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The following posters have been selected for oral presentation and were presented during the Poster Oral Presentation Sessions as part of The British Pain Society's 2021 Virtual Annual Scientific Meeting.

ORAL PRESENTATION 1

CAPTURING THE CHRONIC PAIN PATIENT EXPERIENCE USING A NOVEL DIGITAL HEALTH ECOSYSTEM

Category: Assessment & Measurement

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Background

Chronic pain affects many more outcome dimensions than just pain intensity. Conventionally, these effects are assessed in-clinic and occasionally using diaries at home. Digital clinical research tools can optimize research by allowing for the collection of more and diverse data (subjective and objective), allowing for data collection at home and during times that matter, and by improving patient, researcher and clinician engagement in the research process.

Aims

This analysis reviews performance of a digital ecosystem that captures the multi-year multifactorial chronic pain patient experience at home. Tools like this can maximize the usefulness of such data while decreasing burden.

Methods

Subjects from the ENVISION study, a multi-site, observational study of Spinal Cord Stimulation (SCS) patients with chronic pain who were candidates for or already received spinal cord stimulation (SCS, Boston Scientific, Valencia, CA), used a digital study platform (MyStudyPartner+, Boston Scientific) at home for full duration of study participation. The platform consists of 3 major elements: 1) Subject-Focused Elements: iOS/Android phone-app connected to the subject's SCS stimulator and smartwatch, 2) Researcher-Focused Elements: study management web-portal to design study questionnaires and check compliance, and 3) Infrastructure-Focused Elements: cloud-based server that manages study data and questionnaire delivery. Subjects completed twice-daily, weekly, and monthly questionnaires using the app as requested by the Researcher's schedule. Questions addressed chronic pain intensity, activity/mobility, sleep, mood, medications, voice recordings, pain/

paresthesia drawings, and stimulator uploads. Data were analyzed to understand the patient-app interactions and engagement.

Results

To date, the platform collected data from a total of 275 subjects, who provided 5699 ± 4623 active responses (e.g. answered questions, reviewed recommendations, etc.) each over 12 ± 7 months of ENVISION study participation. Daily questionnaire compliance across all active study subjects for the past year will be shown. Thus far, ENVISION study compliance is $75.3 \pm 13.1\%$ ($n = 273$). 254 subjects received the study watch and wore it for 12 ± 7 months, providing 90.6 ± 95.5 GB of accelerometry data each. Post-IPG subjects who provided at least 1 SCS upload tended to provide them when asked (approximately once per week, 59 ± 48 uploads over 13 ± 6 months of participation).

Conclusions

We demonstrated the feasibility of using a digital platform to collect objective (smartwatch/stimulator/voice) and subjective outcomes data consistently from SCS subjects at home and over years of participation. Patients report altruistic motives more often than monetary incentives as factors associated with engagement. These data suggest most users enjoy the digital platform and find it easy to use. Digital platforms offer additional low-burden tools for researchers to build, execute, and adapt digital clinical studies as research objectives evolve over time. MyStudyPartner+ is an example of a digital tool that could enable clinicians to better understand the many impacts that disease can have on their patients at home and over time.

ORAL PRESENTATION 2

AN INVESTIGATION OF BEHAVIOURAL EXPERIMENTS ON PAIN MANAGEMENT PROGRAMMES

Category: Psychology

Emma Louise Harrold - Psychological Medicine, Cambridgeshire and Peterborough NHS Foundation Trust, Cambridge UK; Pain Service, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK, Isaac Marsden Loftus - Psychological Medicine, Cambridgeshire and Peterborough NHS Foundation Trust, Cambridge UK; Pain Service, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

Background

Behavioural experiments (BEs) draw on experiential learning theory and are routinely used as part of cognitive behavioural therapy. They involve patients making predictions, rating their belief regarding these, and then testing them in real life situations to assess their

validity. They are routinely conducted as part of the therapeutic process in our intensive three-week Pain Management Programme (PMP). Despite this, there is currently a lack of research exploring their mechanisms of therapeutic change or their potential as a patient-focused process measure within this context.

Aims

The study aimed to assess patient's pain-related perceptions when using BEs and their potential use as a measure of therapeutic process.

Methods

198 participants were recruited from referrals to the Pain Clinic at Addenbrooke's Hospital in Cambridge. They completed PMPs between April 2016 and December 2021. The patients completed BEs as part of the PMP. Their prediction and belief rating both before and after conducting the BE (on a scale of 0-100%), was recorded and used for the analysis.

Results

Of all the participants, 97.06% completed at least one BE. Based on an analysis of the BEs, four topics were identified, with most participants making 'non-pain related' predictions (62.63%). The remaining three topics were directly pain-related, with predictions relating to an 'increase in pain' (24.75%), 'pain catastrophizing' (7.07%), and 'fear of movement' (5.56%). Five themes were identified, with most BEs being categorised within the themes of 'physical activities' (31.28%) and 'pleasurable activities' (25.64%), and less within the themes of 'being in public' (17.44%), 'housework' (15.9%), and 'communication' (9.74%). A Wilcoxon signed-rank test revealed that participants belief ratings of their experiments changed significantly ($p < 0.05$) after completing their experiments and Mann-Whitney tests showed that, whilst those who chose negatively worded experiments reported significantly more ($p < 0.05$) change in belief, there was no significant difference in belief change between pain-related and non-pain related BEs ($p > 0.05$).

Conclusions

The results of this exploratory study suggest that many patients engaging in PMPs choose to challenge beliefs that are not directly pain-related and which are often themed around exercise and relaxation. Further research is needed to understand how this information could be used to best support patients. The potential utility of BEs as an individually tailored process measure has tentative support from the significant changes in belief ratings. The results may suggest that we encourage patients to challenge negative thoughts to elicit greater change in beliefs.

ORAL PRESENTATION 3

ASSOCIATION OF OPIOID OVERDOSE WITH SUBSTANCE USE OR MENTAL HEALTH DISORDERS IN PATIENTS PRESCRIBED OPIOID FOR CHRONIC PAIN: A SYSTEMATIC REVIEW

Category: Psychology

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and Michael G. DeGroote Institute for Pain Research and Care, McMaster University, Hamilton, Canada

Background

There are increasing concerns about the harms associated with prescription opioids for chronic pain, including diversion, misuse, and fatal and non-fatal overdose. Previous systematic reviews showed that current or previous substance use and mental health diagnosis are associated with increased risk of developing opioid misuse. However, their associations with fatal or non-fatal overdose remains uncertain.

Aims

We conducted a systematic review and meta-analysis to explore the association between substance use disorder (SUD) or mental health diagnosis and fatal or non-fatal overdose following opioid prescription for chronic pain.

Methods

We searched MEDLINE, EMBASE, CINAHL, and PsycINFO from inception to January 2022, for observational studies, using adjusted analysis, that reported the association between SUD or mental health diagnosis and fatal or non-fatal overdose among patients with chronic pain. Paired reviewers, independently and in duplicate, screened literature, assessed risk of bias and extracted data. We assessed the risk of bias, including representativeness of study population, validity of outcome measures, appropriately adjusted analysis, and missing data. We generated four a priori hypotheses assuming a greater association in the following subgroups: 1) current vs. previous SUD or mental health diagnosis; 2) fatal vs. non-fatal overdose; 3) chronic non-cancer pain vs. cancer-related chronic pain; and 4) higher vs. low risk of bias on a component-by-component base. We used GRADE approach to summarize the quality of evidence.

Results

We included 14 studies with 19 cohorts and 1,530,312 patients prescribed opioids for chronic pain, that studied the association of opioid overdose with SUD or mental health diagnosis. Among the 14 eligible studies, five studies each reported two cohorts of different study populations. Of 19 eligible cohorts, five cohorts reported fatal opioid overdose and two reported non-fatal overdose, with the others reporting mixed overdose. Study populations in 15 cohorts were patients with chronic non-cancer pain, one cohort included only cancer patients, and three included mixed pain populations. Six cohorts included unrepresentative study populations (e.g., veterans, >70% of patients having mental disorders); two cohorts used invalid outcome measures; and six cohorts did not appropriately adjust the most important factors (e.g., age, sex, SUD, and mental health diagnosis). Patients with missing data were not clearly reported in most of studies.

Significant subgroup effects were found between current vs. previous SUD and using valid or invalid outcome measures in multivariable meta-regression (test of interaction $p=0.03$ and 0.02 respectively); thus, we reported current and previous SUD only for valid outcome measures separately. Moderate-quality evidence showed that opioid overdose was associated with current SUD (adjusted odds ratio [OR] 2.42, 95% confidence interval [CI] 1.75 to 3.37 among 10 cohorts and 309,578 patients), any mental health diagnosis (adjusted OR 2.13, 95%CI 1.79 to 2.54 among 17 cohorts and 1,519,013 patients), and depression (adjusted OR 2.35, 95%CI 1.36 to 4.05 among 4 cohorts and 153,233 patients). Low-quality evidence showed previous SUD (adjusted OR 1.19, 95%CI 0.79 to 1.78 among 3 cohorts and 44,416 patients) and anxiety (adjusted OR 1.29, 95%CI 0.94 to 1.76 among 3 cohorts and 94,167 patients) were not significantly associated with opioid overdose. No significant subgroup effects were

found between current vs. previous mental illness or depression. And no additional subgroup effects were found for different types of overdose, chronic pain conditions, and risk of bias.

Conclusions

Our review with moderate-quality evidence suggests that current substance use disorder, mental health diagnosis, and depression are significantly associated with the increased risk of fatal or non-fatal overdose following prescription of opioids for chronic pain. Strategies are needed to prevent opioids overdose or optimize alternative pain management for patients comorbid with both chronic pain and substance use disorder or mental health diagnosis.

ORAL PRESENTATION 4

MINDFULNESS FOR ADULTS WITH CHRONIC LOW BACK PAIN

Category: Older People

Michelle Barrow - Pain Specialist Nurse, Chad Taylor - Pain Medicine Consultant

Background

Non-pharmacological interventions should be an essential component in the management of chronic low back pain (CLBP) in older adults. CLBP in the older adult is physically disabling, as well, as being associated with issues such as anxiety and depression. The management of CLBP differs from the management of younger adults due to co-morbidities, polypharmacy, age-related changes such as pharmacokinetics, pharmacodynamics, frailty and cognitive decline. Social isolation due to the loss of loved ones poses further challenges in the management of the older adult.

Mindfulness is described as a process of becoming more aware of present experience and, through this awareness, being more able to reduce physical and emotional distress. An ancient practice rooted in the Buddhist tradition it was introduced to the Western world and its medical community in a secular form several decades ago. Mindfulness is taught in an 8-week programme referred to as mindfulness-based stress reduction (MBSR), which has been found to be effective for various chronic pain conditions in the general population.

Aims

A narrative literature review was undertaken to search for, retrieve and assess the literature exploring the efficacy and safety of mindfulness practice in the management of the older adult with CLBP and to consider how the evidence may inform clinical practice.

Methods

The search produced 30 journal papers. Consequently, a total of 5 potential papers were obtained and examined with three studies selected. All three studies cited Morone as the principal researcher and author, but they are different studies thus justifying including them in the literature review.

Results

The selected studies were all RCTs with a collective sample size of $n=359$.

Morone et al (2008):

- Pain acceptance significantly improved in the intervention group ($p=.04$) while the control group worsened over the 8 week period ($p=.08$)

- Physical function showed significant improvement ($p=.03$)
- However, no significant effects on pain severity scores, disability or quality of life for the MBSR group.
- The MBSR group were able to adhere to attendance and the required home practice

Morone et al (2009):

- pain severity and disability improved in both groups and there was a statistically significant difference at the end of the 8 week sessions ($p<0.05$)
- Improvement in disability for the MBSR group was maintained at the 4 month follow-up. Control group showed less improvement.
- Differences for pain severity and disability between the 2 groups were not statistically significant

Morone et al (2016)

- The intervention group reported improved function immediately on completion of the 8 week programme, but not maintained by 6 month follow-up
- Effect sizes between the groups at 8 weeks and 6 months were: -0.23 and 0.08 respectively ($p=0.01$).
- The intervention group showed significant reduction of pain severity post intervention and by follow-up.
- Self-efficacy showed improvement immediately post intervention compared to the control group, but not sustained by the 6 month follow-up
- No differences between groups with mindfulness measures
- Changes in quality of life, and catastrophising did not reach clinical significance.
- Excellent retention of participants on the intervention programme

Conclusions

MBSR appears feasible and effective for older adults coping with CLBP, as demonstrated in the Morone et al (2008) study, but particularly in the Morone et al (2016) study. Pain reduction was sustained at the 6 month follow-up in the Morone et al (2016) study, suggesting that mindfulness may be effective in the long-term.

Professionals other than psychologists such as nurses, physiotherapists, and occupational therapists, could deliver such an intervention with appropriate training. Older adults could take part in such a programme while waiting for other treatment such as physiotherapy

ORAL PRESENTATION 5

CHRONIC BACK PAIN SUB-GROUPED VIA PSYCHOSOCIAL, BRAIN AND PHYSICAL FACTORS USING MACHINE LEARNING: A UKBIOBANK STUDY OF 19,803 ADULTS

Category: Other (Research)

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Background

Chronic back pain (CBP) is heterogeneous and identifying sub-groups could improve clinical decision making. Current approaches to sub-group individuals are highly subjective and lack reliability to be implemented on a wide scale. Machine learning can build upon prior sub-grouping approaches for CBP by identifying complex patterns within data. However, only binary classification of pain versus no-pain has been attempted to date.

Aims

The aim was to develop an approach to data-driven biopsychosocial sub-grouping of CBP using machine learning.

Methods

In our cross-sectional study, age- and sex-matched participants with CBP ($n=4,156$) and pain-free controls ($n=14,927$) from the UK-BioBank were included. We included variables of body mass index, depression, loneliness/social isolation, grip strength, brain grey matter volumes and functional connectivity in data analytic approaches. We used fuzzy c-means clustering to derive CBP sub-groups and Support Vector Machine, Naïve Bayes, k-Nearest Neighbour and Random Forest classifiers to determine classification accuracy.

Results

We showed that two variables (loneliness/social isolation and depression) and five clusters were optimal for creating sub groups of CBP individuals. Secondary analyses derived clusters of CBP based on grey matter volumes in the fronto-orbital, primary motor and somatosensory cortices, brain function in the frontoparietal, default mode and sensorimotor networks, and physical variables of body mass index and grip strength. Classification accuracy was greater than 95% for CBP sub-groups were assessed only, while misclassification in CBP sub-groups increased to 35-53% across classifiers when pain-free controls were added.

Conclusions

We showed that individuals with CBP could sub-grouped using psychosocial, physical, brain structural and functional measures and accurately classified. This study benefits individuals with pain through the accurate recognition of profiles that contribute to CBP. Future research should optimise variables by including specific spinal, psychosocial and nervous system measures associated with CBP to create more robust sub groups that are discernible from pain-free controls and that are treatable in clinical practice.

ORAL PRESENTATION 6

MULTIFIDUS STIMULATION IN PATIENTS WITH REFRACTORY CHRONIC LOW BACK PAIN AND FUNCTIONAL SPINE INSTABILITY – THREE-YEAR PIVOTAL TRIAL RESULTS

Category: Interventional Pain Management

Vivek Mehta - On behalf of ReActiv8 B study investigators Pain Research Centre and Barts Neuromodulation Unit St Bartholomew's Hospital

Background

Mechanical chronic low back pain (CLBP) can be caused by impaired neuromuscular control and degeneration of the multifidus muscles, the most important stabilizers of the lumbar spine. An implantable Restorative Neurostimulation system (ReActiv8® by Mainstay Medical) stimulates the medial branches of the L2 dorsal rami to override underlying multifidus inhibition to facilitate motor control restoration. The ReActiv8-B randomized sham-controlled pivotal trial provided evidence of safety, effectiveness and 2-year durability (clinicaltrials.gov/show/NCT02577354).[1,2] Here we report three-year results.

Aims

Determine long-term durability of restorative neurostimulation in patients with refractory CLBP, impaired neuromuscular multifidus control, and no indications for spine surgery.

Methods

Three-year longitudinal follow-up of trial patients at 26 multidisciplinary study sites in the United States, Australia, and Europe. Eligible patients had activity limiting mechanical CLBP (VAS ≥ 6 cm; Oswestry Disability Index ODI ≥ 21 points) despite medical management including at least pain medications and physical therapy. They had evidence of multifidus neuromuscular impairment (positive prone instability test) and no indication for spine surgery. Participants self-administered stimulation for up to 30 minutes twice-daily causing repetitive tonic multifidus contractions and remain in long-term follow-up.

Results

At baseline ($N=204$), participants were 47 ± 9 years of age, had history of backpain for 14 ± 11 years, had an average low back pain VAS of 7.3 ± 0.7 cm, ODI of 39 ± 10 , EQ-5D of 0.585 ± 0.174 points and had pain on $97\pm 8\%$ of days in the year prior to enrollment.

After 3 years ($N=124$), average VAS improved by 5.0 ± 2.4 cm, ODI by 23.3 ± 15.2 points and EQ-5D by 0.223 ± 0.199 ($P<0.0001$ for all) approaching the age-matched population norm; 78% of participants had $\geq 50\%$ VAS improvement; 69% reported LBP-Resolution (VAS ≤ 2.5 cm); 65% had ≥ 20 -point ODI improvement and 84% reported substantial improvement of $\geq 50\%$ in VAS and/or ≥ 20 points in ODI. Of participants using opioids at baseline, 72% had voluntarily discontinued or decreased consumption. Overall safety compares favorably to other neurostimulation systems, and no lead migrations were observed.

Conclusions

Restorative neurostimulation is effective, durable, and safe for patients with refractory CLBP secondary to impaired multifidus neuromuscular control and no indications for spine surgery. Progressive accrual of substantial improvements through 3 years is consistent with the restorative mechanism of action.

Acute Pain

PP003

UNDERSTANDING AND MINIMISING INJECTION-SITE PAIN FOLLOWING SUBCUTANEOUS ADMINISTRATION OF BIOLOGICS; NARRATIVE REVIEW

Category: Acute Pain

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Background

Injection-site pain (ISP) is a commonly reported subjective side effect with the subcutaneous (sc) administration of biologics agents. Multiple factors can make an individual more susceptible to experiencing ISP. Identifying contributing factors allows for interventions and strategies to minimise ISP and support patient adherence to therapy. Introduction of biosimilars requires understanding of ISP to effectively communicate product choices to patients.

Aims

Explore factors that influence ISP associates with sc administration and propose interventions to minimise the sensation of ISP, prevent negative patient experience and increase adherence to therapy.

Methods

1. Describe factors contributing to IPS through a review of previously conducted studies focused on agents where different biosimilars are available
2. Identify interventions that help minimise IPS

Results

1. Identified factors contributing to ISP subcutaneous can be ordered into 3 groups:
 - a. Product-related factors include formulation (ingredients, pH, buffers), delivery volume, needle gauge size and device type.
 - b. Injection-related factors include injection speed, fluid viscosity, injection angle/technique, temperature of product, allergens, injection frequency and injection site.
 - c. Patient-related factors include low body weight, injection anxiety/'needle phobia', pain catastrophising, nocebo effect, female gender, fibromyalgia, depression, severe rheumatoid arthritis, patient expectations and patient movement (during injection).
2. Approaches to minimise identified factors contributing to IPS require multifactorial interventions, understanding of product related factors and effective patient-clinician communication.
 - a. Manufacturers need to ensure as near as possible physiological products regarding pH and osmolality. Data on buffer associated ISP is conflicting and a recent NHS report based on 6 months usage of adalimumab biosimilar in 35'000 patients reported ISP across products regardless of citrate content. Injection volume ideally should be restricted to ≤ 1.5ml and patient friendly devices preferably use short thin-walled, lubricated needles.
 - b. Reports of injection process related factors are contradictory. Studies on injections speed effects on ISP are inconsistent and product dependent whereas high viscosity (15-20 cP) is reported to be less painful than medium or low viscosity sc injections. Minimal administration frequency and adequate patient injection training can minimise ISP by influencing the effects of injection fluid temperature (allowing product to reach room temperature), injection technique, choice of

injection site and identification of hypersensitivity to ingredients and latex.

- c. Assessing ISP is challenging. Limited data and varying study designs make it difficult to fully determine factors influencing ISP. Many patients experience ISP but it may only be of concern for some. Low bodyweight, female gender, fibromyalgia, depression and severe rheumatoid arthritis have been independently associated with ISP. There are no published studies on psychological interventions for ISP but reports on other needle procedures reported benefit of breathing strategies. Pain catastrophising and nocebo effects increase patient perception of ISP and in a questionnaire concerns about injection experience replaced safety issues as second most common answer for discontinuation of sc anti-TNF treatments.

Effective patient-clinician communication with face-to-face and online/digital injection training as well as accessible patient support service pre and during therapy can minimise ISP by managing patient expectations and alleviate potential fear of injections from the onset. Robust training supports the psychological well being of the individual, minimises injection anxieties and allows patients to remain in control of their treatment.

Conclusions

While the complete elimination of ISP with any subcutaneously administered agent remains unlikely, it is important that it be minimised for the sake of adherence to therapy and patient outcomes. ISP can be minimised through well tolerated formulations, patient friendly devices and provision of effective initial patient training. Patient expectation of the overall pre- and post-injection experience needs to be carefully managed. Productive patient-clinician communication including information on any potential for ISP and providing accessible patient support services is essential to optimise treatment adherence.

PP005

GLUTAMATE AS A SALIVARY BIOMARKER FOR ACUTE PAIN: A STUDY IN HEALTHY VOLUNTEERS AFTER UNDERGOING THE COLD PRESSOR TASK

Category: Acute Pain

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Background

Acute pain measurement is difficult in unconscious patients or those with cognitive disability. Finding reliable, objective and non-invasive methods of detecting nociception to guide treatment would be desirable for both patients and clinicians. Salivary cortisol has been shown to rise after exposure to acute pain. Glutamate is a biomolecule associated with nociceptive pathways and its salivary concentration has been found to be higher in people with chronic pain.

Aims

To explore change in the salivary concentrations of cortisol and glutamate after acute pain induced by the cold pressor task (CPT) in healthy pain-free volunteers

Methods

Participants submerged their hand and forearm into a 0-5°C ice bath for a maximum of 5 minutes with full control over when to begin and end the immersion. Saliva samples were collected by passive drool before and immediately after the CPT and then, every 10 minutes for an hour. Pain intensity was reported by participants on a 0-10 numerical rating scale. The samples were frozen at -20°C until they were assayed using enzyme-linked immunosorbent assay (ELISA) for cortisol and a colorimetric assay for glutamate. Data were checked for distribution normality using the D'Agostino Pearson test. The Friedman test and Dunn's comparisons test were used to compare the levels of each biomolecule between saliva samples from different time points. Approval was granted by the University College London Research Ethics Committee (15021/001). All participants were provided with written information and gave written informed consent. The study was funded by the Wellcome Trust [ISSF3/H17RCO/NG16].

Results

Eighteen participants (median age 25 years, range 21-40, male: female ratio 1:1) were recruited. All the participants tolerated submersion for 5 minutes except for one person who removed their arm 1.33 minutes after starting the task. None of the participants reported pain before starting the CPT. The median pain intensity reported after CPT was 6.25 (IQR 2, range 3-6). Salivary cortisol concentration increased between baseline (median 0.14 µg/dL, IQR 0.1) and $t=+10'$ (median 0.34 µg/dL, IQR 0.4) ($p=0.007$). Cortisol levels at $t=+10'$ were significantly higher than the levels immediately after CPT and at $t=+60'$ ($p=0.03$, $p=0.02$ respectively), but there was no significant difference compared with $t=+20'$ and $t=+30'$, indicating that cortisol peaked 10-30 minutes after the CPT. The median baseline glutamate level in the participants was 4.90 ng/µL (IQR= 4.7); slightly above the upper limit of the normal range of salivary glutamate reported in the literature (1.47 - 4.41 ng/µL). Salivary glutamate increased after CPT from a median of 4.90 ng/µL (IQR=4.7) to a median of 5.66 ng/µL (IQR=4.6) and fluctuated thereafter but these changes were not significant except at $t=+50'$ when the levels dropped below baseline to 2.08 ng/µL (IQR 3.3) ($p=0.014$).

Conclusions

The changes in salivary cortisol concentration are in line with previous studies of cortisol change after CPT which validates the study methodology. This is the first study of salivary glutamate after acute pain induction reported in the literature. No change in salivary glutamate concentration has been found, however, it is possible that a peak in glutamate concentration occurred in the first 10 minutes after CPT, and was missed because the sampling time points were designed in accordance with the known time scales of change in salivary cortisol.

As an observational study, this experiment was not designed to show causal relationships. Changes in biomolecule levels may occur due to a stress response or activity in other neuro-endocrine processes rather than being markers of nociception. Further work on nociception-related salivary molecules would help build a picture of how they could be used to detect nociception and measure its intensity in patients who are unable to self-report pain.

PP006

EFFICACY OF PRIDINOL FOR MUSCULOSKELETAL PAIN - PART 1: META-ANALYSIS OF CONTROLLED AND NON-INTERVENTIONAL CLINICAL TRIALS

Category: Acute Pain

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Background

Muscle tone modifying agents are increasingly popular in everyday care due to their causative approach, although their use (e.g. for non-specific low back pain) is not recommended in current guidelines – predominantly due to insufficient evidence.

Aims

To evaluate the available evidence on the analgesic efficacy of pridinol (a muscarinergic antagonist acting on the presynaptic membrane of the motor endplate) for musculoskeletal pain.

Methods

Systematic literature search of randomized (active/placebo) controlled (RCT) and non-interventional clinical trials (NIS). Assessment of study quality according to the recommendations of the German Cochrane Report Center and methodological guidelines of Good Clinical Practice (GCP). Definition of a primary efficacy endpoint (PE) considering everyday relevance and available data structure. Correction of the NIS response by considering an RCT-adjusted, conservatively weighted placebo response (WPR) to avoid possible efficacy overestimations.

Results

The literature search identified 9 RCTs as well as 26 NIS, of which 6/3 had to be excluded from the meta-analysis due to methodological deficiencies. Determination of the PE with reference to a 4-level Likert scale regarding the "clinical global impression of change" (CGIC) at the end of the study dichotomized according to the documented response ("excellent/good/sufficient") vs. nonresponse ("insufficient"). RCTs showed a significant superiority of pridinol (74.6%, 95% CI: 68.5-80.8%, range: 72.1-81.1%) over placebo (49.7%, 95% CI: 42.6-56.7, range: 45.7-50.8%; $p<0.001$, odds ratio [OR]: 2.97 [1.93-4.57], risk ratio [RR]: 1.50 [1.30-1.73], NNT: 4). In all RCTs included in this analysis, the response for pridinol was significantly better than that for placebo ($p<0.001$). For the NIS, response rates averaged 91.5 (95% CI: 90.7-92.3%, range: 38.7-97.1%) and the WPR as 60.5 (95% CI: 59.1-61.9%, range: 53.1-63.2; $p<0.001$), resulting in an OR of 6.89 (95% CI: 6.08-7.80) for the WPR-adjusted PE for pridinol and a RR of 1.50 (95% CI: 1.45-1.55). The corresponding NNT is calculated to be 3. In 17/23 NIS (69.6%), pridinol proved significantly superior vs. WPR.

Conclusions

In the present conservative meta-analysis of trial data on its efficacy in 4,607 patients with musculoskeletal pain, pridinol demonstrated significantly superior analgesic efficacy to placebo in both controlled clinical trials and WPR-adjusted noninterventional studies.

PP007

EFFICACY OF PRIDINOL FOR MUSCULAR PAIN - PART 2: REAL-WORLD EVIDENCE ANALYSIS OF ROUTINE DATA FROM THE GERMAN PAIN E-REGISTRY

Category: Acute Pain

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Background

Muscle tone modifying agents are increasingly popular in everyday care due to their causative approach, although their use (e.g. for non-specific low back pain) is not recommended in current guidelines – predominantly due to insufficient evidence.

Aims

To evaluate the analgesic efficacy of pridinol (a muscarinergic antagonist acting on the presynaptic membrane of the motor endplate) for muscle-related pain under everyday conditions.

Methods

Retrospective longitudinal analysis of the effects of pridinol in patients with musculoskeletal pain using depersonalized data from the German Pain e-Registry (documentation period: January 1st, 2018, to December 31st, 2020) in form of an exploratory non-interventional cohort study. The primary efficacy endpoint was the proportion of patients with a complete response defined as 1.) clinically relevant absolute (\geq minimal clinically important difference, MCID) and/or relative ($\geq 50\%$) improvement vs. baseline both in a) pain intensity, and b) pain-related (functional) impairment in daily life, and 2) absence of drug-related adverse events (DRAEs). Secondary endpoints evaluated the extent of absolute/relative changes of pain intensity and related disabilities in daily life vs. baseline (BL) as well as DRAE frequency. Analysis followed an intention-to-treat approach and included all data of subjects who documented a treatment with pridinol and provided information for at least one follow-up evaluation. Missing data were imputed via LOCF.

Results

During the evaluation period, 1,133 patients (age 53.9 ± 11.8 , range 18-85 years; 54.5% female) were identified who received pridinol for the treatment of their musculoskeletal pain (which was acute or subacute in 90.0%) for a period of up to 9 weeks. Average dose was 2.6 ± 0.6 (median 3, range 0.5-4.5) tablets per day and treatment duration was 12.0 ± 10.2 (median 7, range 3-63) days. In response to pridinol, 94.4/79.8% of patients documented a clinically relevant pain relief, and 94.7/88.1% an improvement of their pain-related disabilities in daily life \geq MCID/50% vs. BL. Seventy patients (6.2%) reported at least one DRAE, and of those nine patients (0.8%/11.4a%) discontinued therapy. After combining efficacy/tolerability parameters relevant for the primary endpoint, 909 patients (80.2%) documented a complete and 146 (12.9%) a partial response without any DRAEs. 78 patients were classified as treatment failures - either due to DRAEs ($n=70$, 6.2%) or ineffectiveness ($n=8$, 0.7%). Across all treatment periods, treatment with pridinol allowed a statistically significant reduction of concomitantly used analgesic medications, and 349 patients (30.8%) even reported a complete discontinuation of all other analgesics. Most

significant reductions were seen for non-opioid analgesics (-37.1%), NSAIDs (-34.4%) and mild opioid analgesics (-24.1%).

Conclusions

In the present real-world evidence analysis of primary care routine data on 1,133 patients from the German Pain e-Registry, treatment with pridinol proved to be an effective and well-tolerated alternative for the treatment of muscular pain.

Assessment & Measurement

PP008

RETROSPECTIVE REVIEW OF EFFICACY OF LIDOCAINE INFUSION IN CHRONIC PAIN PATIENTS

Category: Assessment & Measurement

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Background

Chronic pain accounts for one of the most common reasons patients seek medical care. Lidocaine can achieve both central and peripheral analgesic effects with relatively few side effects, which may be an ideal compound for managing chronic pain and from subjective feedback, patients appear to gain benefit from outpatient lidocaine infusions. Objective treatment aims should be for a clinically significant improvement in pain scores ($>50\%$) for a time period of > 8 weeks.

Aims

To provide quantitative results of the effect of intravenous lidocaine on patients with chronic pain.

Methods

Retrospective study of the analgesic and chronological effect of treatment comparing fibromyalgia and other chronic pain states. Patient criteria were those who had at least two lidocaine infusions as part of their treatment.

A survey was completed by 26 patients on their diagnosis, duration of pain, percentage in improvement of their treatment and length of analgesic effect.

Results

AVERAGE EFFECT OF TREATMENT (WEEKS)

- Fibromyalgia: 10.5 (2-26)
- Non fibromyalgia: 6.5 (0-26)

TREATMENT EFFICACY > 8 WEEKS

- Fibromyalgia: 6/15 (40%)
- Non fibromyalgia: 2/10 (20%)

MEAN IMPROVEMENT IN SYMPTOMS (0-100%)

- Fibromyalgia: 62 (20-100)
- Non fibromyalgia: 44 (0-80)

CLINICALLY SIGNIFICANT IMPROVEMENT ($>50\%$)

- Fibromyalgia: 12/15 (80%)
- Non fibromyalgia: 6/10 (60%)

Conclusions

- Neither category had the majority of patients experiencing treatment efficacy >8 weeks.

- However, within all fibromyalgia patients the average effect of treatment met the target of > 8 weeks, and the majority of patients had clinically significant improvements in their pain scores.
- There were also no patients that didn't experience any benefit.
- The majority of non-fibromyalgia patients experienced clinically significant improvements in their pain although average improvements did not reach the target of > 50% nor the average effect of treatment of > 8 weeks.

Overall, those with non-fibromyalgia chronic pain are less likely to have clinically significant improvements in pain, less overall improvement in pain and for a shorter period of time.

PP010

PATIENT STATES: ARTIFICIAL INTELLIGENCE-DRIVEN METRIC PROVIDING COMPREHENSIVE YET STRAIGHTFORWARD UNDERSTANDING OF CHRONIC PAIN PATIENTS

Category: Assessment & Measurement

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Background

Pain scores are commonly used to assess chronic pain patients. However, they provide a limited window into health status and are subject to numerous sources of bias and confounding factors. IMPACT suggests adding outcomes like physical function, emotional function, patient disposition, and satisfaction to provide a comprehensive view of patients. Advances in continuous at-home data monitoring now allow capturing objective and self-reported metrics, but interpretation is difficult given the volume of information. One solution is to use AI to discover clusters (groups) of patterns in the outcomes. These interpretable health "states" simplify outcomes into a digestible format that describe a patient holistically, allowing clinicians to deeply understand individual patients and identify proactive interventions to improve outcomes.

Aims

Here we use an artificial intelligence-driven method that identifies patterns or "Patient States" in patient health outcomes. These interpretable "Patient States" simplify outcomes into a digestible format that describe a patient holistically, allowing clinicians to deeply understand individual patients and identify proactive interventions to improve outcomes.

Methods

Through on-going, multi-site studies (ENVISION/NAVITAS, NCT03240588) of spinal cord stimulation (SCS) response in patients with chronic leg/back pain (Boston Scientific, Valencia, CA), subjects provided daily self-reported and objective data using a custom-designed digital health ecosystem (Boston Scientific, Valencia, CA). Modern artificial intelligence (AI) techniques were used to develop deeply personalized subject-specific pain prediction models and engineer novel metrics, (e.g. effective mobility) from a continuously-worn smartwatch. Additional analysis techniques (e.g.

k-means, consensus clustering) across this comprehensive feature set were used to discover homogenous groups of health states, check the stability of groups, and determine the optimal number of health states. These Patient States were then validated against subjects held from the training dataset.

Results

To date, analysis of n=116 subjects with ≥10 days of data has discovered states appropriate to describe SCS patients across mood, sleep, activity, pain, medication, alertness, and effective mobility. Unsupervised Consensus Clustering methods using k-means indicated 5 stable clusters exist (based on 1000 sub-sampled iterations) and strong consensus indicated stability of ≤5 clusters. State A can be summarized as the "Best" state and is described by low pain, reduced medication, high levels of activity, mood, sleep, alertness and effective mobility. State B is described by low pain, medication and higher levels of mood, sleep and alertness but with reduced effective mobility, sleep and alertness. State C describes a state with moderate pain but with a resilience in sleep, alertness. State D describes a state with moderate pain and medication use but higher levels of effective mobility. State E can be summarized as an "Inferior" state with high levels of pain, increased medication and low levels of activity, mood, sleep alertness and effective mobility. States correlated with validated in-clinic metrics (Pearson correlations comparing distance from a State centroid to Oswestry Disability Index and EQ-5D-5L) and correlations suggest an order from A-E. Also, preliminary estimation of today's and tomorrow's pain were both within 1 point (0.92/10 mean-absolute-error, n=53 subjects with ≥100 days data-overlap analyzed to date) using only data from the passively collected objective smartwatch.

Conclusions

We defined an AI-driven metric for monitoring and tracking pain patients that considers multiple dimensions to comprehensively describe a patient's state in a straightforward manner. This metric correlates well with other validated metrics and demonstrates changes in clinically significant time points in a patient journey. Patient States provide deep insights that enable clinicians to actively manage care to improve outcomes. Patient States hold promise as new standard of care in efficiently managing the treatment of large groups of chronic pain patients.

PP011

EXPLORING THE USER PERCEIVED FEASIBILITY OF PAINCHEK® AND ABBEY PAIN SCALES IN THE UK CARE HOME SETTING

Category: Assessment & Measurement

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Background

Pain in people with dementia is often poorly managed as a result of misinterpretation and inaccurate pain recognition and assessment. When self-report of pain is no longer possible to assess pain, observational pain assessment tools are utilised. Many studies focus on validating observational pain assessment tools, yet few focus on approaching future users, such as nurses, care home carers and allied

health professionals, to investigate their perceptions on the feasibility of using these tools in clinical practice. Perceived feasibility studies typically focus on reporting views on self-report pain measures, rather than observational tools and the strengths as well as challenges faced by users.

Aims

Due to the limited qualitative research on perceived feasibility of observational pain assessment tools, this qualitative study aimed to gain insight by investigating user perceived potential strengths and limitations of the Abbey Pain Scale (APS) and the PainChek®. Therefore, the aim of this study was to explore feasibility in terms of views and opinions of care home staff and allied health professionals of two observational pain assessment tools, namely PainChek® and APS.

Methods

Semi-structured interviews were conducted with nurses and allied health professionals. Interview transcripts were analysed using Braun and Clarke's (2006) thematic analysis, to identify key themes and subthemes.

Ten participants (age 40.0 ± 14.2 years) were recruited from two UK based care homes in an urban setting. All participants had experience or were working at dementia specialised nursing homes at the time of data collection. The care homes used for recruitment of nurses had a Care Quality Commission rating of "outstanding" and "good" at the time of data collection. The two dementia specialised nursing home had a capacity of 89 and 50.

Participants were presented with a hard copy of the APS to relate to while being interviewed, and they were also presented with a two-minute video which introduced them to PainChek®, as at the time, PainChek® was not available to these care homes for routine use.

Results

Five key themes, each with 2-3 subthemes were identified. The key themes focused on the following; Limitations of APS, Strengths of APS, Limitations of PainChek®, Strengths of PainChek®, and Critical Factors of Pain Assessment. The most prevalent sub-themes revealed that participant nurses often felt that there was no need for an observational pain assessment tool and they expressed that they found the APS time consuming and restricting. Identified APS strengths included usefulness of the 'facial expression' domain. Identified limitations of PainChek® included some worries about using a mobile device as a tool to track pain observations within care homes, while perceived strengths highlighted the useful automated feature which helps to mitigate bias and acknowledgement of the potential to save time using an app on a mobile device.

Conclusions

The themes identified within this study helped to highlight the strengths and limitations of the APS and the PainChek® tools. The findings of this study are important for the implementation of digital health solutions, such as PainChek® into care homes in the United Kingdom and aged care in general.

PP012

MAKING PAIN ASSESSMENT INTELLIGENT: PAINCHEK'S JOURNEY FROM AUSTRALIA TO UK CLINICAL PRACTICE

Category: Assessment & Measurement

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Background

People living with dementia frequently suffer from pain which can cause a number of issues including functional impairment and behavioral symptoms. Over 90% of people with dementia experience Behavioral and Psychiatric Symptoms of Dementia (BPSD) and these symptoms are often treated with antipsychotics. In the UK alone, Department of Health suggests that of the 180,000 anti-psychotic prescriptions for people with dementia, 140,000 are prescribed inappropriately. These medications have a number of side effects including increased risk of stroke and mortality. In people living with dementia behavioural symptoms are also caused by an unmet need such as unrecognized pain. Undetected and under-treated pain in this population group is a major issue which results from their impaired cognition and diminished ability to self-report. The ability to adequately assess pain using evidence-based assessment tools is critical for timely pain management and therefore reduction of BPSD. There are other challenges associated with pain assessment including under-utilization of evidence-based tools, poor documentation and lack of training.

Aims

Develop a pain assessment system which leverages from technology advancements such as those in Artificial Intelligence (AI) and smart automation and therefore overcome the challenges associated with existing pain assessment tools and processes.

Methods

We developed PainChek®, which is a hybrid point-of-care system that uses AI to automatically detect nine facial action units indicative of pain. Combined with non-facial indicators of pain, which are recommended during multidimensional assessment of pain in people with communication difficulties, the application in the PainChek® system enables real-time computation of a cumulative pain score and severity. The system also has advanced data analytics capabilities and through its open application programming interface (API) allows integration with various software platforms allowing a seamless documentation and monitoring of pain assessment practices. Initially our concept was supported through Alzheimer's Australia and then it was further refined and validated against the Abbey Pain Scale in people with moderate to severe dementia. Following clinical practice implementation, the system was further extended to include the Numerical Rating Scale and therefore enable pain assessment and documentation under one platform also for people who are able to self-report.

Results

Following successful validation in various research studies, PainChek® was cleared as Class 1 medical device in Australia (TGA) and Europe (CE mark) in July 2017. Currently, PainChek® has been contracted across over 1500 aged care facilities and 125,000 beds, mainly in Australia. Over 850,000 pain assessments have been conducted so far, comprising the world's largest pain database. Continuing its journey from Australia, in January 2020 PainChek® system was first used in the UK and since then, despite COVID-19 related challenges, it has been contracted to over 3500 beds with close to 20,000 assessments conducted thus far. Additionally, a number of residential aged care organizations with national coverage have recently started piloting PainChek®. Leveraging its open API capabilities, PainChek® has been integrated with a number of leading care

software systems in the UK. Preliminary client feedback from clinical practice use in the UK is suggesting that use of PainChek® has resulted in significant increase in the frequency of pain assessments, dosing decrease and cessation of antipsychotic and benzodiazepine medications as well as reduction in safeguarding incidents.

Conclusions

Digital health solutions such as PainChek® have the capacity to make pain assessment process more intelligent therefore alleviating some of the existing challenges associated with detection, management and documentation of pain. Despite challenges associated with COVID-19, PainChek's has continued its journey from Australia to the UK with initial implementation in the UK suggesting meaningful impact in clinical outcomes related to safeguarding and use of antipsychotic and benzodiazepine medications.

PP013

A RETROSPECTIVE ANALYSIS OF PATIENT SOCIOECONOMIC AND DEMOGRAPHIC FACTORS INFLUENCING ENGAGEMENT IN A NOVEL, DIGITAL PAIN MONITORING SYSTEM

Category: Assessment & Measurement

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Background

Remote consulting technology within healthcare is ever expanding, with millions of remote consultations occurring in 2020, with over 99% of GP practices now offering remote consultation, and also increasingly used in secondary care.

It is easy to assume that older patients will be less willing or able to access and use health technologies, with just 18% of over 75's owning a smartphone in 2018. This assumption may lead to older patients not being offered this modern solution and being discriminated against.

Aims

We set out to analyse if there are any socioeconomic or demographic factors that limit the ability to utilise a digital healthcare application. The app, developed by Cambridge University and Addenbrookes Hospital assesses in real time patient pain scores, and therefore remotely assess response to treatment.

Methods

A retrospective observational study was carried out, analysing the health records of 200 patients who had agreed to use the application from 2019 – 2021. Of these 200 patients, 100 records were randomly selected from a pool of patients who had successfully used the app, and 100 records were randomly selected from those who had been set up on the app, agreed in clinic to use the app, but then failed to input meaningful data (defined as >5 data points).

Base demographics were recorded for both groups including age, identified gender and postal code. The postal code data was used in conjunction with cubically accessible data to give information on the deprivation index and income decile. Of the 100 active patient records further data was recorded in the form of mean pain score inputted, standard deviation of pain score, number of

individual logs of score and number of days over which scores were recorded.

To give a single numerical indicator of app engagement, the number of individual pain score entries was multiplied by the days over which the scores were recorded to give a "usage index".

Data was nonparametric and therefore Spearmans rank coefficient was used for correlation and the Mann Whitney U-test used to compare groups. A two-tailed test with a threshold p-value of 0.05 was used for significance.

Results

Of those offered the app, approximately 15% declined to be involved.

Of the 200 random patients who agreed to use the app, there was no difference between the active (n100) and inactive (n100) groups in terms of age or sex. The maximum age of an active user was 91 years, with a usage index of 1650 (50 recordings over 33 days, population usage index for comparison = 3689).

There was no difference between active and inactive users when analysed for deprivation, income, employment rate or education.

Analysing the active group in isolation there was no relationship between age, pain severity, income or deprivation index with the amount the app was used

Conclusions

When using healthcare technologies clinicians should be cognisant to unconscious bias against patients based on characteristics such as age and socioeconomic group. It has been proven that all ages and socioeconomic groups are able to successfully utilise this technology. Despite this it is vitally important to consider that outliers remain, and services must provide alternatives to technology to ensure equality of access.

The potential applications of technology to healthcare are innumerable, and potentially of great benefit to patients and the healthcare ecosystem. We are only seeing the start of a technological revolution in healthcare, and education of patients on the benefits of healthcare, rather than demographics of the individual is key to ensuring that this revolution is fully realised by all.

Audit and Service Evaluation

PP014

PAIN AND LONG-COVID. A COLLABORATIVE PROJECT BETWEEN THE LONG-COVID HUB AND THE CHRONIC PAIN DEPARTMENT IN SHEFFIELD TEACHING HOSPITALS

Category: Audit and Service Evaluation

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Background

Pain is a commonly reported symptom of long-COVID. The exact nature, duration and chronicity of this pain remains unclear, with most studies reporting myalgic and arthralgic symptoms and other authors speculating that neuropathic pain is likely to predominate and emerge later in the course of the post-COVID illness. Observations made during our service evaluation provide further insights into this poorly understood area.

Aims

- Evaluate the assessment and nature of pain in patients referred to the Sheffield long-COVID hub.
- Clarify the current pain management strategies employed.
- Inform the development of pathways between the Sheffield long-COVID hub and Pain clinic.

Methods

We conducted a retrospective cross-sectional cohort analysis of all adult patients with long-COVID referred to the hub up to October 2021 from primary and secondary care in Sheffield.

We assessed the effectiveness of the initial consultation in covering the major facets of a pain assessment, including chronicity, location, nature and impact of the pain on quality of life. We recorded measures taken to address the pain and baseline demographic data (age, sex and certainty of COVID-19 diagnosis). Presence of neuropathic pain features was compared in patients with new or chronic pain using Odds Ratio with 95% Confidence Intervals.

Results

522 out of 1014 referrals had been assessed. 194 patients were identified as having pain, 94 were excluded (47 had not yet been assessed; 25 did not report pain at their assessment; 9 did not opt-in for assessment; 9 opted-in but subsequently did not attend; 2 duplicate records; 2 were felt not to have long-COVID) leaving 100 records to retrospectively evaluate.

The 100 records analyzed had a 3:1 Female to Male ratio, a mean age of 47.5 years, and 77% had PCR confirmed COVID-19 infections. Around 1 in 5 (100/522) patients reviewed identified pain as a major symptom in their presentation.

New onset pain was reported in 80/100 (80%) patients. 19/100 (19%) patients suffered with chronic pain prior to their COVID-19 diagnosis. Of those with pre-existing pain 13/19 (68%) also experienced new painful symptoms, and 16/19 (84%) reported an exacerbation of their original pain.

Overall, 42/100 (42%) of patients experienced neuropathic elements to their pain. Of those with new pain only, 27/80 (34%) had a neuropathic element to their pain in contrast to those with long standing pain, who reported a neuropathic element to their pain in 15/19 (79%) of cases (OR 0.14, CI 0.04 to 0.45, $p=0.001$).

The majority of reported symptoms were in the limbs, followed by the back, chest and head. Neuropathic symptoms were reported 16/24 (66%) in the hands and 16/22 (73%) in the feet.

Quality of life measures that were affected most notably were mobility (76%) followed by sleep (67%), mood (57%) and change in work routines (49%). The interventions provided by the long-COVID hub were self-management advice and signposting to psychological and physiotherapy services. 5 patients required further investigations and 1 was referred to the chronic pain team.

Conclusions

Pain has been identified as a common presenting symptoms in long-COVID. The majority of patients with pain symptoms in this cohort did not suffer with chronic pain prior to their COVID-19 diagnosis. A significant percentage of the pain had neuropathic characteristics, and this was observed more frequently in those with pre-existing chronic pain. More research is needed to further evaluate and understand pain as a symptom of long-COVID to facilitate the development of pathways for managing this patient group.

PP015

IMPROVING OPIOID STEWARDSHIP- THE ROLE OF THE SURGEON

Category: Audit and Service Evaluation

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Background

Over the last 20-years there has been increasing opioid related deaths, in the context of a worldwide epidemic of misuse including addiction and overdose. Startlingly, initial opiod use is usually iatrogenic. Most published data are from the USA with very little evidence from UK surgical practice.

Aims

To ascertain current opiod prescription practice in a UK general surgical unit.

Methods

Retrospective analysis of general surgical unit opiod prescriptions. Data included prescribed opioids on discharge, 1, 3- and 6-months post-discharge usage, milligrams of morphine equivalence (mgEq) to compare regimes.

Results

One hundred cases were reviewed. 35% of patients were opioid naïve on admission and 20%, 5.71% and 8.57% remained on opioids at 1, 3- and 6-months post discharge respectively. Females more likely to remain on long-term opioids at 6 months at lower doses (42% v 30%). Only 6% of discharge summaries recommended GP follow-up and assessment of opioid requirements. Patients receiving Acute Pain Team reviews more likely to remain on long-term opioids, at lower doses (30.67mgEq, 29.25mgEq and 32.63mgEq at 1-, 3- and 6-months post-discharge) compared to those without (69.16mgEq, 74.25mgEq and 65.13mgEq). Addictive substance use (nicotine, alcohol, illicit) was not associated with extended opioid usage. Only 11% of patients with pre-existing opioid prescriptions were reviewed by the acute pain team. No patients were prescribed reducing dose regimens or given an end-date of prescription. Worryingly, there was no documented assessment of opioid misuse risk in patients.

Conclusions

Standardised assessments i.e. opioid Risk Assessment Tools and mgEq needs to be documented and monitored in primary and tertiary care. Acute pain team services should be offered to more patients. Our study hopes to raise awareness of the need for effective opiod stewardship in surgical patients.

PP016

MRI SCANS - AN AID TO SUPPORTING SELF-MANAGEMENT FOR PERSISTENT LOW BACK PAIN? AN AUDIT OF MRI PRACTICE AND OUTCOMES IN A PAIN MANAGEMENT SERVICE**Category:** Audit and Service Evaluation

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Background

Magnetic Resonance Imaging (MRI) scans are rarely initiated by our pain management service as any such investigation is usually concluded prior to referral. There are however, occasions where we do initiate an MRI scan, if it will lead to a change in our management. In these situations, we consider the risks and benefits of doing a scan as well as how results are to be communicated to the patient in the context of persistent pain.

The iatrogenic effects of MRI scans for low back pain are well known, including the potential to increase disability, focus on biomechanical and structural facets and consequently lead onto higher rates of surgery and healthcare costs. However, they can also provide an avenue for re-conceptualisation of pain, to enable patients to work towards self-management with appropriate reassurance.

Aims

To study the therapeutic outcomes of MRI scans ordered in a single pain management Service, with particular focus on influencing patient self-management.

Methods

We carried out a snap shot notes audit of all MRI scan referrals made by the pain management service between January 2018 and August 2020. Notes were analysed by two clinicians, collecting data on patient demographics, pre MRI referral features, reason for MRI scan and post MRI scan outcomes.

Data was analysed and presented using descriptive statistics.

Results

17 MRI scan referrals were made between January 2018 and August 2020 and they were all for spinal imaging. Patients were aged between 28 – 83 years (mean 50 yrs); 11 male and 6 female; 11 were employed, 3 unemployed, the rest either retired or unknown. 59% of MRI referrals were primarily for diagnostic reasons and 41% for primarily therapeutic reasons, i.e. to provide appropriate levels of reassurance to enable engagement in self-management. Based on analysis of patient records, incorporating patient self-report, clinician's treatment notes, and level of engagement in self-management based sessions, we found that 47% of all cases referred for MRI scans led to such outcomes as increased reassurance and engagement in self-management; of the cases referred for MRI scans primarily for therapeutic reasons, 42% had such therapeutic outcomes.

Conclusions

This study found that nearly half of all MRI scan requests led to a therapeutic outcome, in terms of influencing patient engagement in self-management of their back pain. Interestingly, this was irrespective of the reason for the MRI request. We found that middle-aged, employed males were the predominant demographic referred for MRI scans. These finding should be considered in the context of

the studied pain management service which primarily supports patients to self-manage. This was also a small-scale retrospective audit, with low case numbers. Further research, such as a prospective study, could help to identify best practice in the therapeutic use of MRI scanning.

PP017

ONE SIZE DOES NOT FIT ALL: ENABLING CHOICE AND PATIENT CENTRED CARE IN A CHRONIC PAIN REHABILITATION SERVICE**Category:** Audit and Service Evaluation

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Background

Guidelines recommend that management of multi-morbidity, including symptom complexes such as chronic pain, should develop an individualised management plan taking a person's needs and preferences into account. The NHS Plan calls for an end to one size fits all and recommends differentiated, personalised care to reduce inequalities for people with long term conditions.

Aims

Specialist pain management services have tight referral criteria, meaning that individuals may be denied treatment. A process audit was conducted in order to determine whether patients accessed treatment equitably in a pain rehabilitation service.

Methods

Retrospective chart review of 500 consecutive patients attending a pain rehabilitation unit in a secondary hospital between April 2019 and January 2020. Assessments were predominantly conducted by physiotherapists, for some additional psychology assessment was offered. Baseline demographic data, outcome of assessment, physical and mental health co-morbidities were recorded. Cut points on questionnaires which represented severe depression and anxiety were used. Treatment options included; a pain management programme, physiotherapist-led programmes, hydrotherapy, exercise classes or individual physiotherapy. A chi-squared analysis was applied to baseline variables of age, gender, employment status and mental health diagnosis to compare patients offered treatment or discharged and group rehabilitation programme participants versus non-programme participants. The audit was registered with the trust audit department.

Results

Baseline demographic data (%):

Sex: Female 73.2, Male 26.8, Mean age: 49.9, Employment Status: Unemployed 42, employed 39.4, retired 14.2, student 2.2, Mental Health: Depression 60.2, Anxiety 28.4, current or past history of trauma 28.4, >2 mental health morbidities 32, Physical health: respiratory disease 15.6, diabetes 9.6, Hypertension 9.4, >2 physical health morbidities 15.6. 95.6% of patients were offered treatment. There were no significant differences between participants offered treatment compared to those discharged. Psychiatric morbidity was significantly associated with being offered a group programme, participants without mental health morbidity were less likely to be offered group programmes.

Conclusions

There were no differences in demographic characteristics of participants who were offered treatment versus those that were discharged. Participants with mental health problems were more likely to be offered multidisciplinary treatment. A minority of patients were discharged, in contrast to a published audit of practice from a tertiary pain management centre where 44% of patients were discharged (ref). There was a high burden of mental health co-morbidities in our patients. Physical health morbidities were less prevalent. Depression results in reduced ability to exert effort, thus to deny access to treatment may adversely impact physical health.

Pain rehabilitation services can develop a diverse treatment offer to maximise access and choice for people with complex pain, presenting with physical and mental health co-morbidities. This may minimise health inequality and optimise patient centred care.

PP018

HOW HAS THE COVID-19 PANDEMIC AFFECTED PATIENTS' EXPERIENCE OF PAIN MANAGEMENT THERAPY?

Category: Audit and Service Evaluation

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Background

COVID restrictions required adapting pain management programmes to eHealth delivery. Research has indicated pain management eHealth is more accessible and can improve outcomes for patients, but only when it is tailored and properly supported. Therefore, this literature cannot account for the experience of patients having eHealth enforced on them at short notice by a global pandemic. Consequently, this service evaluation aimed to explore patients' experiences of online pain management during the COVID-19 pandemic.

Aims

The current service evaluation aimed to explore the impact of COVID-19 on patients experiences of pain management therapy. The study examined the barriers and benefits introduced for patients during the move from face-to-face to eHealth methods of delivery.

Methods

A qualitative service evaluation using semi-structured interviews was conducted in an NHS outpatient pain clinic. Six participants were interviewed via online videoconferencing. Transcripts were analysed using thematic analysis. The authors adhered to the BPS Code of Ethics and Conduct.

Results

Three themes emerged from the analysis; *Benefits Aside from Pain Relief*, *A Limited Experience*, and *COVID: A Double-Edged Sword*.

Conclusions

Findings suggested patients were able to benefit from pain management therapy despite the impact of COVID on daily routines and pain experience. The pandemic introduced a new way to deliver pain management therapy which allowed patients to continue to benefit from peer support and learn effective tools for self-management,

whilst also improving accessibility of the programme. Yet, it was not without its limitations. Technical issues and difficulties creating therapeutic connections limited patients' experience of pain management therapy. Hence, moving forward, healthcare services should take into consideration the acceptability of eHealth delivery, but must consider contingency plans to ensure patients' experiences are comparable and not impacted by technical difficulties.

PP019

ASSESSING THE EFFICACY OF TOPICAL GABAPENTIN IN PATIENTS WITH CHRONIC PELVIC PAIN IN SECONDARY CARE

Category: Audit and Service Evaluation

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Background

Chronic pelvic pain causes a large illness and disability burden in the UK. Patients with chronic pelvic pain often report it to have a neuropathic quality. NICE recommends gabapentin as a treatment to manage neuropathic pain. Its mechanism of action is not yet fully understood but systemic side effects can limit the tolerability of oral gabapentin in some patients. Topical application could provide an alternative that is acceptable and effective. Very few existing studies have assessed the efficacy of topical gabapentin although there is a growing body of evidence for the use of topical analgesics more broadly.

Aims

The aims of this study were to assess the efficacy of topical gabapentin at managing chronic pelvic pain and to gather data about its tolerability. The cohort of patients was those already being prescribed gabapentin cream 6% by the pain service at Wythenshawe hospital for chronic pelvic pain. The secondary aim of the study was also to gauge the current use of topical gabapentin within the UK.

Methods

This retrospective study gathered pre- and post-treatment pain scores from those patients who were being prescribed gabapentin 6% cream by the pain clinic. An 11-point pain scale was used. The indication for the treatment was noted. The secondary outcome measures were: percentage benefit felt by the patient and whether there was a post-treatment reduction in oral medication. Any reported adverse effects were also recorded. To achieve the secondary aim of the study, an eight-question national survey was sent out to pain clinics across the country and the results were analysed.

Results

Data was gathered from 40 patients. 38 patients provided pre- and post-treatment pain scores. The average pre-treatment pain score was 7.5(± 1.6), the average post treatment pain score was 5.9(± 2.1). 50% of 38 patients experienced a reduction in their pain score. Of those 19 patients, the mean pain score reduction was 3.2. 50% of patients reported a percentage benefit. Of those 19 patients, the average reported benefit was 47.8%. Only 4 patients (10.3%) reported a change in their oral medication use after using topical gabapentin 6%. 64.1% reported no side effects. Side effects reported were predominantly local skin reactions. There were 23 responses to the national survey.

Only 6 respondents prescribed topical gabapentin for their patients – this was mainly for pelvic pain.

Conclusions

The results of this study demonstrated that more than 50% of patients studied found some benefit from the topical gabapentin (6%), of those that responded positively, there was a convincing decrease in pain. Variability in efficacy is expected when managing a condition with a complex aetiology. The lack of reduction in oral medications suggests topical analgesics are most effective when used as adjuncts. Topical gabapentin was found to be highly tolerable. In lieu of any randomised controlled trials, clinical significance is placed upon the growing body of narrative evidence that suggests topical gabapentin, and topical analgesics more broadly, may be effective and may have a role in the management of chronic pain. This research has limitation as it was retrospective and uncontrolled.

PP020

CLIENT EXPERIENCES OF AN ONLINE PAIN MANAGEMENT PROGRAMME – A THEMATIC ANALYSIS

Category: Audit and Service Evaluation

Claire Wicks - Dorset Healthcare University NHS Foundation Trust, Francesca Harber - Dorset Healthcare University NHS Foundation Trust, Dr Ross Godfree - Dorset Healthcare University NHS Foundation Trust, Louise Brett - Dorset Healthcare University NHS Foundation Trust, Kara Price Jones - Dorset Healthcare University NHS Foundation Trust, Sanjidha Hassan - Dorset Healthcare University NHS Foundation Trust, Thomas Wakefield - Dorset Healthcare University NHS Foundation Trust

Background

In response to the Covid-19 pandemic and ongoing restrictions preventing traditional face-to-face methods of delivering Pain Management Programmes, the Dorset Pain Management Service (DPMS) developed an internet based, individual learning course “Self-Directed Pain Management Programme” (SDPMP). The course is split into six modules, utilising a range of learning methods and affords people the flexibility to learn at a time that suits them.

Aims

The review aimed to develop a rich and meaningful understanding of client's experience of the content and structure of the SDPMP, as well as their experience of accessing an online platform.

Methods

In an ongoing process of quality improvement, a thematic analysis was carried out to explore feedback provided by clients relating to each module (1-6), to identify what they had learnt and what their experience of the e-learning platform was. The questions clients were asked to comment on at the end of each module were: (1) “Please can you provide some feedback on what you have learnt from this module?” and (2) “Please can you provide some feedback on the e-learning experience?”. Client responses which were coded into themes and subthemes, which were then explored in detail.

Results

Thematic analysis of responses identified that the flexibility of using e-learning was appreciated by many users. Clients reflected on learning skills associated with PMP's, such as pacing, relaxation, goal setting and gentle exercise, as well as pain education and an understanding of

the complexity of the pain experience and the factors which influence it. Other responses highlighted differences in learning style and current understanding, and difficulties with technology which will help DPMS to further develop the SDPMP in order to benefit it's users.

Conclusions

This report celebrates the resourcefulness and flexibility of interdisciplinary staff working together to ensure people living with persistent pain can continue to benefit from learning ways to manage their pain and enhance their quality of life. This course is not intended as a substitute for a group pain management program, however, may serve as a useful and welcome addition for a subset of patients experiencing chronic pain that may have difficulty attending face-to-face programmes.

Cancer Pain

PP022

NARRATIVE REVIEW OF DESIGN AND OUTCOMES MEASURES OF STUDIES ON CANNABIS-BASED MEDICINES FOR CHRONIC PAIN TO INFORM BETTER FUTURE TRIALS

Category: Cancer Pain

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Background

Cannabis-based medicines (CBMs) are licensed in many countries for a range of medical indications, including chronic pain. In UK, current NICE guidance is NOT to use CBMs for chronic pain management, based on available evidence (NG144, 2019). This guidance was widely debated and many organisations including British Pain Society called for further research. There has been little discussion about the limitations of previous research, which may have failed to capture ‘real-world experience’ of participants. We undertook a narrative review of published CBM protocols and studies in chronic pain to inform better future CBM research.

Aims

1. To review published protocols and studies of CBMs for chronic cancer and non-cancer pain.
2. To determine aspects of previous studies falling short of a comprehensive assessment of the potential role and safety of CBM, e.g. endpoints and outcome measures, inclusion/exclusion criteria, patients' prior experiences and motivations/barriers to CBM.
3. To inform a ‘next generation’ holistic trial of CBM in cancer-related pain encompassing inclusive design, patient profiling and biopsychosocial outcomes, to capture subjects' real-world experience.

Methods

We searched online registries of protocols of CBM studies in chronic pain published in English. Sources used: EU Clinical Trials Register, ClinicalTrials.gov, ISRCTN. We included only controlled interventional studies, i.e. excluding observational cohorts.

We extracted data on a wide range of parameters including: previous pain experience and catastrophisation; experience of opioids and

cannabis; psychiatric and addiction history; causes of pain; inclusion/exclusion criteria; trial design and phase; interventions and controls; outcomes measures used for pain, impact, quality of life, adverse effects; holistic needs assessment; pharmacokinetics and biomarkers.

Excel spreadsheets were used to analyse data both quantitatively and qualitatively. We widened our analysis beyond pain outcomes, to the designs and tools used as well as factors which were missing.

Results

To an initial tranche of 221 studies, we added a further 18 studies from NICE NG144 evidence review. Sifting and final review led to 43 studies: 19 cancer, 24 non-cancer.

Key exclusion criteria in these studies included: history of schizophrenia or other psychiatric disorders, epilepsy; history of recreational cannabis use; known alcohol or other substance abuse; use of levodopa, amitriptyline, gabapentin, benzodiazepines; brain metastases; dementia/cognitive impairment; suicidal ideation; kidney/liver failure; use of CYP3A4 inducers.

Key clinical outcomes in 43 studies included:

- Pain (n=39/43); measured by NRS or VAS (n=30); BPI-SF (13); MPQ-SF (5); neuropathic pain scale (3).
- Quality of life/Health status (qol) (n=27/43); measured by EORTC QLQ questionnaires (9); EQ-5D-5L (6); SF-36 (5).
- Patient Global Impression of Change was used in 14/43 studies and Physician Global Impression of Change in 4/43
- Specific outcome measures were used for Mood/psychological distress (includes anxiety and depression) (12/43); Sleep quality and disturbance (19/43)
- Change in opioid usage was measured in 9/43 studies.
- Appetite and Nutrition/body mass (8/43); Patient satisfaction (4/43); Performance status (2/43).
- Quantitative sensory testing and other objective pain measures were used in 5/43 studies.

We found no CBM studies measuring potential determinants of 'real-world experience' of cancer patients in these trials, namely pain catastrophisation; holistic needs assessment; individualised qol or personal goals; patient reported barriers to pain medication; comorbidities; frailty; fear of recurrence.

Conclusions

We have performed the first narrative review of published CBM study protocols and trials, focusing not on pain results per se, but rather on the scope of outcome measures, exclusions and many other design factors. We are using this information to design a 'next generation', biopsychosocially relevant randomised trial of a novel CBM for cancer-related pain (called LINEAR-CBM). Feasibility will be tested in cancer survivors but future studies will benefit a wider range of cancer patients. The key sponsor of LINEAR-CBM is CBD Science Group.

PP023

CANCER-RELATED NEUROPATHIC PAIN (CRNP): DO PATIENTS IN THE UK EXPERIENCE GAPS IN DIAGNOSIS AND TREATMENT?

Category: Cancer Pain

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Background

With 409,228 new cancer cases per year, the cancer burden for UK citizens is high. Effective cancer treatments have resulted in longer life expectancy however often this is associated with a longer life with the sequelae of cancer or its treatment including neuropathic pain.

Aims

People with cancer experiencing neuropathic pain from the UK and 12 other European countries shared their experiences with the diagnosis and management of their pain and the impact of cancer-related neuropathic pain (CRNP) on their lives.

Methods

An online survey, prepared, conducted and analysed with a team of experts including physicians, nurses and patients, was completed in June 2021. Adults consenting to participate and diagnosed with cancer were screened for symptoms of neuropathic pain. Respondents who met three or more of the DN4 (Douleur Neuropathique 4) criteria were enrolled and provided detailed information about their experiences regarding the diagnosis and management of CRNP.

Results

549 persons living with CRNP were recruited, thereof 103 (18%) from the UK. Notable differences between patients in the UK and the other European countries were that they were younger (66% vs 88% ≤ 65 years of age) and a smaller proportion still on active cancer treatment (20% vs 44%).

Moreover, a smaller proportion of patients in the UK reported negative impact on activities of daily living (48% vs 61%), absence from work or education for 5 or more days in the past 12 months (20% vs 39%) or having to retire / stop working (19% vs 30%).

Although similar numbers reported CRNP symptoms in UK and EU, a lower proportion received a formal diagnosis of CRNP (55% vs 60%) and reported receiving pharmaceutical treatment prescribed by healthcare professionals (30% vs 47%). This resulted in a lower proportion of patients in the UK that was satisfied with their treatment of CRNP (40% vs 59%) and a higher proportion of patients in the UK requesting provision of better treatment (73% vs 55%).

Less people in the UK recalled being warned by a healthcare professional about the potential to develop CRNP (42% vs 60%) and a similar proportion of patients reported to have no or little knowledge about CRNP (86% vs 88%).

Conclusions

The results of this survey demonstrate that overall CRNP negatively impacts the daily life of patients. Although a different demographic composition of the patient population in the study in the UK

compared to the other European countries was noted, there may be an even higher need in the UK for better education of health care professionals and patients regarding diagnosis and treatment of CRPN.

Education

PP024

CREATING A CAREER FRAMEWORK TO SUPPORT NURSES DEVELOPING CAREERS IN PAIN MANAGEMENT

Category: Education

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Background

Pain is a non-discriminatory phenomenon that effects everyone across all settings and aspects of life. The nature and experience of pain is unique to each individual and impacts not only the physical but also the emotional, psychological, social, and spiritual aspects of a person's life, thus making its assessment and management complex.

Across the globe, pain is ranked in the top ten causes of disability. Closer to home in the UK this translates to up 50% of the general population living with chronic pain. This high incidence of pain continues into the acute inpatient settings and in those living with and beyond cancer, highlighting that this phenomenon infiltrates all aspects of life and healthcare.

Given its high incidence and complexity there is a need to ensure healthcare professionals have the required knowledge and skills to support those living with pain but also encourage healthcare professionals to pursue and develop a specialist career within pain management.

Aims

This project aimed to review and revise the current Royal College of Nursing (RCN) Pain Knowledge and Skills framework to highlight not only the knowledge and skills but to also showcase the varied career and development options available to those when specialising in pain management.

Methods

A project working group was developed by the RCN Pain and Palliative Care Forum committee members. Additional members were recruited from across the United Kingdom and Ireland to ensure that practice and development opportunities were representative. Levels of practice were based on the Skills for Health levels that rank from level 1 (novice) to level 8 (expert). These were matched to role descriptors and the knowledge and skills required for each level of practice. This outlined the various roles within nursing and how they could be used to progress into a specialist pain role.

Following revision and development of the career framework an open consultation was performed bringing together representation from a variety of nursing and non-nursing roles to ensure that the framework meets the needs of all nursing backgrounds. Further revisions to the document were performed by the project team following the comments from the consultation.

Results

The final career framework identifies four main routes in which nurses can develop a specialist role in pain management. including Clinical Practice, Leadership and Management, Traditional Academic Pathway and Clinical Academic Pathway. Within each of these domains a clear career pathway is mapped out from level one (Healthcare Assistant) to Level 8 (Nurse Consultant) and gives an insight into the knowledge, skills and education qualifications that are associated with these roles.

The career framework Is presented in an interactive online platform that allows viewers to not only map their current skills level but also gives them further advice and direction on how to use this framework within their current roles. The site also provides additional information on how to use the framework alongside other national documents such as the Pillars for Advanced.

Conclusions

The development of the RCN Career Framework for Pain Nursing not only highlights the excellent career opportunities available when pursuing a career in pain management, but it also provides much-needed core standards for knowledge and skills when supporting those impacted by pain. By presenting these four main career routes it highlights the wealth of other opportunities available other than the traditional clinical pathway.

It gives nurses at every level of practice guidance on how they can develop their knowledge, skills, and confidence regarding pain, enabling them to support those in their care who are experiencing pain. Although the framework was designed for the nursing profession the core knowledge and skills are transferable to other professional groups.

Epidemiology

PP026

TRENDS IN GABAPENTINOID PRESCRIBING: AN OBSERVATIONAL STUDY IN UK PRIMARY CARE USING THE CLINICAL PRACTICE RESEARCH DATALINK (CPRD)

Category: Epidemiology

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Background

Gabapentin and pregabalin (gabapentinoids) are approved in the UK to treat epilepsy, neuropathic pain and (pregabalin only) generalised anxiety disorder. Gabapentinoid prescriptions have risen dramatically and widespread 'off-label' prescribing, particularly for non-neuropathic chronic pain, is suspected. However, evidence that gabapentinoids are effective for non-neuropathic chronic pain is lacking, growing evidence highlights their misuse potential and they are increasingly implicated in overdose deaths, prompting the UK

government to reclassify gabapentin and pregabalin as controlled drugs from April 2019.

Aims

To investigate trends in new and overall gabapentin and pregabalin prescribing from their approval for neuropathic pain, in 1997 and 2004 respectively, until October 2019, including the period immediately before and after reclassification, and to explore likely prescribing indications and concurrent prescribing of other dependence-forming medicines.

Methods

Our observational study used GOLD and Aurum datasets of the Clinical Practice Research Datalink (CPRD), a database of anonymised primary care records, to obtain a population representative of the whole UK population. We calculated annual rates of new and overall gabapentin and pregabalin prescribing, monthly rates between October 2017 – September 2019, mean daily dose, mean therapy duration, proportions with recorded licensed and unlicensed indications and proportions prescribed opioids, benzodiazepines, Z-drugs and antidepressants concurrently with gabapentinoids. Overall incidence was stratified by age group and gender. Separate analyses for the Aurum and GOLD datasets were combined using a two-stage individual participant data (IPD) meta-analysis.

Results

During the study period, 34.7 million patients entered the CPRD cohort. New gabapentin prescribing increased annually before peaking at 625 per 100 000 patients in 2016-17 and new pregabalin prescribing increased each year to peak at 329 per 100 000 patients in 2017-18. Overall gabapentinoid prescribing (reflecting new and continued use) increased year on year before plateauing in 2018-19. Over the decade to April 2019, overall prescribing rose by over 250% for gabapentin and almost 350% for pregabalin. In the six months from 1 April to 30 September 2019, following the reclassification of gabapentinoids, there was a mean monthly fall of 21% in new gabapentin prescriptions and a 15% fall in new pregabalin prescriptions compared to the same period in 2018. However, overall prescribing was just 3% lower for gabapentin and 1% lower for pregabalin between 1 April to 30 September 2019, compared to the same period in 2018. New gabapentinoid prescribing rose with increasing age group to be highest in patients aged ≥ 75 years and was almost 60% higher in females than males. Around half of patients prescribed pregabalin and almost two-thirds of patients prescribed gabapentin did not have a code for licensed indication recorded at any time prior to the end of their first period of gabapentinoid therapy. Around one-third had a code recorded for neuropathic pain. Chronic back pain was the commonest condition recorded that may represent an unlicensed indication and was identified around the time of first prescription in 15% of patients receiving gabapentin and 13% patients receiving pregabalin. Concurrent prescribing of gabapentinoids with other potentially dependence-forming medicines was common. Over 60% of patients were prescribed opioids, 52% antidepressants, 19% benzodiazepines and 10% Z-drugs at the same time as gabapentinoids.

Conclusions

Whilst the dramatic rise in gabapentinoid prescribing in the UK may have peaked, it remains too high given the lack of evidence for their effectiveness outside clearly defined licensed indications and the risks associated with their use, particularly in conjunction with other potentially dependence-forming medicines. The fall in new prescribing immediately post reclassification in April 2019 is encouraging but the

limited impact on overall prescribing may reflect a lack of access to alternative treatments, which makes it particularly challenging for primary care clinicians to support patients in stopping gabapentinoids.

PP027

EPIDEMIOLOGY AND PHARMACOLOGICAL MANAGEMENT OF LONG COVID: INSIGHTS FROM A PAIN SERVICE LED POST COVID ASSESSMENT CLINIC

Category: Epidemiology

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Background

Long COVID, defined by National Institute for Health and Care excellence (NICE) as COVID-like symptoms lasting > 4 weeks, is an emerging condition worldwide. The Office for National Statistics (ONS) estimates that 1.3 million (2.1%) of the population are suffering from the symptoms of Long COVID which include respiratory and cardiovascular difficulties, worsening mental health, generalised pain, breathlessness and extreme fatigue. NHS England has provided funding to help set up more than 90 Post COVID assessment clinics. The local service in Berkshire is the only one in the UK led by a secondary care Pain service. In early 2022, this clinic had over 1200 referrals with more than 900 patients assessed for further investigation and symptom management. Initial Audit data had indicated that pain is a very common presentation.

Aims

While the NICE guidelines continue to evolve, there is currently no consensus or evidence-based recommendations on pharmacological interventions for pain in Long COVID. Symptomatic treatment of individual organ dysfunction has resulted in a wide variety of medications that have been repurposed for use in Long COVID. In this context, we performed a pilot study to collect information on demographics, symptoms, medications and areas of clinical concern of patients referred to the local Post COVID assessment clinic (Berkshire Longcovid Integrated Service BLIS) over a period of 5 months in 2021.

Methods

Data from 173 patients who attended the service were extracted from a 'Long COVID Self-Assessment Patient Questionnaire'. Anonymised data were extracted from Electronic Patient Records after ethical approval. Data included demographic information (gender, age, ethnicity), diagnosis, condition, medication and pre- and post-COVID numerical scoring scales for several conditions, including pain and fatigue. Numerical data from scoring scales were analysed using Student's t-test.

Results

Cohort demographics showed a majority of females (76%) and predominant age ranges of 42 -57 (88/173 (52%)). Pain was reported as an extremely common presentations in Long COVID with muscle pains (129/173 (74.5%)) while fatigue was noted in 72.3% (125/173). When other forms of pain such as headache, chest pain, joint aches, rib pain and ear pain was added, pain was easily the overwhelming

complaint in most Long COVID patients. Other commonly reported symptoms include respiratory problems and concentration issues. While pain prevalence was high, review of analgesic medication confirmed that strong opioid prescribing was negligible with only 3/173 (<2%) being on strong opioids. Use of gabapentinoids was also low (8/173, 4%). Most common medications were proton pump inhibitors followed by inhalers and then common analgesics such as paracetamol, NSAIDs and codeine/tramadol. Another common group of medications were antidepressants such as amitriptyline, sertraline, duloxetine and fluoxetine. It is unclear whether they were being taken for mood or pain or both.

Conclusions

This initial pilot study demonstrated that pain prevalence is very high in Long COVID patients. While patients were on multiple medications for symptomatic management of a variety of organ system dysfunction, analgesic medications were not that commonly prescribed or continued despite the prevalence of pain complaints. Given the reported intensity of pain, patients were also not on strong opioids or gabapentinoids. Associated side effects and drug interactions were reported as reasons for not wanting to go on more potent analgesics. The mechanisms and pathophysiology of pain in Long COVID is still not fully understood, however nociplastic pain and central sensitization has been purported to be a dominant mechanism. This pilot study highlights the paucity of good pharmacological strategies for managing pain in Long COVID. There is an urgent need to understand the major biological pathways underpinning pain in Long COVID and provide an evidence base to progress therapeutic development of pharmacological molecules.

PP028

DOSE-RESPONSE RELATIONSHIP BETWEEN OPIOID PRESCRIPTION FOR CHRONIC PAIN AND FATAL OR NON-FATAL OVERDOSE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Category: Epidemiology

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Background

Opioids are widely prescribed for chronic pain. High-dose opioid use is associated with increased morbidity, mortality, and healthcare utilization. However, the dose-response relationship and its magnitude remain uncertain between opioid prescription for chronic pain management and fatal and non-fatal overdose.

Aims

We conducted a systematic review and meta-analysis to explore the dose-response relationship between opioid prescription and fatal or non-fatal overdose for chronic pain.

Methods

We searched MEDLINE, EMBASE, CINAHL, and PsycINFO from inception to January 2022, for observational studies that reported the association between opioid doses and fatal or non-fatal overdose among patients with chronic cancer and non-cancer pain, using adjusted analysis. Paired reviewers independently extracted study characteristics, patient demographic information, clinical conditions, opioid doses, and the association with fatal and non-fatal overdose. We assessed the risk of bias of all eligible studies, including representativeness of study populations, validity of outcome measures, appropriately adjusted analysis, and missing data. We conducted one-stage linear and non-linear dose-response meta-analysis using restricted cubic splines at three knots at 10%, 50% and 90% percentiles of the distribution. We also performed two-stage, random-effects, linear dose-response meta-analyses as sensitivity analysis if non-linear dose-response relationship was not significant. We generated the following a priori hypotheses to explain variability among studies assuming greater dose-response relationship of fatal or non-fatal overdose is associated with 1) fatal vs. non-fatal overdose; 2) chronic non-cancer pain vs. cancer-related chronic pain; and 3) higher risk of bias on a component-by-component base. We used GRADE approach to summarize the quality of evidence. We used Stata statistical software version 15 (StataCorp) for all analyses. All comparisons were two-tailed, with a threshold p of 0.05.

Results

Twelve studies were eligible, including 14 cohorts and 687,782 patients prescribed opioids for chronic pain. Among 12 eligible studies, two studies reported two cohorts each, including different subpopulations of men and women, or patients with chronic cancer-related pain or non-cancer pain. Of 14 eligible cohorts, six cohorts reported fatal opioid overdose, with the others reporting mixed fatal and non-fatal overdose. Study populations in 11 cohorts were patients with chronic non-cancer pain, one cohort included only cancer patients, and two included mixed pain populations. Five cohorts included unrepresentative study populations (e.g., veterans, >70% of patients having mental disorders); two cohorts used invalid outcome measures; and six cohorts did not appropriately adjust the most important factors (e.g., age, gender, substance use disorder, and mental health diagnosis). Patients with missing data were not clearly reported in most of studies.

No significant non-linear dose-response relationship was found in the meta-analysis using restricted cubic splines at three knots ($p=0.61$). High-quality evidence shows a significant linear dose-response relationship between opioid prescription and overdose (adjusted odds ratio [OR] 1.11 for every 10 mg increase in morphine equivalent dose, 95% confidence interval [CI] 1.03 to 1.19, $p=0.003$). When dose increases to 90 mg, the odds of having opioid overdose were more than twice as great (OR 2.56, 95%CI 1.34 to 4.9). Sensitivity analysis using two-stage dose-response meta-analysis showed similar results with adjusted OR 1.11 (95%CI 1.08 to 1.14) for every 10 mg increase. We did not detect any significant subgroup effects between different types of opioid overdose, chronic pain conditions and risk of bias.

Conclusions

Our review with high-quality evidence suggests a dose-response relationship between opioid prescription and fatal or non-fatal overdose. Strategies to optimize opioid dose for chronic pain and dose tapering are needed.

PP029

PREDICTING CHRONIC PAIN AND DISABILITY FOLLOWING MUSCULOSKELETAL TRAUMA: RESULTS FROM A PROSPECTIVE OBSERVATIONAL STUDY IN THE UNITED KINGDOM**Category:** Epidemiology

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Background

Serious traumatic injury is a leading cause of death and disability globally, with the majority of survivors developing chronic pain.

Aims

The aims of this study were to describe early predictors of poor long-term outcome for post-trauma pain and create a clinical screening tool for this purpose.

Methods

We conducted a prospective observational study, recruiting patients admitted to a Major Trauma Centre hospital in England within 14 days of their injuries, and followed them for 12 months. We defined a poor outcome as Chronic Pain Grade \geq II and measured this at both 6-months (primary timepoint) and 12-months. A broad range of candidate predictors were used, including surrogates for pain mechanisms and psychosocial factors. Univariate models were used to identify the strongest predictors of poor outcome, which were entered into multivariate models. A clinical screening tool (nomogram) was derived for 6-month results.

Results

124 eligible participants were recruited. At 6-months, 19 (23.2%) of 82 respondents reported a good outcome, whereas at 12-months 27 (61.4%) of 44 respondents reported a good outcome. The multivariate model for 6-months produced odds ratios for a unit increase in: number of fractures, 3.179 (0.52 to 19.61); average pain intensity, 1.611 (0.96 to 2.7); pain extent, 1.138 (0.92 to 1.41) and post-traumatic stress symptoms, 1.044 (0.10 to 1.10). At 12-months, equivalent values were: number of fractures, 1.653 (0.77 to 3.55); average pain intensity, 0.967 (0.67 to 1.40); pain extent, 1.062 (0.92 to 1.23) and post-traumatic stress symptoms, 1.025 (0.99 to 1.07).

Conclusions

A poor long-term pain outcome from musculoskeletal traumatic injuries can be predicted by measures recorded within days of injury. Our results suggest that post-traumatic stress symptoms, pain spatial distribution, perceived average pain intensity, and number of fractures are good candidates for a sensitive multivariate model and derived clinical screening tool.

PP030

INVESTIGATING MULTI-JOINT PAIN AND PHYSICAL ACTIVITY IN RUNNERS AND NORDIC WALKERS**Category:** Epidemiology

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Background

High training load, poor technique and insufficient recovery are associated with musculoskeletal injuries and joint pain in recreational runners and Nordic walkers. Here we investigate recreational running and Nordic Walking training loads (distance and pace) and consider Non-Steroidal Anti-Inflammatory Drug (NSAID) use in people self-reporting current and chronic multi-joint pain.

Aims

To investigate self-reported lower limb multi-joint pain and physical activity in runners and Nordic walkers

Methods

Baseline data from 'Running Through', a prospective cohort study of community runners, joggers and Nordic walkers aged over 18 were collected via an electronic survey between February 2021–February 2022. Weekly messages were sent to participants to capture pain and injury incidence. Data collected through running smartwatches and mobile phone apps monitored total weekly running distance (kilometres per week) and running pace (minutes per kilometre). The collected baseline data included: age, sex, persistent joint pain (reported as 'pain on most days of the last month') and current joint pain in their hip or groin, knees, or ankles. Respondents data were analysed by the number of different joints they self-reported experiencing persistent pain in (zero, one, or more than one). Descriptive statistics were reported as mean (standard deviation), median (range) and percentage. Odds ratios and 95% confidence intervals were calculated and reported.

Results

The baseline survey was completed by 2,726 participants [57% female, mean age 49.78 years (SD 12.69)]. Participants were followed for a median of 9 (1, 24) weeks. 40% of participants reported a lower extremity injury during follow up. Current lower joint pain was reported by 31.9% of respondents, specifically in their hips or groin (19.7%), knees (11.8%) and ankles (6.9%). Runners with one painful point were 2.5 times (95% CI 1.9 to 3.4) more likely and runners with two or more painful joints were 3.2 times (95% CI 1.9 to 5.3) more likely to be taking regular NSAIDs compared to runners with no painful joints. Of the responding participants 26.64% reported persistent pain in a lower extremity joint for most days of the past month (Hip/Groin = 9.4%; Knee = 13.6%; Ankle = 9.1%). A total of 1983 reported not experiencing chronic joint point in the past month, 590 reported pain in one joint and 130 reported pain in two or more joints, with 23 did not respond to the questions. Similar results for mean weekly running load were recorded despite the number of painful joints [zero painful joints: 22.5km per week (95% CI: 9.3 to 35.7); one painful joint: 21.4 km per week (95% CI: 9.6 to 33.3), two or more painful joints: 25.0 km per week (95% CI: 9.2 to 40.9). Similar running paces were also recorded [Zero painful joints: 6.3min/km (S.D 1.8); One painful joint 6.3min/km (S.D. 1.7); Two or more painful joints 6.5min/km (S.D. 2.1)]

Conclusions

Almost one-third of runners reported at least one currently painful lower limb joint with a quarter reporting experiencing chronic joint pain for at least a month. Recreational runners with one or multiple painful lower joints report similar weekly running distances and speed when compared to recreational runners who do not report persistent lower extremity pain. Runners maintain running pace and distance despite increasing pain which may be explained by the increasing use of NSAIDs to improve pain management. Future research should further investigate why and how exercise habits are maintained by runners despite experiencing musculoskeletal pain.

Experimental (Basic) Science

PP032

MICROENCAPSULATION OF LOCAL PAINKILLERS REVEALS THERAPEUTIC POTENTIAL FOR THE TREATMENT OF CHRONIC INFLAMMATORY PAIN

Category: Experimental (Basic) Science

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Background

Chronic pain is a major health problem issue: it has been recently classified as a disease in its own right, thus requiring special treatment. However, existing methods of local injections of the analgesics of choice have principal limitations, such as short-lasting effects, poor control over the application kinetics, risk of systemic drug escape, hence side-effects.

Aims

To overcome this, one promising solution has been drug encapsulation. We aimed to probe nanoengineered microcapsules by setting their adjustable cargo release properties to provide the possibility of a prolonged delivery of medicine within the targeted area, with the primary goal to explore the therapeutic potential of the encapsulation approach in the treatment of chronic pain.

Methods

Microcapsules were nano-engineered from biomaterials using the layer-by-layer (LbL) technology to encapsulate the sodium-channel blocker QX-314 or a commonly used local analgesic lidocaine. The fabricated microcapsules were injected into the sciatic nerve to test the therapeutic efficacy in a model of complete

Freund's adjuvant (CFA)-induced long-lasting peripheral inflammation in rats. All animal procedures were approved and performed in full compliance with the ethical guidelines of the International Association for the Study of Pain and the European Commission Directive (86/609/EEC) and were fully compliant with the United Kingdom Home Office (Scientific Procedures) Act (1986).

Results

We first established and adjusted the microcapsule release properties, enabling the kinetics of drug release over a few days. Using behavioural tests, we next detected a profound alleviation of inflammatory pain, which appeared shortly after a single administration of encapsulated medicine (within a couple of hours). Moreover, it resulted in a profound shortening of inflammatory hyperalgesia in every tested animal with peripheral inflammation. Pain relief was accompanied by recovery of the locomotive deficit and amelioration of anxiety in animals with persistent inflammation. There were no detectable side-effects observed while testing microcapsules in control cohorts. Post hoc immunohistology with two-photon excitation imaging finally confirmed local targeting of nerve fibres.

Conclusions

Our data suggest that nano-engineered encapsulation provides local drug delivery suitable for prolonged pain relief, which could be highly advantageous compared to existing treatments of chronic pain.

Interventional Pain Management

PP034

HADS BRIEF SCORE CAN PREVENT UNNECESSARY SPINAL PROCEDURES

Category: Interventional Pain Management

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Background

it is well established that many patients with CLBP have somatoform disorders as well as accompanying anxiety disorders or depression. In many spine clinics no screening regarding these accompanying disorders is yet performed.

Aims

This study was performed to evaluate whether the Hospital Anxiety and Depression Scale (HADS) brief test, which takes only 4-5 minutes to fill in and 30 seconds to assess, is able to detect within a minimum of time patients with the above concurrent diagnoses.

Methods

88 patients with CLBP and sciatica were enrolled in this study, 3 were lost to follow-up. All completed the HADS questionnaire prior to examination. Indications for minimally-invasive pain therapy interventions were made by an experienced spine surgeon based on history, examination and MRI-results, but blinded to the result of the

HADS. Before treatment as well as 6 weeks, 3 and 6 months after the procedure, visual analogue scale (VAS) back pain, Oswestry Disability Index (ODI) were recorded. The minimally-invasive spine procedures performed were: 51 radiofrequency rhizotomies of lumbar facets, 22 epidural neuroplasties and 12 intradiscal decompressions.

Results

At 6 months, VAS in all patients improved by 2.2 ± 0.96 while ODI decreased by 10 ± 4.67 (\pm SEM). However, in the subgroup with a high-risk of somatoform disorder (HADS > 18 ; $n=30$) VAS and ODI improvements were only 0.9 ± 0.68 and 7 ± 4.3 , respectively, whereas in the low-risk subgroup (HADS < 12 ; $n=34$) VAS and ODI were significantly reduced: 2.5 ± 0.7 and 13.5 ± 3.3 , respectively. The intermediate group with HADS score $> 12 < 18$ ($n=21$) displayed a VAS improvement by 2.2 ± 0.94 and a decrease in ODI by 10 ± 2.9 (\pm SEM). Furthermore, there was a significant difference in the improvement measured by VAS ($p < 0.003$) as well as by ODI ($p < 0.05$) between the high- and low-risk HADS groups.

Conclusions

In a selected group of patients with CLBP and sciatica, the easy-to-administer HADS appears to reliably predict the outcome of minimally-invasive pain procedures, most probably due to the detection of somatoform comorbidities such as anxiety disorders or depression. It is well accepted, that invasive therapies in such patients frequently are unsuccessful. Most alarming is the probable fact that in our study 30 patients were invasively treated without effect. This has impact not only because of unnecessary and potentially harmful procedures being performed but also because of increasingly limited healthcare funds.

PP035

UTILIZATION OF COMBINATION THERAPY-BASED PROGRAMMING IN PATIENTS USING SCS FOR CHRONIC PAIN: OUTCOMES FROM A REAL-WORLD, OBSERVATIONAL EUROPEAN STUDY

Category: Interventional Pain Management

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Background

Spinal Cord Stimulation (SCS) programming customized to the individual needs of each patient is thought to be important for elucidation of the most effective clinical outcomes when using SCS for management of chronic pain. This is in part supported by the fact that the experience of chronic pain itself is inherently dynamic and highly subjective in nature. Our recently published work has also shown that, when given the available option, a substantial proportion of patients using SCS for chronic pain prefer programming that combines neurostimulative modalities such as (but not limited to) the utilization of supra- and sub-perception-based approaches (Kallewaard JW, et al. J Clin Med. 2021 Sep 10;10(18):4085).

Aims

In this study, we embarked on a clinical evaluation of patients implanted with an SCS device who chose to use combination therapy-based programming to treat their chronic pain.

Methods

This is an observational case-series of patients permanently implanted with an SCS system (Spectra WaveWriter, Boston Scientific, Marlborough, MA USA) to treat chronic pain as part of an ongoing assessment of real-world outcomes of SCS for chronic pain based on retrospective chart review (Clinicaltrials.gov identifier: NCT01550575). All analyzed patients utilized combination therapy programming consisting of at least two distinct modes of applied neurostimulation (e.g., supra-perception [e.g., standard rate, tonic] + sub-perception [e.g., high rate/burst/microburst]) delivered simultaneously. To minimize potential bias, data collection from patients is being performed directly by clinical site personnel without any sponsor involvement. Demographic information, pain location, surgical history, medical history are being collected for all patients. In addition, Numeric Rating Scale (NRS) scores, Percent Pain relief (PPR) and other functional outcomes as available are being collected as part of the chart review.

Results

A total of 65 implanted patients preferred combination therapy as assessed at their last follow-up visit. Among these patients, a mean 5-point NRS score improvement compared to baseline measures (7.8 to 2.7) was reported up to 12-month follow-up and was sustained up to their last follow-up visit (mean = 13 ± 8 months). Fifty-five percent (36 of 65) reported pain score of 2 or less at last follow-up.

Conclusions

Given the different mechanisms of action that are thought to govern the various modes of neurostimulation now increasingly accessible as part of commercially-available devices, it is postulated that a substantial proportion of patients are likely to achieve their best outcomes using programming approaches that provide SCS as a combination therapy as reported in this preliminary data series (5-point NRS improvement; 55% of patients reporting pain score of 2 or less). Providing multiple neurostimulative programming options offers substantial autonomy and versatility to patients over the total course of their experience using an SCS-based therapeutic strategy for treatment of pain.

PP036

REAL-WORLD OUTCOMES IN A CHRONIC PAIN PATIENT COHORT UNDERGOING A SINGLE-STAGE SCS-IMPLANTATION PROCEDURE

Category: Interventional Pain Management

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Background

Undergoing a screening trial prior to permanent implant has been a routine step for most patients utilizing Spinal Cord Stimulation (SCS) for chronic pain. However, increased scrutiny over necessity of a trial procedure on the basis of a recent randomized controlled trial has again re-ignited a long-running debate (Eldabe S, Duarte RV, Gulve A, Thomson S, et al. Pain. 2020 Dec;161(12):2820-2829).

Aims

So as to add to the compendium of real-world data, we initiated an observational, case-series evaluation of patients who underwent a single-stage procedure in which an "on the table" trial was conducted as part of a permanent SCS device implantation.

Methods

This is a consecutive, observational, multicenter case-series based on an on-going, real-world evaluation of SCS outcomes for chronic pain (Clinicaltrials.gov: NCT01550575). All patients were implanted with an SCS device (Boston Scientific) and underwent a single-stage, permanent-implant procedure with an "on-table" screening trial. Retrospective chart reviews were used to assess overall pain (numerical rating scale [0-10 NRS]) at baseline, postimplant, 3-, 6-, and 12-months follow-up. Data collection includes baseline demographics, pain diagnosis, and quality of life questionnaire [EQ-5D-5L]).

Results

To date, 123 patients who underwent a single-stage procedure (i.e., no prior, temporary trial period) have been assessed at baseline as part of this analysis. Nearly half of these patients are female (49.6%) with mean age 59.3 ± 14.2 years. Available data so far assessing mean overall pain (compared to baseline) demonstrates consistent improvement as signified by a 4.9-point improvement (8.2 to 3.1) at 6-months follow-up and a 5.3-point improvement at 12-months post-implant (8.2 to 3.0), $p < 0.0001$. On the basis of the available quality of life data recorded at baseline and last follow-up (mean duration: 304 days), as measured by EQ-5D-5L, a substantial improvement versus baseline has been observed (baseline [$n = 59$] = 26.0; last follow-up [$n = 61$] = 72.3).

Conclusions

Several downsides of SCS screening trials do exist such as procedural duplication, higher infection risk, and possible increased healthcare costs. Utilization of a single-stage implantation procedure may therefore be appropriate and/or beneficial for at least some patients using SCS for chronic pain. The preliminary, real-world evidence derived from this on-going evaluation, so far demonstrates that a singlestage implantation procedure may be beneficial for some patients. This may suggest that future assessment and/or revision of established clinical practice guidelines could be considered, as it pertains to the utilization of a separate and preceding screening trial, in light of specific patient conditions and/or co-morbidities when taking in account the use of SCS for chronic pain.

PP040

TWO-YEAR OUTCOMES OF AN SCS SYSTEM CAPABLE OF MULTIPLE NEUROSTIMULATION MODALITIES: A RANDOMIZED CONTROLLED TRIAL

Category: Interventional Pain Management

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Robert Bolash - Cleveland Clinic, Cleveland, OH, USA, John Noles - Spine and Pain Specialists, Shreveport, LA, USA, Roshini Jain - Boston Scientific Neuromodulation, Valencia, CA USA

Background

Pre-clinical Spinal Cord Stimulation (SCS) studies have previously demonstrated that neural activity, and in turn, perception of pain can be robustly modulated via the stimulation of different neuronal targets (e.g. dorsal horn, dorsal column).^{1 2} Stimulation of multiple simultaneous targets via the dual use of sub- and supra-perception-based SCS modalities (i.e. combination therapy) may therefore be able to enhance pain relief outcomes. Positive outcomes when using combination therapy in SCS-implanted patients have now been recently reported.^{3 4} Here, we will report long-term clinical outcomes up to 2 years from a prospective, randomized controlled trial (RCT) that evaluated the effectiveness of SCS using sub- and supra-perception modalities as a combination therapy for chronic pain.

Aims

This clinical trial evaluates the effectiveness of SCS with multiple modalities as compared to conventional SCS in patients with chronic pain in a prospective, parallel group, randomized controlled trial (RCT).

Methods

COMBO is a prospective, multicenter, RCT with an adaptive design (clinicaltrials.gov: NCT03689920) where participants received an SCS System capable of multiple neurostimulation modalities including combination therapy (Spectra WaveWriter, Boston Scientific). Subjects were randomized to either receive combination therapy (paresthesia-based and a sub-perception-based customized field shape algorithm) or monotherapy (paresthesia-based SCS only) for 3-months. The primary endpoint was based on proportion with $\geq 50\%$ reduction from baseline in overall pain and no opioid increase at 3-months. Assessments of pain, quality of life, disability are collected up to 2-years follow-up. Adverse events are also collected.

Results

The study achieved its primary endpoint based on a pre-specified cohort of 89 randomized subjects ($p < 0.001$). An 88% responder rate with no increase in opioids was reported (71% in monotherapy control group), along with significant improvement in disability and satisfaction in the combination therapy group at 3-months. At 1-year follow-up, an 84% responder rate was reported with significant improvement in functional outcomes (22-point ODI improvement, 81% very much/much improved). This improvement was further sustained at 2-years with an 85% responder rate and significant improvement in disability (25-point ODI improvement) and overall satisfaction (85%).

Conclusions

These primary endpoint and 2-year follow-up results provide further evidence to support the postulate that providing multimodal therapy, via application of patient-specific neurostimulation field configurations that utilize sub- and supra- perception SCS techniques in combination, can produce highly effective clinical outcomes.

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PP041

REAL-WORLD OUTCOMES USING A NOVEL SCS DEVICE CAPABLE OF ENGAGING MULTIPLE SUB-PERCEPTION MECHANISMS

Category: Interventional Pain Management

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Background

Given the established subjective and varying nature of the experience of pain, providing those implanted with a Spinal Cord Stimulation (SCS) device with multiple neurostimulative programming options (that can be selected by and/or optimized for the individual) is increasingly recognized as an invaluable aspect for enabling the most efficient and effective treatment for chronic pain. A recently launched, commercially-available SCS device capable of full-body MRI can now provide the largest array of paresthesia-based and sub-perception based neurostimulation modalities capable of engaging multiple mechanisms within a single device. This report will seek to describe our real-world, observational experience and patient-outcomes using this new SCS system.

Aims

This study will seek to collect and analyze real-world data associated with the use of a newly launched SCS system capable of providing multiple modalities including combination therapy, fast-acting sub-perception, and other paresthesia-based approaches.

Methods

This is an on-going, consecutive, multi-center, real-world, observational case-series evaluation (Clinicaltrials.gov: NCT01550575) that retrospectively assesses patients with chronic pain who used a newly available SCS System (WaveWriter Alpha, Boston Scientific) designed to provide supra- and/or sub-perception neurostimulative programming modalities either alone or combined engaging multiple mechanisms. These approaches can be optimized in a patient-specific manner such as including (but not limited to) novel Fast-Acting Sub-Perception Therapy (FAST) and/or a new, customizable, sub-perception-based field shape algorithm enabling precise conformational shaping and targeting of electric fields (Contour, Boston

Scientific). At baseline and at follow-up visits, pain relief outcomes are collected as well as other clinical endpoints, when available per standard of care.

Results

One hundred and nineteen patients (53% females, mean age = 64.9 years) with a baseline mean pain score of 7.7 ± 1.8 (NRS 0-10) were implanted. Of these 119 patients, 53% reached 3-months post-permanent implant ($n = 50$), and 40% reported >80% pain relief. Seventy-four percent reported NRS pain score of ≤ 2 and 30% reported no perceptible pain.

Conclusions

Preliminary data from this multicenter, real-world, observational, case-series demonstrate significant improvement of chronic pain in patients implanted with a new SCS system capable of providing multiple paresthesia-based and sub-perception-based modalities that recently have been postulated to engage different mechanisms of action.

PP042

ENHANCED ENERGY EFFICIENCY AND SPINAL CORD STIMULATION OUTCOMES USING FAST-ACTING SUB-PERCEPTION THERAPY (FAST) FOR CHRONIC PAIN

Category: Interventional Pain Management

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Background

Spinal Cord Stimulation (SCS) is traditionally delivered to patients in a continuous manner (i.e. temporally non-varied waveform) for chronic pain. However, it has been well-established that cycling of stimulation, defined as the intermittent activation (ON) and deactivation of stimulation (OFF), can achieve therapeutic benefit for those utilizing SCS to treat chronic pain.¹ As such, cycling of SCS-based neurostimulation may prevent the development of neural tolerance and enable greater control of the dose of electrical energy delivered to neural tissues as well as increase the longevity of implanted devices.² Recently, Fast-Acting Sub-Perception Therapy (FAST), a novel SCS based approach that can provide pain relief within minutes of initial activation without need for paresthesia in order to achieve clinically-meaningful analgesia, has been reported.³

Aims

We report our initial real-world experience utilizing FAST cycling to determine if improved device longevity can be achieved by lowering the charge burden while maintaining pain relief.

Methods

This is an on-going, consecutive, multi-center, real-world, case-series evaluation (Clinicaltrials.gov: NCT01550575) that retrospectively assesses patients who utilized FAST-based programming with cycling using an SCS System (Boston Scientific) for chronic pain. Patients underwent various cycling settings and reported their overall pain scores, sleep quality, and preference.

Results

A total of 17 previously-implanted patients (11 Female) with a baseline pain score of 7.6 ± 2.1 (Mean \pm SD) provided data following the use of FAST in a continuous mode and cycling thereafter. Preliminary clinical data from this multicenter, observational case-series (n=17) demonstrate that equivalent pain relief (NRS pain score <1.5 on a scale of 0 -10) may be achieved with the use of FAST cycling settings (50% and 25% duty cycle). With use of FAST Cycling (50% or 25% duty cycle), lower energy consumption was noted.

Conclusions

Preliminary results from this multi-center, observational case-series demonstrates that FAST cycling can enable better management of battery consumption while maintaining substantial pain relief.

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PP043

CLINICAL OUTCOMES USING A NEW FAST-ACTING SUB-PERCEPTION THERAPY FOR CHRONIC PAIN: A MULTICENTER, EUROPEAN, OBSERVATIONAL REAL-WORLD STUDY

Category: Interventional Pain Management

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Background

Traditional Spinal Cord Stimulation (SCS) modalities that achieve sub-perception analgesia (e.g., ~1-10 kHz, burstDR) require patients to often wait hours or even days until pain relief is fully realized. A recent study however has demonstrated that quicker analgesic onset is possible using a new sub-threshold-based SCS modality called Fast-Acting Sub-Perception Therapy (FAST).¹ While achieving rapid onset of pain relief offers a substantial advantage for patients and providers alike, the magnitude and quality of pain relief in patients using FAST in the real-world clinical setting is also an important consideration. As such, we sought to assess outcomes in patients using FAST-SCS for chronic pain in a European-based, multicenter, observational study.

Aims

To add to the compendium of real-world data, we initiated an observational, case-series evaluation of patients who underwent SCS and received FAST programming for the treatment of chronic pain.

Methods

This is an international, multicenter, observational case-series of patients permanently implanted with a FAST-enabled SCS system (Boston Scientific, Marlborough, MA USA) to treat chronic pain as part of an ongoing assessment of real-world outcomes of SCS for chronic pain based on retrospective chart review (Clinicaltrials.gov identifier: NCT01550575). All analyzed patients are programmed using novel FAST (i.e., biphasic-symmetric waveform at 90 Hz; pulse width: 160-260 μ s). To minimize potential bias, data collection from patients is being performed directly by clinical site personnel without any sponsor involvement. Demographic information, pain location, surgical history, medical history are being collected for all subjects. In addition, Numeric Rating Scale (NRS) scores and Percent Pain relief (PPR) are being collected as part of the chart review. Mean, median, and standard deviations will be calculated for demographic data and NRS scores.

Results

This study is currently ongoing. Initial results from this on-going study is being planned for presentation.

Conclusions

This observational real-world study will seek to further validate the novel FAST technique as a bona fide sub-perception-based SCS approach that can provide patients with robust pain relief at rapid onset (versus that of traditional sub-perception-based modalities of SCS).

Reference:

Metzger CS, Hammond MB, Paz-Solis JF, Newton WJ, Thomson SJ, Pei Y, Jain R, Moffitt M, Annecchino L, Doan Q. A novel fast-acting sub-perception spinal cord stimulation therapy enables rapid onset of analgesia in patients with chronic pain. *Expert Rev Med Devices*. 2021 Mar;18(3):299-306.

PP044

INTRACORTICAL CONNECTIVITY CHANGES FOLLOWING INFRA-SLOW NEUROFEEDBACK TRAINING IN PAINFUL CHRONIC KNEE OSTEOARTHRITIS: A FEASIBILITY CLINICAL TRIAL

Category: Interventional Pain Management

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Background

Disrupted intracortical connectivity has been demonstrated in chronic pain. It is unknown, whether cortical connections can be altered by electroencephalography-based Infra-slow fluctuation Neurofeedback (EEG ISF-NF) training. If it can be changed, then whether such changes in the connectivity are associated with clinical pain outcomes needs to be explored.

Aims

This is a secondary analysis from a feasibility clinical trial that sought to determine the changes in functional connectivity (FC) and effective connectivity (EC) between the targeted cortical regions following ISF-NF training and its relationship with clinical pain outcomes in people with chronic painful knee osteoarthritis (KOA).

Methods

A parallel, two-arm, double-blind, randomized, sham-controlled clinical trial was conducted with adults aged 44-75 years with KOA. Eligible participants attended nine ISF-NF training sessions (30 minutes/session; 3 sessions each week for three consecutive weeks). The ISF-NF source localized training protocol involved down-training ISF bands at the somatosensory (SSC), dorsal anterior cingulate (dACC), and up-training pregenual anterior cingulate cortices (pgACC). The active group (n=11) participants received real-time auditory feedback as a reward for reaching a pre-determined threshold of ISF bands at the three cortical areas. In contrast, the sham group (n=10) listened to pre-recorded audio files. Pain severity, interference, and unpleasantness were measured at baseline (T0) and immediate post-training (T1). Resting-state EEG was recorded at T0 and T1. Current source density was derived at SSC, dACC, and pgACC for seven frequency bands [ISF (0.01-0.1 Hz), slow (0.2-1.5), delta (2-3.5 Hz), theta (4-7.5 Hz), alpha (8-12 Hz), beta (13-30 Hz), gamma (30.5-44 Hz)]. Exact low-resolution brain electromagnetic tomography (eLORETA) software was used to compute the FC between the regions of interest and lagged linear connectivity contrast maps were derived using a threshold $P < 0.05$. EC was derived by computing Granger causality for the significant FC between the regions. eLORETA was used to conduct within-group changes in the FC and EC and correlations between percentage change scores of clinical pain outcomes and connectivities for all frequency bands.

Results

Participants were middle-aged (61.7 ± 7.6 years), New Zealand European (90.5%), and females (62%) with an average knee pain duration of 4 ± 3.4 years. The ISF-NF group exhibited decreased ($t=1.22$, $p=0.03$) FC in the delta, theta, alpha, beta, and gamma bands, and increased FC strength in the ISF and slow band between the targeted regions. The sham group ($t=1.62$, $p=0.03$) demonstrated an increase in the FC strength between the regions in slow, alpha, beta, and gamma bands. The FC connectivity between pgACC & dACC, pgACC & S1Lt, and pgACC & S1Rt for the ISF and the slow band was positively correlated ($p=0.04$, $r=0.3$) with the pain severity. No significant correlations between FC and clinical outcome

measures were found for the other frequency bands and FC. An overall increase in the EC from pgACC to dACC and pgACC to S1Rt & S1Lt in the active group were observed. No significant EC changes in the sham group were demonstrated for the ISF band.

Conclusions

ISF-NF can result in measurable changes in the intra-cortical connectivities, and it is related to change in the clinical pain outcomes in people with chronic KOA. This is the first study to explore the potential of ISF-NF training in influencing the functional and effective connectivities in persistent musculoskeletal pain. The study findings suggest that ISF-NF training may produce clinical benefits by influencing cortical connections.

PP045

DMARDS AND SSI - RELEVANCE IN INTERVENTIONAL PROCEDURES

Category: Interventional Pain Management

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Background

Rheumatoid arthritis (RA) and disease modifying anti-rheumatic drugs (DMARDs) increase the risk of infection. Use of biologic and non-biologic DMARDs is high among RA patients undergoing surgery. 75-84 % of RA patients are on these medication at the time of surgery. In recent years the number of patients having spinal interventions for pain management with concurrent use of DMARDs has grown and likewise in patients having implanted devices such as spinal cord stimulators. Current guidance suggests discontinuations of Biologic DMARDs prior to surgical interventions to avoid surgical site infections. We reviewed the incidence of SSI's in a cohort of patients attending surgery at our centre.

Aims

To assess if peri-operative biologics and steroids increase the risk of post-operative infections

To evaluate whether pre-operative withdrawal of biologic DMARDs renders protection against post-operative infections

To confirm safety and benefits of continuing non-biologic DMARDs in the peri-operative period

Methods

The data was collected retrospectively by review of electronic clinic case-notes, per-operative assessment sessions, and post-operative discharge summary to evaluate incidence and type of post-operative infections, flare of arthritis in post-operative period, risk factors associated with increased rate of infections, morbidity and mortality associated with post-operative infections, benefits and disadvantages of prophylactic discontinuation of DMARDs before surgery

Results

A review of 56 patient notes who had surgery at our centre revealed no statistically significant values of surgical site infections, flare up or other adverse events in following the recommendations of the British Society of Rheumatology guidelines and thereby adhering to discontinuation of Biologic DMARDs in the pre and post operative phase. The standards were adhered to in all patients reviewed and recommended guidance and best practice was maintained.

Conclusions

The British Society of Rheumatology (BSR) recommends balancing the potential benefit of preventing post-operative infection against the risk of a peri-operative flare in disease activity. The American College of Rheumatology and the American Association of hip and knee surgeons have acknowledged the evidence as being of low quality - they have reiterated that recommendations are not treatment mandates, but can be used to provide guidance regarding medication management prior to surgery.

Indirect evidence suggests that host defences return to normal after 7 days. The current recommendation may change once more evidence is available. While the current recommendations are as follows:

- Skip one dose of biologics and plan surgery in the week after 1 dosing interval.
- In case of Tocilizumab subcut, discontinue for 2 doses.
- In case of major surgery/high risk of infection, discontinue for 3-5 half-life of the drug.
- Jak inhibitors, to be discontinued for a week.
- To continue conventional DMARDs in inflammatory arthritis as it has been now established in numerous RCTs and meta-analysis that the risk of infection and flares is low compared to when conventional DMARDs are discontinued.
- To continue Mycophenolate, Azathioprine, Cyclosporin and Tacrolimus in severe systemic lupus erythematosus (SLE) but to discontinue these strong immunosuppressants in non-severe SLE.
- Steroids to be continued in the same dose and to avoid supra-physiologic dose ('stress dosing') before surgery

While the above guidance remains in practice it would be useful to have further large studies to assess the efficacy of discontinuation of Biologic DMARDs in the peri operative phase and the relevance of this practice in prevention of Surgical Site Infections.

As the number of Spinal Cord Stimulator implants, and other implanted devices for management of chronic pain increase in number year on year and as do spinal interventions, it is imperative to consider these aspects while managing complex rheumatology patients who attend in Pain clinics for these procedures and guide appropriate peri operative management.

Neuropathic Pain

PP046

LONG-TERM NEUROPATHIC PAIN BEHAVIORS CORRELATE WITH SYNAPTIC PLASTICITY AND LIMBIC CIRCUIT ALTERATION: A COMPARATIVE OBSERVATIONAL STUDY IN MICE

Category: Neuropathic Pain

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University of Campania, Naples, Italy, Sabatino Maione - University of Campania, Naples, Italy

Background

Pain chronicization causes functional changes in brain regions. Besides sensorial dysfunctions, patients with neuropathic pain may refer emotional problems, including depression and cognitive damages. Although these comorbidities are clinically recognized, the underlying mechanisms remained unclear.

Aims

In this study, we used a multidisciplinary approach to characterize the affective and cognitive consequences of long-term neuropathic pain.

Methods

We used the spared nerve injury (SNI) model to characterize the development of sensory and aversive components of neuropathic pain and to determine their electrophysiological impact across prefrontal cortex and limbic regions. Moreover, we evaluated the regulation of several genes involved in immune response and inflammation triggered by SNI.

Results

We showed that SNI led to sensorial hypersensitivity (cold and mechanical stimuli) and depressive-like behavior lasting 12 months after nerve injury. Of interest, changes in nonemotional cognitive tasks (novel object recognition and Y maze) showed in 1-month SNI mice were not evident normal in the 12-month SNI animals. In vivo electrophysiology revealed an impaired long-term potentiation at prefrontal cortex-nucleus accumbens core pathway in both the 1-month and 12-month SNI mice. On the other hand, a reduced neural activity was recorded in the lateral entorhinal cortex-dentate gyrus pathway in the 1-month SNI mice, but not in the 12-month SNI mice. Finally, we observed the upregulation of specific genes involved in immune response in the hippocampus of 1-month SNI mice, but not in the 12-month SNI mice, suggesting a neuroinflammatory response that may contribute to the SNI phenotype.

Conclusions

These data suggest that distinct brain circuits may drive the psychiatric components of neuropathic pain and pave the way for better investigation of the long-term consequences of peripheral nerve injury for which most of the available drugs are to date unsatisfactory.

PP047

NEUROPATHIC PAIN AMONG PATIENTS WITH EPIDERMOLYSIS BULLOSA SIMPLEX: A RETROSPECTIVE STUDY OF PATIENT AND PAIN CHARACTERISTICS AND TREATMENT

Category: Neuropathic Pain

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Background

Epidermolysis bullosa simplex (EBS) is a rare genetic disorder characterised by blistering localised to the basal layer of keratinocytes. Pain is a common feature of EBS, with a recent study reporting a high prevalence of neuropathic pain in a cohort of EBS patients (Brun J, et al. Pain and quality of life evaluation in patients with localized

epidermolysis bullosa simplex. *Orphanet J Rare Dis* 2017; 12: 1-8). However, there is little existing research into the character and treatment of neuropathic pain in this population.

Aims

To examine the prevalence, characteristics, and treatment pattern of neuropathic pain in EBS patients attending the University Hospitals Birmingham (UHB) Adult Epidermolysis Bullosa (EB) pain clinic.

Methods

Clinical records of all EBS patients who attended the UHB EB pain clinic from January 1, 2014 to July 1, 2021 were retrospectively reviewed. Patients were included if they had been diagnosed with 'likely neuropathic pain' (LNP) using the painDETECT questionnaire, which has been routinely used to assess patients attending the UHB EB pain clinic since 2014. Information was extracted on the prevalence and character of neuropathic pain and the use of pain medications. Data was collected and analysed using Microsoft Excel.

Results

Of the 56 EBS patients who attended the pain clinic and completed painDETECT questionnaires during the study period, 27 attained scores suggesting LNP, giving an estimated prevalence of 48.2%. Mean age of patients with LNP was 40.9 years, which was comparable to mean age of 43.6 years for patients without LNP. The most common comorbidities in patients with LNP were psychiatric diagnoses (44.4%) and obesity (33.3%). Neuropathic pain was most frequently reported at the feet (92.6%) and described as 'burning' (55.6%). Before attending the pain clinic, most patients with LNP reported taking non-opioid analgesics (55.6%) or no pain treatments (29.6%). Only three patients (11.1%) reported taking antidepressants or anticonvulsants before pain clinic attendance. Following an initial pain consultation, 44.4% of patients were prescribed antidepressants or anticonvulsants as analgesia. Topical lidocaine 5% plasters (unlicensed indication) and weak opioids were also prescribed for 51.9% and 48.1% of patients, respectively. One patient (3.7%) refused prescription of any pain medication.

Conclusions

To our knowledge, this retrospective review represents the largest study to date to examine neuropathic pain in adult EBS patients and the first to do so using the painDETECT questionnaire. The high prevalence of neuropathic pain in EBS patients attending the specialist pain clinic necessitates appropriate management. However, our results suggest that neuropathic pain was under-recognised and undertreated before pain clinic attendance. Additional large-scale prospective studies of neuropathic pain in EBS patients are warranted in order to optimise the diagnosis and treatment of those affected.

PP048

AN AUTONOMOUS PERIPHERAL CLOCK IN SENSORY NEURONS DRIVES DIURNAL PAIN BEHAVIOURS

Category: Neuropathic Pain

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Background

Pain is an essential aversive sensory experience that enables awareness of tissue injury or threat of tissue damage, critical for survival. However chronic pain can also develop as a pathological state. Pronounced diurnal variations have been reported in both physiological pain and chronic pain disorders. A better understanding of the basis of this rhythmicity could play an important role in managing pain. Sensory neurons arising from either the dorsal root ganglion (DRG) or trigeminal ganglion (TG) express ion channels that transduce noxious stimuli into action potentials with synaptic transmission of nociceptive information in the dorsal horn or trigeminal nucleus caudalis (TNC) respectively. Regulation of these channel proteins may underlie the diurnal variation in sensory responses.

Aims

We aimed to investigate the mechanistic basis of rhythmic variation in pain behaviours in mice, linking molecular networks, cellular neurophysiology and behaviour.

Methods

We used a range of techniques to understand pain rhythmicity. We performed sensory threshold testing in oro-facial and hind paw regions. We assessed cellular excitability with electrophysiological assays on primary cultures and slices of sensory ganglia. We used qRT-PCR and RNAseq to investigate the underlying molecular mechanisms. Clock gene transgenics were employed to identify which clock was most relevant.

Results

We found that circadian rhythm significantly influences basal sensory threshold to pain, as a separately regulated mechanism to nitroglycerin (GTN) induced pain, through an autonomous molecular clock in sensory ganglia. We found that behavioural variation was matched with diurnal variation in electrophysiological responses. When we examined gene expression, this revealed clear rhythmicity in sodium and potassium ion channels – indicating these may be key effectors of sensory neuron clocks. We also found that the peripheral sensory ganglia clock was the principal driver of electrophysiological and behavioural pain responses. Finally we investigated the effect of small molecule clock stabilisers on pain.

Conclusions

Altogether, our study had established the importance of the peripheral clock in regulation of pain threshold and its potential as a therapeutic target for pain management.

PP049

HIGH CERVICAL STIMULATION FOR OCCIPITAL NEURALGIA AND CERVICOGENIC HEADACHES

Category: Neuropathic Pain

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Background

A considerable number of patients suffering with cervicogenic headache and occipital neuralgia may not respond to standard medical therapy, resulting in impairment.

Aims

While implantation of a peripheral occipital nerve stimulator is a therapeutic option for these patients, high cervical spinal cord stimulation (SCS) may be a promising new therapy option.

Methods

We present our experience of three patients implanted with SCS on a high cervical level to control their cervicogenic headaches and/or occipital neuralgia.

Results

1st Case 1: A 44y old female patient suffering with left-sided cervicogenic occipital pain, accompanied by shoulder and facial discomfort (due to cervicogenic trigeminal neuropathy) was implanted with two 8 contact leads (tip at C1 level). We provided burst stimulation to treat facial pain, and paraesthesia to treat occipital and shoulder discomfort. At 18 months the patient reports 80% pain relief and has significantly reduced her antineuropathic medication. During the last review the patient reported onset of a new temporo-occipital pain which was effectively managed with a new burst program.

2nd CASE: A 42y old male patient that was already implanted with SCS for right brachialgia and neck discomfort (following a right C5/6 foraminotomy and decompression through posterior route), developed occipital neuralgia. Initially he received bilateral peripheral occipital nerve stimulation electrodes which were attached to the initial implanted pulse generator. Due to a resistant infection the whole system had to be removed and replaced with a right 16 contact lead with a tip at C1 tip and a left 8 contact lead with a tip at the same level. After 6 months of follow-up and four reprogramming sessions the patient reports 80% pain relief. He is using a subperception program (contour and microburst).

3rd case: A 52y old male that developed right occipital pain, dysesthesia, and tinnitus after right shoulder decompression 8 years ago, was implanted with two 8 contact leads with tips at C2. Two weeks post implantation the patient reports 90% pain relief on average and less flare ups (currently on a silent program).

Conclusions

All our patients report excellent pain relief with high cervical SCS with postero-lateral lead placement for occipital pain, cervicogenic headaches and facial pain. High cervical or cervicomedullary junction SCS can be an alternative to occipital nerve stimulation. Future research is needed to assess the various options and determine the best treatment method for refractory cervicogenic headache and occipital neuralgia.

PP050

REAL WORLD OUTCOMES IN PANDEMIC: A TERTIARY CARE UK NEUROMODULATION CENTER SNAPSHOT ACTIVITY

Category: Neuropathic Pain

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Background

Covid-19 pandemic, has resulted in disruption of elective neuromodulation service worldwide. Although NSUKI has provided guidance for resumption of this activity within the NHS England Recovery pathway, delivery of the service has been a challenge. The neuromodulation centre based at Barts Health NHS Trust is one of the few centres in the UK that has been providing the service in the pandemic restrictions.

Aims

We aim to present a snapshot of our activity in the pandemic, highlighting the ongoing robust data collection and real world benefit from the therapy in the year 2021.

Methods

The numerical rating pain scores (NRS), Hospital Anxiety Depression Scale (HADS), Pain and Sleep Questionnaire -3 (PSQ-3) and EQ-5D questionnaires were collected at baseline and 1, 3, 6 and 12 months post implant follow ups. All questionnaires were completed remotely as per the NHS England outpatient guidance.

Results

Data from 178 clinical appointments in 2021 were analysed. The average age of the patients was 55 years and 63% were female and 37% male. At follow up, the number of patients completed at each time point were baseline, n= 52; 1 month, n= 27; 3 months, n=28; 6 months, n= 21 and 12 months, n= 26. Pain scores decreased by 43% at 12-months vs. baseline. Similar reductions were seen at 12-months in anxiety and depression scores (42% and 46% respectively). The average ODI score decreased by 35% at 12 months vs. baseline. The average score from PSQ-3 and EQ-5D UK index have positively improved by 47% and 66% at 12-months when compared to baseline.

Conclusions

This is one of the first real world data outcome of prospective follow up of this cohort of patients that demonstrates that despite the pandemic, marked improvements in pain scores, depression, anxiety, sleep and quality of life parameters in patients and improvements were maintained.

References:

S Eldabe, G Baranidharan, A Gulve, S Thomson, J Hughes, G Vajramani, C Patel, S Love-Jones, J Fitzgerald. Recommendations for the Management of Implanted Neurostimulation & Intrathecal Drug Delivery Devices During the COVID-19 Pandemic. NSUKI GUIDELINES 2020.

Non-Pharmacological Pain Management

PP051

OUTCOMES FROM PEOPLE SUFFERING FROM CHRONIC PAIN WHO HAVE HAD ACCESS TO SUPPORTED SELF-MANAGEMENT DURING THE COVID-19 PANDEMIC

Category: Non-Pharmacological Pain Management

Sonia Cottom - York St John University

Background

This evaluation looks at the network of staff-led self-management group sessions delivered on-line during the COVID-19 pandemic by a Scottish based charity, Pain Association Scotland.

These groups have enabled chronic pain sufferers to make changes to their everyday lives in a positive and importantly practical way, leading to improved levels of coping, well-being and quality of life; not only for the sufferers, but their carers, family and colleagues.

Aims

Chronic pain is a major clinical challenge in Scotland and across Europe as a whole. 18% of the UK population are currently affected by severe chronic pain (Harding and Gronow, 2014). This has resulted in a significant impact on people's quality of life and affects their family, relationships and carers.

During the COVID-19 pandemic, the usual face-to-face group sessions had to switch to on-line. Furthermore, there had been an increased demand for our service when 11 out of 14 Chronic Pain services had ceased all new patient activity due to staff redeployment resulting in no first appointments at a chronic pain clinic. Furthermore, there are no virtual support groups being delivered by the NHS within the Pain Management Service and all procedures and interventions had ceased

Methods

The group meetings were delivered on-line each month for two hours and those accessing on our on-line groups were sent a questionnaire via SurveyMonkey asking them about their experiences of the monthly group sessions through a series of questions and opportunity for anecdotal comments.

Results

There were 98 responses from 169 issued. The survey has demonstrated that regular supported self-management in a group setting is beneficial to those suffering with chronic pain. Key outcomes over the 12 months include:-

- 62% of service users noting reduced visits to their GP regarding their chronic pain
- 90% felt more in control of their pain rather than the pain controlling them.
- 96% of participants felt able to cope better on a day-to-day basis

Noting some of these key outcomes one could probably interpret this as potentially a reduced reliance of clinical services going forward to demonstrate not only cost effectiveness but also the value of on-going self-management maintenance.

Conclusions

A well-managed supported self-management resource can therefore help sufferers understand and manage their chronic pain by seeking positive adaptive and coping mechanisms which ultimately lead to a better quality of life

PP052

EXPERIENCES, BARRIERS AND NEEDS OF PHYSIOTHERAPISTS WITH REGARD TO PROVIDING SELF-MANAGEMENT SUPPORT TO PEOPLE WITH LOW BACK PAIN: A QUALITATIVE STUDY

Category: Non-Pharmacological Pain Management

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Background

Low back pain (LBP) is the leading cause of years lost to disability around the world. A person-centred, biopsychosocial approach focused on self-management and a healthy lifestyle is recommended for managing persistent musculoskeletal conditions, including persistent LBP. However, research suggests that physiotherapists do not always follow evidence-based guidelines when caring for people with musculoskeletal conditions. Moreover, the way physiotherapists currently provide self-management support is not optimal.

Aims

To explore the experiences of physiotherapists with regard to providing self-management support to people with non-specific LBP.

Methods

This was an exploratory qualitative study using semi-structured interviews. Registered physiotherapists in the Netherlands who were between 18 and 65 years old and who had treated people with non-specific LBP in the past six months were eligible to participate in the interviews. A semi-structured interview guide was developed and pilot tested. Individual interviews were conducted online by three

researchers in varying pairs. Interviews were audio recorded and transcribed verbatim. Inductive thematic analysis, a method for identifying, analysing and reporting themes within qualitative data, was used to analyse the data. Member checking was performed and datasaturation was assessed.

Results

A number of 14 physiotherapists participated in this study. The mean age of the participants was 30.6 years (SD = 7.3, range 23–49). Three main themes emerged from the inductive analysis: 1) Providing self-management support in daily practice; 2) Barriers to providing self-management support; and 3) Participants' needs to improve self-management support. Physiotherapists believe that self-management has added value in the management of people with non-specific LBP. The majority of the participants find it important that a patient takes control, takes initiative and has insight into their symptoms. Motivational interviewing, providing advice and exercise were most frequently used to facilitate behaviour change aimed at enhancing patients' self-management. Support regarding self-management skills was not frequently mentioned.

Physiotherapists are not fully aware of and do not fully integrate support with regard to important self-management skills. Integrating self-management support is often experience as difficult and does not work well enough for all patients. The most important barrier participants experienced with regard to integrating self-management was patient expectations, as most patients expect the treatment to be mostly hands-on, with the physiotherapist guiding the treatment. Another important barrier was addressing psychosocial factors. Limited amount of time also emerged as barrier to treatment. All participants indicated that the barrier(s) they experience or have ever experienced affect the quality of treatment.

Although self-management support was considered important, less than half of the participants had acquired additional knowledge about it. Most participants expressed a need to better integrate self-management support in their treatment. They explained that they needed more knowledge (courses, knowledge clips), opportunities to exchange experiences (peer review group) and tools for patients (app).

Conclusions

Physiotherapists believe that self-management support is important in people with low back pain. However, physiotherapists do not fully integrate support with regard to important self-management skills in people with non-specific LBP. The most important barrier with regard to integrating self-management was patient expectations. Physiotherapists need knowledge, opportunities to exchange experiences and tools for patients. We recommend that physiotherapists address the identified barriers and needs and better include self-management support in their treatment of people with non-specific LBP. We recommend important stakeholders to collectively work on diminishing barriers to integrating self-management support.

PP053

A NEW METHOD FOR A SELF-CARE TREATMENT OF A PATIENTS SUFFERING FROM CHRONIC PAINS BY COMPUTER ASSISTED BIOFEEDBACK

Category: Non-Pharmacological Pain Management

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Background

Chronic pain is a common worldwide medical condition and is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. There are many treatment modalities. For example equipment for self-care treatment of chronic pain patients

Aims

The main study objective and research question is to develop an equipment of self-care for conceptual learning in treatment of chronic pain and identify important physiological and psychological features which can be influenced through inducing, intensifying and maintaining their own frissons. Multisensory and multimodal stimuli are used to achieve this by musical, visual, aromatic and vibrotactile and cold which are applied on the cutaneous surface of the spine. For this purpose we have developed a device which includes a computer and a computer system with a music and video player, lighting, presentation of aromas and a closed hydraulic circuit with a hydraulic actuator. We evaluate physiological and psychological parameters of the patient, wherein the physiological parameter comprises one or more parameters associated with the patients including blood pressure, heart rate, heart rate variation, skin conductance, body temperature, and wherein the psychological parameters comprises emotional parameters of the patient including one or more of anxiety, fear, pleasure, a mood caused by an experience of pain. We think that application of our device can be an integrated part of chronic pain treatment

Methods

We did extensive (pubmed) desktop/research work regarding current available publications with regards to chronic pain, multisensory stimulations which can be applied for self-management of chronic pain and which psychological and physiological parameters are important.

Results

The device we have developed is still in a prototype version. One we have passed that stage more research needs to be done to evaluate the device

Conclusions

If we look at the literature the device has very promising features and can be an integrated part of chronic pain self treatment by biofeedback

PP054

PHYSIOTHERAPIST-LED BIOPSYCHOSOCIAL EDUCATION AND EXERCISE PROGRAMME FOR PATIENTS WITH CHRONIC LOW BACK PAIN IN GHANA: MIXED-METHODS FEASIBILITY STUDY

Category: Non-Pharmacological Pain Management

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Background

Low back pain (LBP) is a common musculoskeletal disorder which causes substantial years lived with disability globally and

in Sub-Saharan Africa. The biopsychosocial (BPS) model of management has been recommended in national and international practice guidelines for the management of chronic low back pain (CLBP) and has also demonstrated to be effective in clinical trials. However, these clinical trials have been predominantly delivered in high income countries (HICs), although evidence suggests that the prevalence of LBP is substantially higher in low- and middle-income countries (LMICs) especially in Africa (39%; 95% CI 30 - 47). Understanding the effectiveness of BPS interventions in LMICs especially in Africa is a very underexplored area, with substantial inequity between research from HICs and LMICs. Ghana is a LMIC where the effectiveness of BPS interventions has been underexplored.

Aims

The aim of this PhD was therefore to establish the feasibility of delivering and/or implementing a physiotherapist-led BPS patient education and exercise therapy programme for the management of patients with CLBP in a Ghanaian context.

Methods

Philosophical paradigm: This study applied a critical realism paradigm for the purpose of understanding research phenomenon by their causal mechanisms.

METHODOLOGY: A mixed-methods methodology was applied with the rationale of achieving the depth and breadth of corroboration and understanding from quantitative and qualitative data.

Theoretical framework: Normalisation process theory (NPT) was applied as a theoretical framework to identify, characterize, and explain the important mechanisms that are barriers or facilitators to the implementation of the BPS intervention

Methods

This study involved a mixed-methods, sequential, feasibility, pretest-posttest quasi-experimental study to investigate the feasibility of delivering and/or implementing the BPS intervention. The study was conducted in a teaching hospital out-patients physiotherapy department in Ghana involving 30 recruited patients with CLBP and 2 physiotherapists. Feasibility outcomes regarding management (for example, intervention fidelity) and processes (for example, recruitment rate, retention rate, data completion rate) were captured pre-intervention, post-intervention, and 3-months post intervention. Semi-structured interviews were conducted post intervention to explore participants' experiences with the BPS intervention. Patients' demographics were collected at baseline. Patient reported outcome measures such as pain, disability, pain catastrophising, kinesiophobia, self-efficacy, and general quality of life, were collected pre-intervention, post-intervention and at 3-months follow-up. Thematic analysis was conducted to explore participants' experiences and identify any barriers and facilitators to implementation.

Results

The results of the trial demonstrated that it is feasible to train physiotherapists and deliver the BPS intervention in a Ghanaian hospital out-patient setting. Recruitment rate (5 patient participants per week - 100% recruitment met), retention rate post intervention (90%), data completion rate post intervention (99.8%) and intervention fidelity (83.1%), all met feasibility thresholds. There were no adverse events. Thematic analysis of qualitative data identified 5 interlinked themes namely, patients' expectations; patients' health beliefs, autonomy, and engagement; external influences; and personal and professional characteristics of physiotherapists. Qualitative data demonstrated that the BPS intervention was acceptable to

physiotherapist and patient participants. The application of the constructs of NPT offered an understanding of the wider implications for the implementation, elucidated the potential for implementing the BPS intervention and identified the mechanisms by which implementation can be possible.

Conclusions

The results of this study have established that it is feasible to deliver the BPS intervention in a Ghanaian hospital setting. This study also provides relevant findings to inform the conduct of a definitive full-scale clinical trial and/or implement the BPS intervention in routine clinical practice. This PhD therefore provides a platform upon which further knowledge can be developed.

PP055

TO EVALUATE PATIENT REPORTED OUTCOMES FOR PATIENTS ATTENDING ONLINE MULTI-DISCIPLINARY PAIN MANAGEMENT PROGRAMMES, DELIVERED VIA VIDEO CONFERENCING

Category: Non-Pharmacological Pain Management

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Background

The Covid-19 pandemic initiated a rapid innovation phase in the NHS, including digital transformation which allowed for accelerated implementation of video conferencing and digital data collection methods.

Aims

To evaluate patient reported outcomes for patients attending online multi-disciplinary pain management programmes, delivered via video conferencing that were introduced in response to the Covid-19 pandemic.

Methods

During the Covid-19 pandemic it was not possible to deliver face to face rehabilitation due to shielding and during surges of infection. An online pain management programme of 16 hours duration staffed by psychologists and physiotherapists, delivered in 2-hour sessions was developed as a rapid innovation. In developing the programme we used quality improvement methodology which included conducting a literature search. Shared learning from online meetings with service users and clinicians was also used to inform service design. Guidance and approval were sought from the information governance and information technology teams. Microsoft teams was adopted as the delivery platforms it was deemed most secure by the trust. A testing phase was completed to ensure that processes adhered to GDPR regulations. Standard operating procedures were completed for scenarios such as safeguarding, falls and injury. Pre-meet sessions were offered for patients to practice with the video conferencing technology and 'How to' and 'Conduct' guides written for patients and clinicians. Accompanying digital materials were created and sent to participants via email. Programme content was adapted to be delivered online and content evolved iteratively using a Plan, Do, Study, Act cycle (PDSA) in response to patient feedback and research evidence. Exercise sessions were adapted to be completed in a

confined space within minimal equipment due to reductions in physical activity reported by people with persistent pain during lockdown. Patients were sent exercise bands to use at home and cardiovascular exercises were included in programmes. Pre and post-programme outcome data using validated questionnaires was collected digitally via Microsoft Forms between June 2020 – March 2021. Consent was obtained for data to be used for service evaluation and publications.

Results

Complete data was collected from 60 participants. Outcome Measure Pre-programme Post Programme Effect Size Mean (SD) Mean (SD). Average pain (NRS) 6.8 (1.5) 6.7 (1.5) 0.06. Chronic Pain Acceptance Questionnaire 19.0 (8.3) 22.3 (5.5) 0.5. Patient health Questionnaire – 9 (Depression) 14.1 (6.2) 10.7 (5.8) 0.6. Generalised Anxiety Disorder 9.8 (4.9) 7.4 (4.6) 0.5. Pain Interference Scale (Brief Pain Inventory) 6.8 (1.5) 5.8 (1.9) 0.6. Tampa Scale of Kinesiophobia 37.9 (7.9) 34.3 (5.3) 0.5. Chalder Fatigue Scale 21.1 (7.3) 17.8 (8.5) 0.5

Conclusions

The online pain management programmes was developed iteratively using available research evidence and clinician and service user feedback. PDSA methodology allowed for iterative development, including implementing guidance from the emerging literature (Gilbert et al 21). Preliminary outcomes suggest that multi-disciplinary pain management programmes via video conferencing are effective. Effect sizes were smaller in comparison to in-person pain management programmes in the same service (Heelas et al 20). There is limited qualitative and quantitative research evidence regarding pain management programmes via video conferencing software. Such programmes have been found to be effective in improving quality of life and are acceptable to patients. Physical activity outcomes were not improved however compared to in-person programmes (Walumbé et al 21). Future research is required to inform patient selection for online programmes, evaluate qualitative data and to understand whether there are improvements in physical activity. Services may need to consider equity of access and provide alternatives for people without access to the internet and allow for patient choice by continuing to offer in person treatment where safe to do so. Impact. Online access may allow for greater inclusivity by reducing the burden of travel and cost of attending services in person and allow access to treatment where it is unsafe to attend in person due to a global pandemic.

PP057

HOW EFFECTIVE ARE EDUCATIONAL, BEHAVIOURAL, AND COGNITIVE INTERVENTIONS FOR ADULTS WITH CHRONIC MIGRAINE?

Category: Non-Pharmacological Pain Management

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Background

Around 3% of general practitioner consultations are for headaches. In epidemiological studies 2-4% of adults have chronic headaches, i.e., a headache on 15 or more days per month for at least three months.

Many of these people have chronic migraine a severely disabling condition, affecting people's careers, psychological wellbeing, and general health. The vast majority of those affected are managed exclusively in primary care. The annual medical cost for chronic migraine is 4.8 times higher than for those with episodic migraine. Medications are used prophylactically and to relieve symptoms, however, they are not always effective. Non-pharmacological interventions may complement existing therapies, enabling individuals to recognise and manage their triggers, and use medication safely.

Aims

Our aim was to evaluate the effects educational, behavioural, and cognitive interventions, on headache frequency, disability, pain intensity, quality of life, psychological wellbeing, and medication consumption.

Methods

We did a systematic review. We searched Cochrane, Embase, Medline, PsychINFO, Scopus, and Web of Science for randomised controlled trials assessing the effectiveness of educational, behavioural, and cognitive interventions for chronic migraine in adult populations when compared against usual care. We assessed trials in line with accepted standards using the Cochrane Handbook for Systematic Reviews and extracted data on relevant outcomes at baseline and follow-up.

Results

Five trials (N=240) met our inclusion criteria; one educational, two psycho-educational and two behavioural interventions, none were done in primary care. Participants were predominantly female (83.3-100%), aged 30-43 years. We judged four studies to have high risk of bias and one study to have some concerns. For headache frequency reduction, evidence was found in one behavioural intervention trial at six weeks ($p=.01$); headache-related disability was significantly lower after an educational intervention at six months ($p<.05$), and a psychoeducational intervention at four months ($p<.05$); severity of symptoms was reduced following one behavioural intervention at six weeks ($p=.001$); one psychoeducational intervention reported borderline significance for improving the quality of life at seven weeks ($p=.049$); for medication consumption, one educational and one behavioural intervention reported reductions in the intervention group at follow-up

Conclusions

We found some weak evidence for the effectiveness of educational, behavioural, and psychoeducational interventions in reducing headache frequency, headache-related disability, and pain intensity. We also found that headache related disability could be reduced even when headache frequency remained the same when using a psychoeducational intervention. This highlights that the two variables are not co-dependent. Our findings support the idea that self-help interventions could be valuable tools aimed at targeting the ability to function with pain. But more robust primary-care based studies are needed. The International Classification of Headache Disorders (ICHD-3) criteria for chronic migraines requires individuals to have 15 headaches a month, with eight migraines for longer than three months. These strict criteria meant that very few studies could be included in our analysis. As headache frequency and disability can be decoupled, and for many people headache frequency can fluctuate below 15 a month, we suggest that a broader definition of chronic migraine may be more practical for treating patients and recruiting them for research. Chronic migraine is a disabling condition, and our research highlights the need for high quality, primary care research to improve headache-related outcomes for individuals with chronic migraine.

PP058

ELEKTROTHERAPY AND EXERCISE-BASED PROGRAM COULD IMPROVE MUSCLE WEAKNESS, ADHERENCE TO EXERCISES AND REDUCE INTRA-ARTICULAR CORTICOSTEROIDS IN KNEE OA

Category: Non-Pharmacological Pain Management

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Background

A recent RCT revealed a structured physiotherapy program (a combination of hands-on treatment and exercise-based physiotherapy) as a better alternative than intra-articular corticosteroids (IACs) in the treatment of knee osteoarthritis (OA). Likewise, combining the quadriceps neuromuscular electrical stimulation (NMES) with exercise could optimize the muscle weakness and exercise adherence along with reducing the risk of repetitive IACs.

Aims

The aims of the study are to explore the potential IACs-sparing effect of and adherence to a structured physiotherapy program of quadriceps NMES with strengthening exercises for pain relief in knee OA.

Methods

Forty-one ASA 1-3 in-hospital patients, aged ≥ 42 , treated for symptomatic chronic knee OA with or without IACs followed by quadriceps NMES with strengthening exercises were examined retrospectively. Patients with IACs (Group A, $n=17$) and without IACs (Group B, $n=24$) received a structured physiotherapy program implemented twice-a-year (at 6-month intervals). NMES was applied sequentially to each of the four quadriceps' heads (frequency 50 Hz, pulse duration 1 ms, on:off ratio 1:2, 30 contractions followed by exercise, sessions frequency 5d/wk, 3 wk). The exercises continued to be applied individually after discharge. The adherence to physiotherapy program and IACs consumption were checked at 6-month and 1-year visits. Data regarding demographics, ASA and CCI scores, Kellgren-Lawrence grade, and inflammatory variables were collected as well.

Results

The only between group differences were increased baseline effusions in Group A ($p=0.035$). The whole-group comparison revealed 41 patients to receive physiotherapy again at 6-month visits, of them 7 with repetitive IACs ($p=0.017$), and two dropouts at 12-month visits.

Conclusions

The implementation of a structured physiotherapy program utilizing quadriceps NMES with strengthening exercises improve adherence to the program and reduce the need of repetitive IACs.

PP059

THE IMPACT OF BIOPSYCHOSOCIAL FACTORS ON THE ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND PAIN IN FIBROMYALGIA- CROSS-SECTIONAL SURVEY

Category: Non-Pharmacological Pain Management

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Background

Fibromyalgia affects 1 in 20 adults in the UK, predominantly women and is associated with a significant psychosocial burden. Although there is much interest in physical activity interventions for pain management, adherence to physical activity remains a massive challenge in this population as factors contributing to exercise intolerance are not adequately explored.

Aims

This study aimed to investigate the impact of biopsychosocial factors on the relationship between pain and physical activity in people with fibromyalgia.

Methods

Participants ($N=251$), aged between 20-70, diagnosed with fibromyalgia were recruited from fibromyalgia organisations in the UK (Fibromyalgia Action UK, Versus Arthritis, Charities and regional fibromyalgia groups) via an online survey. Physical activity was assessed using the self-reported International Physical Activity Questionnaire Short Form (IPAQ_SF). Symptoms (pain intensity, fatigue, physical function) was evaluated using the FIQR. Pain interference was assessed using the Brief Pain Inventory (BPI). Correlation coefficient, univariate and multiple regression models were used to evaluate the relationship between pain and physical activity controlling for the impact of biopsychosocial factors

Results

Higher physical activity was associated with lower pain intensity, interference, depression, anxiety and fatigue. The association between pain interference and physical activity was assessed ($p < .001$), controlling for the impact of BMI, gender, age in model two ($p=0.25$); medications and other conditions in model three ($p=0.191$); depression and anxiety in model four ($p < 0.001$).

Conclusions

Biopsychosocial factors such as anxiety and depression strongly impact the association between pain and physical activity. A multi-dimensional approach incorporating patient education with behavioural components targeting psychosocial factors are essential to increase adherence to physical activity for people with fibromyalgia.

Older People

PP061

PRIMARY CARE PHYSICIAN'S ATTITUDE TOWARDS THE PRESCRIPTION OF ANALGESICS IN ELDERLY PATIENTS WITH CHRONIC NON-CANCER PAIN

Category: Older People

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Background

Chronic non-cancer pain (CNCP) affects quality of life in our growing elderly population. Pharmacological management of pain is challenging due to physiological changes and co-morbidities and may lead to undertreatment of pain.

Aims

To identify the attitude of General Practitioners (GP) and General Practitioner Trainees towards the prescription of analgesics in the elderly with chronic pain.

Methods

A survey was designed to explore trends, considerations, attitudes and educational views on prescribing analgesics to the elderly with and without dementia. A mail survey to 75 GPs randomly selected based on addresses and an electronic survey to 59 GP trainees through the GP Training Scheme in University College Cork was conducted with ethical approval. Data analysis was done using SPSS v27.

Results

The survey was returned by 29.3% of GPs (mean age 47.95 ± 9.22 years) and 23.7% of GP trainees (mean age 31.86 ± 6.18 years). GPs had a mean experience of 19.19 ± 11.03 years, GP trainees had 4.71 ± 2.20 years. All participants found managing CNCP a challenge, citing concerns about side effects and polypharmacy as the main challenge.

In dementia patients, the treatment of choice across the pain scale was paracetamol. As pain intensity scores increase, there was an increase in opioid prescription ($p=0.041$). Post-graduate training and experience in geriatrics did not influence choice.

Conclusions

Utilisation of resources and availability of evidence-based guidelines are lacking which could hinder good pain management. Post-graduate training does not affect prescribing habits suggesting that undergraduate education has greater impact on future prescription habits.

Other (Research)

PP062

LONG-TERM EFFECTIVENESS AND SAFETY OF MEDICAL CANNABIS ADMINISTERED VIA THE METERED-DOSE SYQE® INHALER

Category: Other (Research)

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Background

Preliminary clinical studies of medical cannabis (MC) treatment via the metered-dose Syqe inhaler showed short-term effectiveness and safety using very low and precise doses of MC.

Aims

Here, we assessed its long-term effectiveness and safety.

Methods

Patients prescribed MC treatment with the inhaler were monitored by Syqe's patients support program. (-)- Δ^9 -trans-tetrahydrocannabinol (Δ^9 -THC) was used as a dosage marker for full-spectrum MC. Pain intensity was evaluated using numeric pain scale (NPS) at baseline and up to 120 days after treatment initiation. The change in quality of life (QoL) from baseline was evaluated. Adverse events (AEs) were followed-up continuously for 15 months.

Results

A total of 143 patients (mean age 62 ± 17 years; 54% males) were included in the analysis, most (68%) were diagnosed with chronic neuropathic pain. The stable daily dose, following a mean 26 ± 10 days of titration was $1,500 \pm 688$ mcg aerosolized Δ^9 -THC. Significant pain reduction, ranging from 22.8% in the intent to treat population to 28.4% in the population that reported high pain intensity at baseline of ≥ 8 points on NPS ($p < 0.001$) was observed. Ninety-two percent of patients reported improved QoL. AEs were reported mostly during the titration phase (34% of patients) and declined to $\leq 4\%$ at 3-15 months. Only 7% of patients reported psychoactive AEs (anxiety and restlessness).

Conclusions

MC treatment with the Syqe inhaler demonstrated overall long-term pain reduction, QoL improvement and a superior AE profile compared to administration of MC by conventional routes. Additional follow-up in a larger population is warranted.

PP064

ROLE OF COMMUNITY PHARMACISTS IN OPTIMIZING OPIOID THERAPY FOR CHRONIC NON-MALIGNANT PAIN MANAGEMENT-A LOGIC MODEL

Category: Other (Research)

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Background

Chronic non-malignant (CNMP) is common in low-and middle-income countries (LMICs), but no literature is available on the use of potent opioids, in its management. Numerous studies from LMICs have highlighted the absence of potent opioids due to, lack of regulation of medicines, unavailability and the fear of misuse and diversion. Community pharmacists are acknowledged members of the healthcare team who can help manage chronic conditions and diseases by optimising the use of medicines through medication reviews and patient counselling. Pain relief is one of the basic human rights and following the objectives of Universal Health Coverage (UHC) and the World Health Organisation (WHO) Workforce development goals (2030) which aims for "access to quality essential medicines and

medicine services. Pakistan, a LMIC is currently seeking to improve the overall access to opioids, without risking a potential opioid crisis.

Aims

To explore stakeholders' perception towards developing specialised roles of community pharmacists in opioid optimisation to control unsupervised and unsafe use of opioids in the management of CNMP.

Methods

Data was collected in Pakistan in November – December 2020 using exploratory qualitative methods using semi structured interviews of purposive sampled pharmacy policymakers (n=11) and people with CNMP (n=14) and focus groups with doctors (n=31) and community pharmacists (n=36). Data were inductively analysed using reflexive thematic analysis (supported by N-Vivo 12) and deductively mapped to social ecological model. Case study observations were carried out in six community pharmacies between September 2020-November 2020. The case studies were analysed using a cross case synthesis using explanation building technique. Data from all three methods was triangulated to develop a logic model. Ethical approval for this study was obtained from Research and ethics committee School of Pharmacy University of Nottingham, and research ethics committee Hamdard University Islamabad, Pakistan.

Results

98 stakeholders identified multiple factors and barriers at different social ecological levels; i.e., individual and system which could be improved/overcome by developing the role of community pharmacists. Factors identified for people with CNMP, on their individual level, included self-medication, uncontrolled CNMP, patient non-adherence, tolerance, addiction and lack of awareness of opioids. System level factors included easy availability of medicines and unlicensed staff administering and dispensing opioids in medicine outlets, and unregulated distribution channels. A logic model was developed by collating all the factors promoting unsafe use of opioids and presents the journey of a person with CNMP to acquire opioid medicines and the potential benefits of developing the role of community pharmacists to overcome factors/barriers. The logic model highlights potential benefits that could help optimise the use of opioids and introduce control over self-medication, misuse and diversion in the system. Benefits include mandating and strictly enforcing the dispensing of opioids only on prescriptions by community pharmacists as well as controlling and regulating, illegal or unauthorised; dispensing, prescribing and administration of opioids. Other advantages include, reviewing prescriptions and identifying polypharmacy, potential drug interactions and identifying people at high risk of opioid related adverse effects. Community pharmacists can also help educate people with CNMP, which could help optimise the use of opioids, as well as avoid self-medication and non-adherence to prescribed regimes and minimise the risk of opioid related harm and diversion.

Conclusions

Developing role of community pharmacists in Pakistan in opioid medicine optimisation could improve the current use of opioids as well as help reduce unsolicited, self-medication or unsupervised use of potent opioids and offer improved pain management. By strategically introducing community pharmacists to control misuse and diversion of opioids, Pakistan could improve access to potent opioids and significantly improve CNMP management treatment options and be on a road map for achieving UHC as well as WHO workforce developmental goals.

PP066

DEVELOPMENT OF MRI-COMPATIBLE DEVICE TO DELIVER AND MEASURE PRESSURE PAIN THRESHOLDS IN EXPERIMENTAL AND CLINICAL PAIN RESEARCH

Category: Other (Research)

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Background

Musculoskeletal (MSK) conditions, including rheumatoid arthritis (RA) and fibromyalgia, are some of the most common causes of chronic pain. Available pain relief is of limited benefit and improved tools are needed to better characterise and accurately diagnose pain conditions, evaluate current therapies, and aid the discovery of new treatments. MSK patients may experience pain during gentle pressure applied over specific joint and non-joint areas. This "hypersensitive" response is thought to result from abnormal pain processing in the brain and spinal cord.

Pressure Pain Threshold (PPT) is one of the most frequently used measurements in quantitative sensory testing studies of chronic pain and analgesic effect reports¹ but existing pressure-pain devices have many limitations.

Pressure algometry is a well validated method to reliably produce mechanical stimuli outside Magnetic Resonance Imaging(MRI) environment but commercial algometers are incompatible with MRI due to ferrous components. They are subject to operator bias for stimulus timing and pressure achieved, are unusable on moving body-parts, handheld and manually operated. Thermal stimuli have been a preferred method for nociception imaging during fMRI because of MR compatibility and ability to control the magnitude and duration of the stimulus. In contrast, mechanical stimuli have been used less frequently in fMRI studies. A handful of laboratories have developed bespoke devices to overcome one or more of these limitations. However, no device has overcome all these problems, none are currently available for use in other centres, no gold-standard has been agreed, and all have systematic differences that weaken comparison of results. Additionally, there has been no visible effort to get these devices into clinical practice, meaning patients with MSK pain are missing out on high-precision tools that would aid diagnosis and guide appropriate treatment.

Aims

1. To develop a prototype for an MRI safe manually controlled pressure delivery device to investigate chronic MSK pain during brain imaging.
2. To validate the delivery of precise pressure-pain stimuli during brain imaging studies of chronic pain
3. To further develop an automated prototype of this pressure delivery device that overcomes operator bias

Methods

We built a thumb pressure delivery device using Computer Aided Design (CAD) Software design and 3D printing technology. The Device consists of pressurised piston devices, three way stop cocks and tubing. The MRI compatible handheld pressure generator was housed in an ergonomic casing and connected to a pressure gauge. The participant end of the Device is a modified barrel and piston device held in a snug especially designed housing that holds a human thumb comfortably. The modified barrel in contact with skin surface is 1mm² area similar to that of a standard algometer with ability to cause measurable phasic and tonic pain.

After Research Ethics Approval 19/WA/0150 we tested the device in and outside scanner measuring pressure pain threshold and maximum tolerable pain in healthy volunteers.

The next level prototype being developed is an automated pressure delivery device that removes operator bias

Results

We recorded Pressure Pain threshold and Pain Tolerance in healthy adults. Thumb pain was tolerated well, in and outside scanner environment with evidence of pain matrix activation.

Pressure and Pain scores for 4-stimulus epochs, with and without conditioning stimulus (CS) in 1 participant measured over 600 seconds: Pressure in PSI/Pain VAS(0-10)/Conditioning Stimulus OFF 7.9/4.0 7.5/5.0 7.2/5.0. Pressure in PSI/Pain VAS(0-10)/Conditioning Stimulus ON 6.8/3.5 6.7/3.5 6.4/5.0. Mean pressures CS OFF 7.5psi CS ON 6.6psi. Mean pain CS OFF 4.7/10 CS ON 4.0/10

Conclusions

1. The manual handheld prototype device generates required moderate pressure pain in a graded measurable manner and does this safely.
2. Further automation of the device removes operator bias and generates adequately painful repeatable, measurable, and accurate pressure stimulus.

Refs

1. Petersen, 2021, Pain. Jan;162(1):31-44. doi: 10.1097/j.pain.0000000000002019. PMID: 32701654.

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Paediatric

PP067

PATELLOFEMORAL PAIN, BODY MORPHOLOGY AND ALIGNMENT IN PUBERTAL DANCERS: TWO-YEARS FOLLOW-UP

Category: Paediatric

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Background

The maturation period is a critical time for young dancers, as it can be accompanied by critical changes in body morphology and in anatomical alignment, along with increased prevalence of patellofemoral pain (PFP).

Aims

The aims of this study were to follow the prevalence of PFP among young dancers along pubertal growth (as they matured from early- to mid-adolescence); to assess changes in body morphology and in anatomical alignment over 2-years; to identify the risk factors related to PFP in these young dancers; and, to assess the prevalence of re-injured/recovered dancers.

Methods

Sixty-seven dancers (aged 12.8±0.5) were screened for PFP at baseline, 65 dancers at 1st follow-up one year later and 51 dancers at 2nd follow-up, two years later. At each of these points in time, the dancers were interviewed concerning their background, and anthropometric measurements, lower-limb physical examinations and knee ultrasound scans were performed.

Results

Morphological parameters changed significantly from baseline to follow-ups. PFP was found in 53.3% of the dancers' knees at baseline. All dancers that took part in all the 3 screenings had at least one episode of PFP along the screenings. No dancers recovered in the 1st follow-up, yet 40.5% of the dancers with PFP at the 1st follow-up recovered in the 2nd follow-up. Along the 3 screenings, 23.9%, 34.8%, and 41.3% of the dancers had 1, 2 or 3 PFP episodes, respectively. None of the dancers skipped PFP along the 3 screenings. Lower BMI was identified among dancers who developed PFP during follow-up compared with dancers with no PFP, either at baseline or at follow-ups. A positive grinding and positive Patellar Inhibition Test (PIT) at baseline were found to be risk factors for PFP at follow-ups.

Conclusions

A high prevalence of dancers had sustained PFP along the 2 follow-ups, with low recovery rate. Parameters predisposing the dancers to PFP should be identified at early stages of dance class, and dancers/teachers should be alert to the need for devising modifications of training and injury prevention strategies from a young age.

PP068

"THAT'S WHY WE HAVE A CONSULTATION...": EXPLORING CHILDREN AND YOUNG PEOPLES' EXPERIENCES OF AND PERSPECTIVES ABOUT PAIN COMMUNICATION IN PAEDIATRIC RHE

Category: Paediatric

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Background

Pain communication should be an integral part of every clinical consultation, particularly in paediatric rheumatology where children/young people often present with long-term conditions in which chronic pain is a feature. Literature exploring pain communication in paediatric healthcare encounters has been focused on healthcare professionals, yielding inconsistent findings about the occurrence and nature of pain discussions in real-world clinical settings with children/young people. There has been limited research investigating children/young peoples' own experiences and perspectives of this.

Aims

The aim of the current study was to investigate children and young peoples' experiences of and perspectives on communicating about pain with healthcare professionals in paediatric rheumatology.

Methods

Twenty-six children/young people were recruited from three UK paediatric rheumatology centres. Data were collected using semi-structured telephone interviews between April-October, 2021. A framework analysis approach explored similarities and divergences in children and young peoples' narrative accounts.

Results

The mean age of children/young people was 14.0 years (SD=3.6 years, Range= 6-18 years, 58% female). Diagnoses included; Juvenile Idiopathic Arthritis, Chronic Regional Pain Syndrome, diffuse idiopathic chronic pain, localised idiopathic pain, hypermobility (including Ehlers Danlos Syndrome) and Raynaud's disease.

Four themes were identified.

- 1) Nature and focus of appointments. Children/young people frequently saw several professionals from the team who talked about pain. Children/young people reported that conversations about pain predominantly occurred during physical examinations with the rheumatologist or the physiotherapist.

- 2) Co-ordination of pain communication. Children/young people identified how professionals mostly started pain conversations. Children/young people described how they would start conversations about pain if they had felt that their pain experiences had been particularly bad. They explained how they were often asked to verbally rate pain rather than use a written pain assessment tool. Some children/young people talked about how professionals directed questions about their pain to parents. This was problematic as parents "can't feel" pain and sometimes children/young people "hid" pain from parents to protect them.
- 3) Reflections on pain communication. Children/young people talked about how it became easier to talk about pain with familiarity of professionals. There were expectations that pain should always be asked about as it was considered a main reason for a consultation. They discussed how these conversations gave them an opportunity to "get it off their chest" and made them feel "reassured" that professionals "cared". Being asked about pain reminded them that they were different to peers and they were concerned it could highlight "something else is wrong". Children and young people discussed how questions asked about pain were sometimes too broad to answer. Children/young people expressed their need to discuss the emotional as well as the physical effects of their pain.
- 4) Moving forward after pain communication. Children/young people discussed how professionals gave mixed messages about how to manage pain, offering advice which was difficult to put into practice (e.g. "doing too much" vs "not doing enough"). They also spoke about how they predominantly learnt how to self-manage their pain by themselves, rather than through the advice of healthcare professionals. For children and young people, it was difficult that they did not always know why they were experiencing pain and healthcare professionals were also sometimes unable to explain this. This created management uncertainty for many children and young people.

Conclusions

These study findings highlight a range of effective and ineffective pain communication approaches from the experiences and perspectives of children/young people. These will be used to create recommendations for improving the communication of chronic pain in paediatric rheumatology in the future, in a way that is acceptable and valuable to children/young people.

PP069

"THEY NEED TO GET USED TO IT...": IDENTIFYING PATTERNS IN COMMUNICATION ABOUT CHILDREN AND YOUNG PEOPLE WITH PAIN BY HEALTHCARE PROFESSIONALS

Category: Paediatric

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Background

Multi-disciplinary teams (MDTs) are common in paediatric rheumatology where UK standards of care state that all children/young people should have access to a paediatric rheumatologist, nurse, physiotherapist, occupational therapist and a psychologist. MDTs in paediatric rheumatology regularly meet for the broader purpose of discussing the assessment of and future management plans for children/young people with a range of complex conditions in which chronic pain often features. The structure and/or content of these discussions has not been previously investigated. Little is known about healthcare professional to healthcare professional communication and how this may influence the care of children/young people with chronic pain.

Aims

The aim of the current study was to investigate the patterns in communication about children and young people with pain by healthcare professionals in paediatric rheumatology MDTs.

Methods

This study was a non-participant ethnographic observation of virtual and face-to-face MDT meetings in three paediatric rheumatology centres in the UK. A structured observation checklist was used to capture and organise field notes which were analysed using an inductive thematic approach amongst research team members. The interpretation of field notes was also guided by discussions with healthcare professionals from each of the teams participating.

Results

Forty-two healthcare professionals from across the three teams participated. Ten meetings from each team (n=30) were observed, with meetings ranging from 1-2 hours. Analysis was organised into three core inter-related elements of how children and young people with pain were communicated about by healthcare professionals;

- 1) Describing the child/young person with pain and their parents: Healthcare professionals' perceptions about personality characteristics (e.g. "He is mature", "She is sensitive") were frequently used to introduce a child/young person with pain to the team. A

child/young person description was always accompanied by a description of parents and perceptions about their behaviour (e.g. "Dad is very disengaged", "Mum can shout").

- 2) Interpreting the pain of the child/young person: A core component of interpretations was professional's familiarity with the child/young person and parents (e.g., "I haven't got a handle on them yet"). Professionals' interpretations of the child/young person's pain were also often described as being influenced by 'gut feelings' or 'vibes' from the child/young person and their parents (e.g., "I get the feeling there is something else going on").
- 3) Managing the child/young person with pain and their parents: Healthcare professionals discussed the need for acceptance of pain and treatment from children/young people and their parents (e.g., "She wasn't buying into that"; "He needs to get used to it", "Mum has taken this on board"). Setting boundaries for children/young people and parents for accessing the team also featured in discussions (e.g., "I had to set expectations for mum because it was getting too much", "We need to re-assure them but not always be available").

Conclusions

Findings suggest that healthcare professionals in paediatric rheumatology describe, interpret and manage the child/young person presenting with pain, alongside the broader psychosocial (rarely the biological) context of that child/young person including their parents. This study highlights a range of healthcare professional approaches and processes to discussing children/young people with pain at paediatric rheumatology MDT meetings. These findings will inform the content and methods of a behaviour change intervention to improve pain communication in consultations with children/young people, parents and amongst the paediatric rheumatology team of healthcare professionals in the UK.

PP070

OUTCOMES YOUNG PEOPLE CONSIDER IMPORTANT TO MEASURE DURING THEIR CHRONIC PAIN TREATMENT

Category: Paediatric

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Background

Treatment outcomes measured in children's services must reflect the priorities of young people. Despite global and national policies stating all young people should be given the opportunity to be heard and their views considered, it is currently unknown which outcomes are important to young people during treatment for chronic pain and whether these change over time. What is consistently advocated is the need for a multidisciplinary approach that focuses on function, despite the presence of pain. Although services aim to create this shift in focus from pain to function, it is currently unknown whether these are the most important outcomes for young people.

Aims

This study sought the opinions of young people undergoing multi-disciplinary treatment for chronic pain and aimed to establish: 1) which outcomes young people identify as important and why; and 2) if their outcome preferences change during the care episode.

Methods

Ethics approval was granted by the National Health Service Research Ethics Committee (Ref: 18/SC/0138). The target population was young people aged 11-18-years, receiving treatment for chronic musculoskeletal pain in two secondary and tertiary services in England. Purposive sampling was used to recruit participants with a range of ages, treatment stages and settings. They took part in one semi-structured interview during which they completed a timeline drawing symbolising their treatment journey from start to finish. Important positive and negative changes (outcomes) were highlighted and discussed in depth. Some of the timelines went into the future. Young people were offered a choice of communication method (face-to-face, telephone, video call or instant messenger) and where possible, were given the opportunity to talk without parental influence. Timeline drawings and the interview transcripts were analysed using thematic analysis.

Results

Twenty-one young people (3 males and 18 females) aged between 11 and 18 (average age 14-years) participated in the study. Nine were recruited from an outpatient physiotherapy (n=8) or psychology (n=1) service and represented those early in the hospital care pathway. Twelve young people were recruited from a tertiary multidisciplinary service, five of whom required inpatient intensive rehabilitation. Treatment duration ranged from 2-78-months and was delivered across 12 different hospitals. The most-frequently reported diagnosis was complex regional pain syndrome (n=7).

Four themes emerged at different stages of treatment: "perfect storm", "turning points", "disconnect" and "free". The "perfect storm" occurred at the beginning of treatment and the pain was the focus - the cause and the impact on the young person's life. Being "free" was described at the end of treatment, social functioning ("going out") became the focus and young people described doing what they liked, when they liked, and with whom they wanted. It was during treatment that change occurred, and the focus moved to emotional functioning with "turning points" reflecting key shifts in the young person's beliefs, control and mindset: these could connect or "disconnect" them from their ideal end-point. These shifts were influenced by relationships, the environment and pivotal moments and appeared central to the young person's recovery.

Conclusions

This study is important because it portrays varied experiences of young people undergoing treatment for chronic pain within existing care-pathways across hospital services. It demonstrates that the treatment journey is dynamic and complex, that outcomes are interconnected and change over time, and recovery is possible. Furthermore, health professionals and parents have a key role in facilitating positive relationships, expanding a young person's environment and acknowledging pivotal moments. Ultimately however, the decision to change is intrinsic, coming from the young person, when they feel in control of their situation and believe they can recover. The perceived stage of treatment mattered and influenced the outcomes young people prioritised.

PP071

SELF-COMPASSION IN ADOLESCENTS WITH CHRONIC PAIN

Category: Paediatric

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Background

Greater self-compassion has been shown to be associated with higher functioning and lower levels of mood disturbance in adults with chronic pain. It remains to be seen whether self-compassion is more independently powerful than other established psychological predictors, and there are relatively few studies. However, it is clearly a variable of interest. Self-compassion has never been explored in a population of adolescents with chronic pain. Other psychological variables, such as pain acceptance, have been successfully translated into this age range and have proved powerful.

Aims

We aimed to see if self-compassion could be reliably measured in adolescents with chronic pain. We then looked to establish whether self-compassion was related to clinically important outcomes such as functioning and distress.

Methods

This was a cross-sectional survey of 99 adolescents with chronic pain who were attending a UK National specialist service. The mean age was 15.7 years, with 82% female and a median pain duration of 3.7 years. 45% had primary widespread pain, 29% CRPS, 15% back pain, and 11% other diagnoses (e.g. primary abdominal pain). All gave written, informed consent for the use of their data, or equivalent parental consent. This consecutive, pre-treatment sample completed the short form of the Self-Compassion Scale (SCS-SF), as well as a battery of other self-report measures looking at distress and functioning. These included the seven subscales of the Bath Adolescent Pain Questionnaire (BAPQ), as well as the PedsQL as a measure of paediatric quality of life. Measures of mindfulness and pain acceptance were also completed, to look at the association between self-compassion and other important psychological variables.

Results

The SCS-SF showed acceptable internal consistency (Cronbach's alpha =.76). It correlated significantly with two measures of low mood, the Moods and Feelings Questionnaire MFQ ($r=-.40$, $p<.001$), and the depression subscale from the BAPQ ($r=-.27$, $p<.01$). However, there was no association with measures of physical functioning (BAPQ Physical functioning and PedsQL physical both $p>.05$) and equivocal correlations with measures of psychosocial functioning (BAPQ Social functioning $p>.05$, PedsQL Psychosocial $r=.27$ $p<.01$, in a scale containing low mood items). Self-compassion was not strongly related to indices of the young person in relationship with their pain, being weakly associated with pain acceptance ($r=.22$ $p<.05$) and not significantly correlated with pain related fear ($p>.05$). In contrast, it was positively correlated with adolescent mindfulness ($r=.37$, $p<.001$).

Conclusions

Self-compassion may be a predictor of low mood in adolescents with chronic pain. However, in contrast to the adult literature, it does not show broader correlations with measures of functioning, or with indices of a young person's relationship to their pain sensations. In the adolescent population, self-compassion may be more specifically related to mood and psychological variables, rather than variables related to functioning and pain coping.

Primary Care

PP072

STAKEHOLDER INVOLVEMENT IN THE DEVELOPMENT OF A NEW PROACTIVE CLINICAL REVIEW OF PATIENTS PRESCRIBED OPIOID MEDICINES LONG-TERM FOR PERSISTENT PAIN

Category: Primary Care

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Background

There is a scarcity of evidence supporting interventions to reduce long-term opioids in patients with persistent pain and there is a need for new interventions focussing on this matter, especially in primary care where most patients with persistent pain are managed. When developing new health care interventions, the use of robust methodology helps to give interventions the best chance of being effective, implemented, acceptable to patients and professionals. Stakeholder involvement is a recommended key action for intervention developers but it is often under-reported.

Aims

We provide a worked example of how we involved stakeholders to develop a new proactive clinical review of patients taking opioid medicines long-term for persistent pain, led by practice pharmacists

working in primary care teams (called the PROMPPT intervention). The aim of PROMPPT is to reduce opioid use, where appropriate and to support patients to live well with persistent pain.

Methods

We established 3 stakeholder groups specifically a Patient Advisory Group, a Pharmacist Advisory Group and a mixed Stakeholder Group. Stakeholders each had an interest in persistent pain, opioids, delivering primary healthcare, and/or promoting behaviour change.

The Patient Advisory Group met on 3 occasions ahead of the grant application. Then, following the award of the grant, the Patient, Pharmacy and mixed Stakeholder groups met for 8 workshops over a 12-month period, with additional asynchronous meetings held as and when needed. Ahead of the grant application, the Patient Advisory Group helped define research questions and help plan the research design, which included planning engagement activities with stakeholders. During intervention development they co-designed the qualitative research blog and intervention written resources, such as patient information about persistent pain and reducing opioids and advised on intervention components.

The Pharmacy Advisory Group discussed current approaches to tapering opioids used in practice, what resources would support tapering plans and pharmacists' training needs.

The mixed Stakeholder Group met to help co-design the intervention with a view to optimising acceptability and feasibility of the intervention and future implementation. The mixed Stakeholder Group discussed current primary care for patients using opioids for persistent pain, evidence around opioid tapering and pain management, from qualitative studies. Debrief sessions were held for patient and pharmacist representatives who attended the mixed Stakeholder workshops to help make sense of the discussions and key points were fed back to the Patient and Pharmacy Advisory Groups.

Results

Ahead of the grant application, the Patient Advisory Group felt regular pharmacist review for patients taking opioids was an important research topic, reviews did not happen routinely and could provide accessible and longer appointments. During intervention development, they recommended follow-up strategies, using real-life stories from patients who had made changes, improving diversity of avatars used in the blog and improved signposting to the blog in the recruitment strategy.

The Pharmacy Advisory Group identified important components for the review as: assessing if patients are ready to change opioids; set back planning, assessing impact of making changes to pain medication. Pharmacists identified communication skills were important to training, as was learning from worked examples and case studies and having support from a clinical champion. The mixed Stakeholder Group highlighted the importance of using a flexible, patient-centred approach focussed on shared decisions and involvement from the wider GP practice

Conclusions

Iterative involvement of stakeholders with a shared interest in optimisation of care for patients prescribed opioid medicines long-term for persistent pain generated ideas and facilitated problem solving during the development and refinement of the new practice

pharmacist-led PROMPT review, which will be tested in a large cluster randomised controlled trial starting during 2022.

Psychology

PP074

A QUALITATIVE STUDY WITH ORTHOPAEDIC PRACTITIONERS ON PSYCHOSOCIAL FACTORS AND SURGICAL OUTCOMES

Category: Psychology

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Background

Pain catastrophizing and psychological distress moderate surgical outcomes and psychological interventions are recommended to optimise post-operative results. Orthopaedic surgeons value the role of psychological factors however, despite evidence arising to the modifiable risk factors that impact on patients' outcomes, they often refrain from making referrals for treatment and orthopaedic surgery is framed within a biomedical model. Barriers towards the management of psychosocial factors include having a lack of time, stigma, feeling uncomfortable, professional confidence, fear of offending patients and of negative patient reactions. Willingness to discuss psychosocial issues with patients is due to the lack of resources available for patients.

Patients should be supported both physically and emotionally during the perioperative period and surgeons need to be aware of the emotional health of the patient and how this influences their physical recovery after surgery. There is little evidence to understand orthopaedic surgeons' experiences of providing care, their thoughts on the best ways to manage and support patients who present with psychosocial factors and who may be at risk of sub-optimal recovery. By understanding orthopaedic practitioners' views on providing care, this may offer an opportunity to implement changes within the surgical care pathway and provide overall better-quality care.

Aims

It was therefore invaluable to understand surgeons' views on how best to support patients who may be at risk of suboptimal recovery and the development of persistent pain, and their attitudes towards the use of interventions in practice.

Methods

Eleven surgeons and three registrar orthopaedic practitioners took part in semi-structured interviews within a secondary care hospital setting. The surgical decision-making process, views of catastrophizing and

psychological distress and the use of psychological interventions in surgical practice were explored.

Results

Thematic analysis identified five themes: pain expressions and pain behaviours affect the surgeons decision-making process; when pathologies and symptoms do not match; psychological factors pertaining to unsatisfactory outcomes; a service gap in surgical care and the acceptability of using a screening tool in surgical practice to identify patients at risk of suboptimal recovery.

Conclusions

Orthopaedic practitioners face challenges in identifying who is likely to reach optimal versus sub-optimal outcome. Surgeons are becoming increasingly aware that the etiology of pain is multifactorial, and a variety of factors may explain the unpredictability of post-operative outcomes. The surgeons support the use of psychological interventions to optimise post-operative results or stop unnecessary treatments and they accept the use of a screening tool in surgical practice. A screening tool may provide great utility for identifying at risk patients, to allow for modification of surgical patients care plans to reduce the likelihood of developing persistent post-operative pain. To aid this process, input is needed from allied health professionals.

PP075

PATIENTS' EXPERIENCES OF THEIR POSTOPERATIVE OUTCOMES FOLLOWING FOREFOOT SURGERY

Category: Psychology

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Background

Hallux valgus and hallux rigidus are two common forefoot conditions causing deformity, pain, functional limitations, disability and deteriorating health status resulting in the requirement for surgery. Even when surgery is performed by an experienced surgeon there remains a potential for patients to experience dissatisfaction and unfavourable outcomes. The emotional health of the patient and behavioural consequences of pain influence the development of persistent problems and effect treatment outcomes. For example, increasing the risk of developing chronic post-surgical pain, prolonged disability, impaired quality of life and functional impairment. Disabling foot pain is likely to be multifactorial in origin, however there is a paucity of qualitative research providing insight into how patients perceive their outcomes and the factors affecting their recovery. The associated burden is therefore unknown.

Aims

The study aimed to qualitatively explore patients' experiences of their surgical outcomes following forefoot surgery and factors associated with their recovery.

Methods

This qualitative study was part of an observational study to assess whether pain catastrophizing influences post-operative outcomes following forefoot surgery. Ethical approval was granted by NRES Committee South Central and Oxford and local R&D approvals prior to data collection in a National Health Service (NHS) orthopaedic outpatients department. Semi-structured interviews with fifteen patients who received surgery for hallux valgus and/or hallux rigidus were conducted. Data were analysed using thematic analysis.

Results

Thematic analysis generated five themes; physical limitations, the psychosocial impact of surgical recovery, regaining normality, patients' expectations for physical recovery and an altered body-image. Physical and psychosocial factors were inter-related. Patients experiencing problematic outcomes were functionally limited, had low mood and were unable to return to a normal life post-surgery. Patients reported weight related issues and were limited in their footwear and clothing choices; this negatively impacted on their self-esteem.

Conclusions

A forefoot condition is multifaceted and patients need to be supported holistically. Patients experience a range of physical and psychological factors that may influence their outcomes and recovery from surgery. Poor management of persistent post-operative pain and psychosocial factors place the patient at risk of developing and maintaining chronic pain. Psychosocial factors are potentially modifiable and targeted interventions could be used in the surgical care pathway to optimise patients' outcomes. The National Institute for Health and Care Excellence recommend the use of preoperative rehabilitation to better prepare patients physically and psychologically for surgery to optimise their outcomes and recovery. However, there remains a treatment gap in referring patients for psychological support in the surgical care pathway. To aid this, a multidisciplinary approach to care and treatment with the inclusion of allied health professionals will enable to better support patients.

PP076

TO CHOOSE PAIN: NATURAL BIRTH AS A VITAL CASE OF BENIGN MASOCHISM

Category: Psychology

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Background

Benign masochism is the phenomenon of intentionally choosing pain to allow for pleasure, during or immediately after it. Studies point to a variety of modern benign masochism experiences. It appears that there is something natural to humans in certain degrees of masochistic acts that spice up life and give it meaning.

Aims

This article points out a phenomenon that has eluded the literary discussion on benign masochism: physiological birth. During an uninterrupted physiological birth, women enter a particular state of consciousness – birthing consciousness – which is similar in many ways to other states of consciousness of benign masochism.

Methods

This is theoretical research. I use a phenomenological perspective to review and analyze qualitative studies that describe the psychophysical characteristics of pain during physiological birth and pain during other kinds of intentional pains, such as received pain during benign masochism acts.

Results

My analysis reveals that today, due to modern obstetric pharmacological pain relief (epidural) and the lack of awareness in Western culture of the benefits of physiological birth (of medical healthcare professionals and of birthing women) – the possibility of choosing and experiencing physiological natural birth is de facto nonexistent for many women.

Conclusions

I argue that the phenomenon of birthing consciousness represents a unique, critical, and forgotten case of benign masochism: the ancient practice of giving birth in pain and pleasure. The choice of modern women to have natural uninterrupted physiological births may also represent, in a sense, intentional pain aimed at producing a positive and life-changing experience, as well as beneficial in crucial physiological terms (promoting physiological childbirth and rapid recovery from delivery). Unfortunately, obstetrics has failed to recognize the phenomenon and its physiological and psychological benefits. Because of this failure – modern obstetrics practices in many parts of the western world undermine the ability of women to have a physiological birth without intervention.

PP077

ARE PAIN MANAGEMENT PROGRAMMES EFFECTIVE WHEN DELIVERED REMOTELY?

Category: Psychology

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Background

The response to the covid-19 pandemic created innovation in how we deliver the intensive three-week Pain Management Programme (PMP) at Addenbrooke's hospital. The live digital version of the PMP was launched with patients taking part in group interventions via video call. PMP's are widely offered by NHS services and have traditionally been delivered in clinical settings. The PMP at this service is a multidisciplinary approach based on cognitive behavioural therapy. The patients' self-report outcome measures are used to assess physical functioning, psychological well-being and adjustment in relation to their individualized goals. Patients take part in group reviews at one month, six months and one year.

Following the outbreak of covid-19, services in the NHS have rapidly transitioned to deliver remotely. There is a need at this early stage, to test and evaluate the potential effectiveness of virtual PMP's and to compare the use of different media for delivery of healthcare.

Aims

The main aim of this study was to compare the efficacy of remotely delivered PMPs and Back Pain Programmes (BPPs) with those delivered face-to-face in a clinical setting.

Methods

This study used an independent measures design. 107 participants were recruited from the PMP and BPP at the Pain Clinic at Addenbrooke's Hospital, Cambridge. They completed the programmes between January 2019 and October 2021. The sample was comprised of 41 patients completing virtual programmes and 66 patients completing face to face programmes. The measures, which are administered routinely on the programmes, were as follows: sit to stand, Canadian Occupational Performance Measure (COPM; performance and satisfaction), Roland-Morris Disability Questionnaire (RM), Hospital Anxiety and Depression Scale (HADS; depression and anxiety), Pain Catastrophizing Scale (PCS; rumination, magnification and helplessness), Pain Self-Efficacy Questionnaire (PSE), and the Tampa Scale of Kinesiophobia (TSK). The measures were collected for the first day of the programme, the last day, and at 1-month follow-up. The clients' scores on the outcome measures were compared across programmes.

Results

The majority, 81 (75.70%) of the participants were women. The mean age of those participating was 50.75 years. There were no significant differences in gender or age of participants' across the programmes. Thirty-three independent sample t-tests were conducted and showed that there were no significant differences between the groups on any measure at any time point ($p > 0.05$). Twenty-two one-way repeated ANOVAs were conducted showing that participants in both the video call group and face to face group significantly improved across time in all outcome measures ($p < 0.05$), other than a non-significant improvement seen on the Roland-Morris Disability Questionnaire for participants in the remote-delivery group.

Conclusions

These results suggest that the participants in the remote delivery group and face to face group were similar at the outset of the programme, that neither programme was more effective, and that programmes led to improvements in client outcomes. These results add to the clinical evidence base and address gaps in the literature comparing PMP delivery methods. The findings suggest that the rapid adaptation of our team, to the novel use of live digital delivery in the wake of covid-19, may prove to offer viable new options for our patients to access pain management programmes.

PP078

REFRAMING PAIN AS A POSITIVE SIGNAL: A RANDOMIZED CONTROLLED TRIAL AND NOVEL INTERVENTION APPROACH

Category: Psychology

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Background

Pain is an almost-ubiquitous experience across medical care. Following injury or surgery, pain causes distress and concern of delayed healing, hampering recovery. During medical treatments, pain is a common side effect that causes worry and lowers adherence. The status quo for behavioral analgesia in medical settings is to provide information and tools to manage and cope with pain. A novel approach provides an alternative solution: truthfully describe non-severe pain as a sign that the treatment is active and working, and that the body's self-healing systems are engaged for recovery.

Aims

Here we describe a randomized controlled trial of a novel intervention approach that reframes pain as a positive signal of treatment efficacy.

Methods

528 adults receiving the covid-19 vaccination were randomized to receive no intervention or a symptom as positive signals mindset intervention in which they were shown a short (3:43 minutes) video that explains how the body responds to vaccinations and how minor side effects such as aches and pains are signs that the vaccination is working.

Results

Participants receiving the mindset intervention reported fewer symptoms such as pain at the injection site immediately following the vaccine ($F = 7.49$, $p = .006$) and were significantly less worried about those symptoms three days later ($F = 6.69$, $p = .01$). They also reported that they would be more likely to get vaccinated against viruses like COVID-19 in the future ($F = 6.55$, $p = .01$). No significant group differences were found for side effect frequency at day 3 or coping behaviors.

Conclusions

Watching a brief (< 4 minute) video explaining how vaccines work and how the experience of symptoms such as pain can be positive signals of treatment efficacy led to improved symptom experience and increased intentions to vaccinate in the future. This novel approach could also be helpful for injury and surgery, for example by reframing non-severe pain as a positive signal that the body's self-healing immune system and protective pain system are switched on and engaged to promote healing and recovery.

PP080

PAIN IS COMMONLY EXPERIENCED AND ASSOCIATED TO LOW MOOD AND ANXIETY IN PEOPLE WITH LONG COVID

Category: Psychology

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Background

Long Covid has affected over 1 million people in the UK. People living with the condition experience a range of symptoms, including

pain and fatigue. Understandably, many people also experience low mood and anxiety, in part in relation to the impact of the symptoms of Long Covid on their lives. Long Covid clinics in the UK have a range of rehabilitation models. In order to design appropriate rehabilitation interventions and psychological support services, it is important to understand the extent to which pain is commonly experienced and how it is linked to other symptoms, including low mood and anxiety.

Aims

To examine the associations between pain and low mood, and anxiety, using clinical data from people with Long Covid.

Methods

Clinical data routinely collected from referrals to a specialist Long Covid clinic were analysed. All patients referred to the clinic were sent questionnaires, including the COVID-19 Yorkshire Rehabilitation Screening Tool (C19-YRS) that asks patients to rate their symptoms “now”, with Long Covid and previous to becoming unwell with COVID-19. Symptoms include fatigue, breathlessness, difficulties with completing activities of daily living, cognitive problems, communication difficulties, ongoing cough, change in appetite, and incontinence. Mood was rated using the “Patient Health Questionnaire” (PHQ-9) for depression and the “Generalised Anxiety Disorder Assessment” (GAD-7) for anxiety. Scores above 10 indicate probable levels of clinical depression or anxiety. Psychometric properties of GAD-7 and PHQ-9 were explored prior to further analysis, using confirmatory factor analysis, correlations to test construct hypotheses, and calculation of internal consistency. Descriptive analysis of symptom reporting was conducted. The association between pain and depression and anxiety was tested using Odds Ratios. Stepwise multiple regression was used to further explore the relative variance explained in mood measures by physical symptoms of Long Covid, including pain.

Results

The PHQ-9 and GAD-7 were found to be psychometrically sound for use with people with Long Covid. Pain now was rated at least 7/10 (“high pain”) by 189 out of 516 of the sample (36.6%). The odds for people with high pain reaching the threshold indicating probable clinical levels of depression (OR=3.1, 95%CI 2.12-4.62) and anxiety (OR=3.6, 95% CI 2.10-6.18) are significantly higher than for those with low pain. The most commonly endorsed symptoms were fatigue, disrupted activities of daily living, breathlessness on walking and pain. Multiple regression analysis was conducted, including pre-COVID and “now” (with Long Covid) ratings of these common symptoms. Depression scores were predicted by fatigue “now” ($\beta=0.243, p<0.001$), pain “now” ($\beta=0.174, p<0.001$), breathlessness on walking “now” ($\beta=0.134, p<0.01$), disrupted activities of daily living ($\beta=0.123, p<0.01$), and fatigue pre-COVID ($\beta=0.078, p<0.05$); together explaining 27% of the variance in depression scores ($F(4,497)=36.369, p<0.001$). Anxiety scores were predicted only by pain “now” ($\beta=0.231, p<0.001$), breathlessness on walking “now” ($\beta=0.170, p<0.001$), and fatigue levels pre-COVID ($\beta=0.131, p<0.05$); together explaining 12% of the variance in anxiety scores ($F(3,499)=22.8, p<0.001$).

Conclusions

Given that pain is commonly experienced by people with Long Covid and is associated to greater chance of probable clinical levels of depression and anxiety, it is imperative that Long Covid services include a rehabilitation offer or pathway that offers evidence-based support for pain, including psychological support.

PP081

PLACEBO ANALGESIA: SINGLE- AND DOUBLE-BLINDED ADMINISTRATION OF INFORMATION ABOUT EFFECTS OF DENTAL TREATMENT

Category: Psychology

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Background

Placebo analgesia is a reduction in pain due to the mere expectation that a treatment will reduce that pain. The expectations can be induced by information to the patient that effective treatment has been administered.

Aims

The present study investigated whether single- or double-blinded administration of information about treatment had any effect on pain and placebo analgesic effects.

Methods

A multi-experiment study including a meta-analysis. First a meta-analysis was conducted to see potential differences in the magnitude of placebo effect between single-blinded and double-blinded studies. Then, two experiments, the first single-blinded and the second double-blinded, were conducted on dental patients to test the findings from the meta-analysis. In experiment one forty-four and in experiment two fifty-two dental patients were randomized to two groups of ‘standard information’ and ‘extended information’. The Standard Information group received information normally provided by the dentist. The Extended Information group received information designed to increase expectation about treatment effects and reduce stress. However, in experiment one, dentists were made aware of the true nature of the anaesthesia, whereas in experiment two both dentists and patients were unaware of the true nature of the anaesthesia.

Results

The meta-analysis did not suggest any difference in the magnitude of the placebo effect due to single- or double-blinded administration. In the single-blind experiment, pain levels during a dental procedure were reduced by about 50 % in the Extended Information group compared to the Standard Information group. Reduced stress predicted the decrease in pain. However, when the information was administered double-blind in the second experiment, pain levels were the same in both groups.

Conclusions

The information provided to the patients was the same in both experiments. Thus, similar expectations should have been induced in the patients. However, the pain modulating effect of the information was abolished when the information was given double-blinded, suggesting that when subtle cues are removed, the placebo effect can be reduced or abolished.

PP082

THE ROLE OF PAIN CATASTROPHISING IN OSTEOARTHRITIC KNEE PAIN FOLLOWING GENICULAR ARTERIAL EMBOLISATION

Category: Psychology

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Background

Patients with mild-to-moderate knee OA that is resistant to conservative treatment, but not severe enough to warrant joint replacement surgery, are a challenging group to manage. Genicular arterial Embolization (GAE) is a novel and minimally-invasive treatment for these patients, which blocks abnormal blood vessels that contribute to inflammation and sensory nerve growth within the synovium. However, a purely pathological treatment approach has limitations, and a better understanding of presurgical markers could help improve treatment outcomes. Pain catastrophising (PC) has previously been associated with poor outcomes across a variety of treatments for chronic pain. It is theorised that PC represents a cognitive-attentional bias increasing sensitivity to pain. PC has frequently been associated with the dorsolateral prefrontal cortex (dlPFC), and its role in top-down modulation of the sensory-discriminative dimensions of pain.

Aims

- 1) Evaluate the predictive value of PC for identifying patients that experience poorer outcomes of GAE at follow-up.
- 2) Investigate the neural mechanisms of PC at rest, to better understand the mechanism underlying the influence of PC on pain.

Methods

30 patients (Mage = 61.7, s.d = 11.1y) suffering from osteoarthritis of the knee participated in a novel experimental trial for GAE. Prior to embolisation, patients attended a pre-surgical session involving psychometric and sensory pain assessment. A subset of patients completed an fMRI scan (17 patients; Mage = 58.6, s.d = 9.2y), within which a 10-minute resting-state scan was completed using a Siemens MAGNETOM Prisma 3T. Analysis was completed using the FSL6.0, and the Harvard-Oxford structural atlas was used to create a dlPFC seed for use in connectivity analysis.

Patients completed the Knee Injury & Osteoarthritis Score (KOOS) at 6-weeks, 3-months and 1-year. Difference values were calculated between baseline and follow-up scores, to allow for variation in severity of condition, and were retained as dependent variables for clinical outcome. The subscale for pain from KOOS was selected as the primary outcome variable.

Results

At baseline, higher scores on the Pain Catastrophising Scale were associated with higher self-reported pain ($r(30) = -.45, p < .05$), attention-to-pain ($r(30) = .53, p < .005$), depressive symptoms ($r(29) = .41, p < .05$), anxiety symptoms ($r(29) = .53, p < .005$) and worse sleep quality ($r(29) = .40, p < .05$).

Counter-intuitively, patients with higher PCS scores had improved clinical pain outcomes post-surgically at 6-weeks ($r(29) = .42, p < .05$), 3-months ($r(30) = .61, p < .001$) and 1-year ($r(27) = .42, p < .05$).

When evaluating neural mechanisms, PC was associated with increased connectivity between the dlPFC and two clusters; 1) the premotor and rostral anterior cingulate cortices and 2) the motor and somatosensory cortices.

Connectivity between the dlPFC and cluster 1 was correlated with higher attention to pain ($r(16) = .51, p < .05$) and the PCS-subscale magnification ($r(16) = .58, p < .05$). Whereas, connectivity with cluster 2 was correlated with the PCS-subscale rumination ($r(16) = .54, p < .05$) and helplessness ($r(16) = .57, p < .05$).

Conclusions

In mild to moderate knee OA, PC is associated with higher pain and poor psychological function at baseline. However, post-surgically, data suggest these patients experience the greater clinical improvements. PC was found to be associated with higher connectivity between the dlPFC and regions of the brain associated with sensory-discriminative processing of pain. This is in line with previous literature, and suggests that the attentional focus of PC leads to heightened requirements for top-down pain modulation, over more saliently present nociceptive signals.

OA can severely impact patient's lifestyles and well-being. Patients with mild-to-moderate OA, such as in this sample, have attempted conservative treatment, and experienced little-to-no benefit. Therefore, at baseline, patients may agree with PCS items such as "it's terrible, and I think it's never going to get better" or "I anxiously want the pain to go away". The aversive influence of pain may be accurately assessed and quantified as high pain catastrophising. GAE successfully reduced pain from baseline to 3-months ($t(29) = -3.9, p < .001$) and 1-year ($t(26) = -2.6, p < .05$), and therefore, these PC judgements may be moderated. Patients with anxiety to untreatable pain at baseline may experience bifold reductions in pain and catastrophising, potentially explaining the greater improvements post-surgically.

Reviews

PP083

EFFECTS OF DIFFERENT PHYSICAL THERAPY TECHNIQUES ON THE IMPROVEMENT OF SLEEP QUALITY IN PATIENTS WITH CHRONIC PAIN

Category: Reviews

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Background

Insomnia is often considered a consequence of chronic pain. However, it has been shown that both sleep disturbances and chronic pain may have a bidirectional relationship.

Aims

The aim of this systematic review was to assess effects of different physical therapy techniques on the improvement of sleep quality in patients with chronic pain.

Methods

We searched the PubMed, EMBASE, WOS, Cochrane and Google Scholar databases to conduct this systematic review while following Preferred Reporting Items for Systematic Reviews and Meta-Analyses standards. The search was performed by two independent reviewers, and differences between the two reviewers were resolved by consensus. The last search was performed on December 2020. A total of 13 trials were selected and GRADE was used to rate the quality, certainty and applicability of the evidence.

Results

A total of 13 trials were included, according to inclusion criteria. There was a high risk of bias across mostly of the studies. Modest improvements were found with exercise intervention, but not clinically important. Usual Physical Therapy alone does not seem to be effective on improving sleep quality in people with chronic pain.

Conclusions

The different Physical Therapy techniques do not seem to have a big impact in sleep quality in people with chronic pain, due to a limited number of studies and the disparity and poor quality of them, future research with higher methodological quality is needed.

PP084

LIPOSOMAL BUPIVACAINE DECREASES POST-OPERATIVE OPIOID USE IN ACLR'S

Category: Reviews

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Background

Anterior Cruciate Ligament tears are common after a non-contact injury and several thousand reconstructions (ACLR) occur yearly in

the United States. Multimodal pain management has evolved greatly to include nerve block choice to reduce physical therapy losses post-operatively, pericapsular and wound injections, and other adjunctive measures. However, there is a surprisingly high use of opioid use after ACLR.

Aims

The purpose of this study is to determine the role that liposomal bupivacaine may play in reducing post-operative opioid use in ACLR patients.

Methods

The literature search was performed in Mendeley. Search fields were varied until redundant. All articles were screened by title and abstract and a preliminary decision to include an article was made. A full-text screening was performed on the selected articles. Any question regarding the inclusion of an article was discussed by 3 authors until an agreement was reached.

Results

Eighteen articles summarized the literature around the opioid epidemic in ACL surgery and the current context of multimodal pain strategies in ACLR. Five primary articles directly studied the use of liposomal bupivacaine as compared to reasonable control options. Orthopedic surgeons remain to be some of the large prescribers of narcotic medication in the United States. Patient and prescriber education are effective methods at decreasing opioid prescriptions. A large number of opioid pills prescribed for ACLR are not used for the correct purpose. Several risk factors have been identified for opioid overuse in ACLR: American Society of Anesthesiologists score, concurrent meniscal/cartilage injury, preoperative opioid use, age < 50, COPD, and substance abuse disorder. Liposomal bupivacaine is effective in decreasing post-operative opioid use and reducing post-operative pain scores as compared to traditional bupivacaine. LB may also be effective as a nerve block, though the data on this is promising yet limited. LB is associated with significantly greater costs than traditional bupivacaine.

Conclusions

The role for opioid medications in ACLR may continue to decrease over time. Liposomal bupivacaine is a strong tool in the surgeons tool house that can reduce post-operative narcotic use in ACLR.

PP085

LIPOSOMAL BUPIVACAINE IN HIGH VOLUME LOCAL INFILTRATION ANALGESIA IN TOTAL HIP ARTHROPLASTY

Category: Reviews

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Background

Liposomal bupivacaine has been integrated into the practice of many surgical disciplines in an effort to reduce post-operative pain. This

includes many subdisciplines of orthopedic surgery. Total hip arthroplasty has opioid use post-operatively as compared to other orthopedic disciplines.

Aims

The purpose of study is to identify the role that liposomal bupivacaine may play in total hip arthroplasty and determine if a reduction in opioid use is possible.

Methods

The literature search was performed in Mendeley. Search fields were varied until redundant. All articles were screened by title and abstract and a preliminary decision to include an article was made. A full-text screening was performed on the selected articles. Any question regarding the inclusion of an article was discussed by 3 authors until an agreement was reached.

Results

A total of 21 articles were included for qualitative description of the opioid epidemic, opioid overuse in total hip arthroplasty, and risk factors for opioid over use in total hip arthroplasty. A total of 9 articles were included regarding the use of liposomal bupivacaine in total hip arthroplasty. Several risk factors have been identified for opioid overuse after total hip arthroplasty. These include a younger age, an opioid risk too score of > 7, a higher body mass index, chronic obstructive pulmonary disease, immunodeficiency syndromes, preexisting pain syndromes, peripheral vascular disease, anxiety and mood disorders, and substance abuse disorders. Liposomal bupivacaine reduces post-operative opioid use, patient-reported outcomes, length of stay, time to ambulation, yet is more expensive than traditional bupivacaine.

Conclusions

Liposomal bupivacaine represents a useful adjunct to the multimodal pain strategies in total hip arthroplasty with sufficient evidence to suggest that it may be useful in decreasing post-operative opioid use. The high costs of LB represent a barrier to institutional acceptance of LB into standardized multimodal pain strategies. Further efforts should be aimed towards better understanding the current state of integration of LB into academic and private practice settings, industry movements to decrease the cost, and the role other adjunctive measures may have in reducing post-operative opioid use.

Service Management

PP086

THE IMPACT OF VIRTUAL CLINICS ON CLINICIANS DURING THE COVID-19 PANDEMIC

Category: Service Management

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Background

The Covid-19 pandemic forced a change in the way that our clinicians 'see' outpatients. Prior to March 2020, only the pain

nursing team did telephone clinics. The need to avoid face-to-face contact during the pandemic prompted the introduction of remote working 'Virtual Clinics', which have included both telephone and video calls made to patients that would previously have been seen in face-to-face appointments. Whilst much has been made of the impact of these virtual clinics on patients, the effect of the change on clinicians has been less discussed.

Aims

To better understand what impact the change in consulting may have had on clinicians. This includes identifying any positive changes that could be integrated in the future, and negative changes and how these can be resolved.

Methods

An anonymous online questionnaire was distributed to members of the pain multidisciplinary team, including chronic pain consultants, nurses, psychologists and physiotherapists. It was also sent to members of specialities that see a similar cohort of patients, such as rheumatology and spinal/orthopaedics. The questionnaire presented in Microsoft Forms comprised of 33 questions, with a combination of dropdown options and free text boxes.

Results

A total of 15 responses were received (56% response rate), with an even representation from each of the groups of clinicians invited to take the survey. Prior to the Covid-19 pandemic, only 27% (4 out of 15) of clinicians had previously used a virtual clinic, and all of these were using telephone calls. All 15 had subsequently used virtual clinics since the start of the pandemic. 73% (11 out of 15) did not receive any formal training and would have liked some in both telephone and video consultations. On average, most neither agreed nor disagreed that they were able to communicate with patients as they would like in a virtual consultation, but most strongly disagreed that they were able to physically examine patients as they would like. Overall, most felt that they were not able to deliver the same quality of care to their patients in virtual consultations as they were able to in face-to-face consultations. When asked about some of the reasons as to why this was, a prominent concern was the IT facilities. None of the clinicians felt this was currently sufficient to perform safe and effective virtual consultations. Overall, 73% (11/15) clinicians felt that face-to-face consultations were more productive for new patients, but 67% (10/15) felt that a combination of face-to-face, telephone and video consultations would be more productive for follow ups. The key to this was felt to be a greater degree of flexibility to choose which format would be most beneficial for both patient and the clinicians.

Conclusions

Virtual clinics have rapidly evolved since the start of the Covid-19 pandemic. Our survey has found some positive aspects to them, but also highlighted some clinician concerns. The benefits found included greater convenience for patients and clinicians, particularly for routine follow up appointments. They have also taken pressure off our congested outpatient spaces. Some negatives were found including the lack of training and support, the need for more reliable IT facilities, and the lack of options for face-to-face consultations when needed. Overall, a mixture of the two formats was felt to be the best way forward, but this needs to be patient and clinician led with appropriate resources and support. Further work could include more detailed focus on staff wellbeing and possible feelings of isolation when working remotely in virtual clinics.

PP087

ONLINE COMPLEX PAIN MDT MEETING: A SERVICE EVALUATION**Category:** Service Management

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Background

The multi-disciplinary team (MDT) are central to chronic pain management and at our centre we run a weekly departmental MDT meeting to discuss complex pain patients. We rely on the expertise of doctors, nurse specialists, physiotherapists and psychologists to achieve the best outcomes for patients. In the wake of the Covid-19 pandemic many departments have utilised online services to conduct meetings that were previously carried out face to face. We have also adapted our practice and moved to an online format for our weekly MDT using MS Teams.

Aims

We aim to evaluate the new online format of our MDT meeting in comparison to previous face to face meetings. We want to gauge the involvement from different disciplines within the MDT and recognise any limitations in the way we conduct our online meetings.

Methods

In March 2021 10 key questions were sent to all members of the MDT who are regularly involved in the weekly meeting. This was distributed in the form of an online survey. The survey involved a mixture of yes/no, quantitative and qualitative questions. Quantitative questions were scored from 0 (being strongly disagree) to 100 (strongly agree). Qualitative responses were left as open box answers.

Results

We had 31 responses out of the 60 people in our department (52.7%). The responders gave a mean score of 48 out of 100 in response to a question asking if the online meeting was more useful than a face to face meeting. 29 out of 31 (93.6%) of responders answered 'yes' when asked if relevant disciplines were available at the new format of the meeting and 26 out of 31 (83.9%) of responders felt that members of the different disciplines were encouraged to participate at the MDT. However, it was suggested involving more junior colleagues and less medically focused discussion could improve multi-disciplinary engagement. 20 responders stated they would feel limited in bringing a case to the MDT meeting due to fears over the reactions of colleagues or that the case they wished to discuss was 'too simple'.

Conclusions

The new online format of the meeting did not diminish its quality compared to previously held face to face meetings. There was still involvement from the whole MDT with all relevant groups being represented. In the future it was suggested that the meeting could be made more inclusive by adding a teaching element for all disciplines to learn from and more involvement and inclusion of junior colleagues. Looking forward, the online format of this meeting will encourage wider MDT involvement by allowing participation from GPs in the community and other colleagues from different trusts. Other concerns were regarding technical and documentation issues. These concerns could be addressed by involving an administration team member for these tasks. Overall the online nature of the MDT can allow wider an opportunity for reflective practice and learning opportunities for junior colleagues which can make the meeting feel more accessible to all members of the MDT. We can also further enhance the multi-disciplinary nature of the meeting by allowing wider participation from other colleagues from both within and outside our trust.

Poster Number	Title	Category	Lead Author
ORAL PRESENTATION 1	CAPTURING THE CHRONIC PAIN PATIENT EXPERIENCE USING A NOVEL DIGITAL HEALTH ECOSYSTEM	Assessment & Measurement	Simon Thomson
ORAL PRESENTATION 2	AN INVESTIGATION OF BEHAVIOURAL EXPERIMENTS ON PAIN MANAGEMENT PROGRAMMES	Psychology	Emma Louise Harrold
ORAL PRESENTATION 3	ASSOCIATION OF OPIOID OVERDOSE WITH SUBSTANCE USE OR MENTAL HEALTH DISORDERS IN PATIENTS PRESCRIBED OPIOID FOR CHRONIC PAIN: A SYSTEMATIC REVIEW	Psychology	Li Wang
ORAL PRESENTATION 4	MINDFULNESS FOR ADULTS WITH CHRONIC LOW BACK PAIN	Older People	Michelle Barrow
ORAL PRESENTATION 5	CHRONIC BACK PAIN SUB-GROUPED VIA PSYCHOSOCIAL, BRAIN AND PHYSICAL FACTORS USING MACHINE LEARNING: A UKBIOBANK STUDY OF 19,803 ADULTS	Other (Research)	Scott Tagliaferri
ORAL PRESENTATION 6	MULTIFIDUS STIMULATION IN PATIENTS WITH REFRACTORY CHRONIC LOW BACK PAIN AND FUNCTIONAL SPINE INSTABILITY – THREE-YEAR PIVOTAL TRIAL RESULTS	Interventional Pain Management	Vivek Mehta
PP003	UNDERSTANDING AND MINIMISING INJECTION-SITE PAIN FOLLOWING SUBCUTANEOUS ADMINISTRATION OF BIOLOGICS; NARRATIVE REVIEW	Acute Pain	Anja St. Clair Jones
PP005	GLUTAMATE AS A SALIVARY BIOMARKER FOR ACUTE PAIN: A STUDY IN HEALTHY VOLUNTEERS AFTER UNDERGOING THE COLD PRESSOR TASK	Acute Pain	Roxaneh Zarnegar
PP006	EFFICACY OF PRIDINOL FOR MUSCULOSKELETAL PAIN - PART 1: META-ANALYSIS OF CONTROLLED AND NON-INTERVENTIONAL CLINICAL TRIALS	Acute Pain	Michael Andreas Ueberall
PP007	EFFICACY OF PRIDINOL FOR MUSCULAR PAIN - PART 2: REAL-WORLD EVIDENCE ANALYSIS OF ROUTINE DATA FROM THE GERMAN PAIN E-REGISTRY	Acute Pain	Michael Andreas Ueberall

Poster Number	Title	Category	Lead Author
PP008	RETROSPECTIVE REVIEW OF EFFICACY OF LIDOCAINE INFUSION IN CHRONIC PAIN PATIENTS	Assessment & Measurement	Harriet Daykin
PP010	PATIENT STATES: ARTIFICIAL INTELLIGENCE-DRIVEN METRIC PROVIDING COMPREHENSIVE YET STRAIGHTFORWARD UNDERSTANDING OF CHRONIC PAIN PATIENTS	Assessment & Measurement	Magdalena Anitescu
PP011	EXPLORING THE USER PERCEIVED FEASIBILITY OF PAINCHEK® AND ABBEY PAIN SCALES IN THE UK CARE HOME SETTING	Assessment & Measurement	Ivana Babicova
PP012	MAKING PAIN ASSESSMENT INTELLIGENT: PAINCHEK'S JOURNEY FROM AUSTRALIA TO UK CLINICAL PRACTICE	Assessment & Measurement	Kreshnik Hoti
PP013	A RETROSPECTIVE ANALYSIS OF PATIENT SOCIOECONOMIC AND DEMOGRAPHIC FACTORS INFLUENCING ENGAGEMENT IN A NOVEL, DIGITAL PAIN MONITORING SYSTEM	Assessment & Measurement	Thomas Craig
PP014	PAIN AND LONG-COVID. A COLLABORATIVE PROJECT BETWEEN THE LONG-COVID HUB AND THE CHRONIC PAIN DEPARTMENT IN SHEFFIELD TEACHING HOSPITALS	Audit and Service Evaluation	Carla George Hakim
PP015	IMPROVING OPIOID STEWARDSHIP- THE ROLE OF THE SURGEON	Audit and Service Evaluation	Kesav Aditya Vijayagopal
PP016	MRI SCANS - AN AID TO SUPPORTING SELF-MANAGEMENT FOR PERSISTENT LOW BACK PAIN? AN AUDIT OF MRI PRACTICE AND OUTCOMES IN A PAIN MANAGEMENT SERVICE	Audit and Service Evaluation	Ben Lightowler
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