

1. Chronic pain related to the anatomic location of Implantable Pulse Generators (IPG)

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Introduction

Central and peripheral nervous system neuromodulation is used widely for a variety of indications. The anatomic site for placement of the IPG is variable based on physician and patient preference, convenience, or indication. To date, few studies describe the interaction between IPG implantation site and subsequent chronic pain. A better understanding of this interaction may decrease chronic IPG site pain and improve patient satisfaction.

Methods

This study was a single center, IRB approved cohort study surveyed patients who underwent IPG implantation from January 1, 2010 to December 31, 2015 at Northwestern Memorial Hospital. The IPG devices included those related to a spinal cord stimulator, deep brain stimulator, or sacral nerve stimulator. The survey assessed the following for IPG site pain: VAS pain score, pain characteristics (McGill Pain Questionnaire), pain frequency, need for pain treatment, functional impairment, and cosmetic appearance. Means and standard deviations of respondent data were analyzed. The between-group differences (by IPG implant site) were assessed by Kruskal Wallis H test via Spss Version 23.

Results

475 patients were identified by CPT code for study inclusion. We received 229 responses (50% response rate). Patient demographics include median age of 67 (range from 22-97), 147 female. Of the 228 patients with data, 46% had a spinal cord stimulator. The data was grouped by anatomic location of IPG into chest (25%), abdomen (5%), back (22%), and buttocks (41%). 34% of respondents endorsed IPG site pain; 22% endorsed VAS > 10 on VAS scale of 100. Mean current VAS was 12 with standard deviation of 22. McGill pain characteristic analysis showed that the pain was mostly tender, sore, annoying type of pain. There was no statistical difference in pain scores as related to IPG implantation site. Total of 13 patients had the IPG removed [infection, 3; lack of efficacy, 5; , pain at IPG site, 2; , and non-specified reasons, 3].

Conclusions/Discussion:

We identified a 34% prevalence of chronic IPG site pain. We did not identify an association between site of IPG and severity of pain. Further data analysis will be performed on this data set to determine the effect of IPG site on need for pain treatment, functional impairment and cosmetic appearance. To our knowledge, this is the first cohort study to assess the chronic IPG site pain based on anatomic location.

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2. Feasibility of a group-based graded aerobic exercise program for adolescents with juvenile fibromyalgia

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Introduction:

Juvenile fibromyalgia (JFM) is a chronic pain condition associated with widespread muscle pain, fatigue¹, and physical impairment². Regular aerobic exercise is effective for pain management³, but compliance is poor due to fatigue and fear of pain associated with beginning an exercise regimen⁴. This study aimed to evaluate the feasibility, safety and tolerability of a group-based, graded aerobic exercise (GAE) protocol for adolescents with JFM.

Methods:

Nine adolescent females, ages 13-17 years, were enrolled in this study. Participants engaged in aerobic activities (treadmill, elliptical, stationary bike, floor exercises) while maintaining a moderately elevated heart rate (approximately 97-136 beats per minute). This GAE protocol utilized interval training which gradually increased the volume of each activity from two minutes at five stations (10 min of exercise) to five minutes at six stations (30 min of exercise). Rest periods were standardized at 60 second intervals between stations. Exercise sessions were completed twice weekly for eight weeks with a structured qualitative interview conducted post-treatment.

Results:

Six participants (Mage = 15.44) completed the protocol, two withdrew due to time commitments, and one withdrew due to a new medical concern. Participants (n=5) reported improved energy levels and stamina for longer periods of exercise without additional pain flares. Pacing of the training was generally well-tolerated by participants (n=5), though some expressed concerns about resuming treatment after missing a session (n=2) and difficulty resting between intervals (n=3). All respondents indicated that the group component and social support were a beneficial distraction from pain.

Conclusions/Discussion:

Findings from this feasibility study indicate that carefully monitored GAE is a safe and tolerable method of engaging adolescents with JFM in exercise. Based on participant feedback, minor changes to the protocol (e.g., self-reporting of heart rate during rest breaks, sitting during rest breaks) are warranted in future investigations of the effects of GAE in adolescents with JFM.

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3. A Difficult Diagnosis of Transitional Zone Pain Exacerbated By Acid Reflux: A Case Report

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Introduction:

Transitional zone pain (also termed segmental or borderline pain) is a type of neuropathic pain after spinal cord injury (SCI) that is typically felt at or immediately below the level of injury and described as a band-like tightness across the body. SCI patients often suffer from chronic pain, but due to the nature of their injury, their perception of pain changes and as a result diagnosing the pain generator becomes more difficult.

Case Description

46-year-old male presented to acute rehabilitation from another facility where he had been treated for the past several months after an incomplete C5 SCI from a fall down the stairs. Two weeks before his transfer the patient developed left sided band-like pain across his upper abdomen which was diagnosed by orthopedic surgery as left oblique strain. Upon admission to our facility, the patient stated his left sided abdominal pain was getting worse despite treatment with lidocaine and ice.

Results:

Multiple treatments were attempted including opioids, steroids, Gabapentin and Venlafaxine for neuropathic pain, stretching, TENS, massage, ice/heat. Despite all the treatments attempted the patient's pain continued to worsen to the point he was sent to the emergency department after developing chest pain and shortness of breath. After a negative ED workup, the patient was started on aggressive treatment for acid reflux and within 2 days his pain was significantly improved.

Conclusions/Discussion:

Pain is a common complaint after SCI, especially traumatic injury. Pain generators include neuropathic, musculoskeletal, and visceral sources and differentiating between them is difficult, with treatment often being a series of trials and errors. This patient's presentation with transitional zone pain far below the site of injury and exacerbation by acid reflux is not only extremely unusual but a reminder of how difficult it can be to treat a patient's pain after SCI.

4. Genicular Nerve Ablation via Chemical Neurolysis for Knee Pain: A Case Series

Authors

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Introduction

Radiofrequency ablation (RF) has emerged as a technique for the management of chronic osteoarthritic and post-surgical knee pain. However, image guided chemical neurolysis may be an effective and less expensive alternative. Alcohol and phenol are neurolytic agents which are used safely for cancer-related pain, contractures and nerve pain. This case series summarizes four examples of chronic knee pain successfully treated with alcohol or phenol neurolysis.

Methods

Chemical neurolysis of the genicular nerves was performed in four patients with chronic refractory knee pain due to osteoarthritis or related to knee replacement surgery. After physical examination, imaging, and diagnostic genicular nerve blocks, patients underwent neurolysis with 98% alcohol (n=2) or 6% phenol (n=2). Self reported pain scores, functional status and analgesic medication use were reevaluated post-procedure.

Results

All patients reported reduction in their post-procedure NRS pain scores. In addition, improvements in function and decreased analgesic medication use were noted. One patient who had failed to improve with cooled RF of the genicular nerves reported relief after chemical neurolysis. Furthermore, chemical neurolysis was utilized successfully in an anticoagulated patient who could not safely undergo radiofrequency ablation.

Conclusions/Discussion

Chemical neurolysis is a potentially promising technique for management of chronic knee pain from primary osteoarthritis, or chronic pain after total knee replacement. This case series demonstrates technical and clinical success in four patients with intractable pain via self report. As compared to cooled radiofrequency (RF) and conventional RF ablation techniques, chemical neurolysis can be performed with smaller gauge needles, may require less procedural time, and does not require conscious sedation. Further research is needed to identify the optimal volume and concentration of neurolytic agents for genicular nerve ablation, the duration of effect and incidence of adverse events, if any. Further, a head to head study of clinical effectiveness of chemical versus radiofrequency neurolysis is warranted.

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5. Acetaminophen IV in the Perioperative Setting in Mount Sinai Hospital

Authors

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Introduction

Opioids are the mainstay of current perioperative pain management, but have significant side effects including respiratory depression. Multimodal analgesia utilizes medications with different mechanisms of action for a synergistic effect in order to decrease opioid usage. Current ERAS protocols recommend a multi-modal approach. Recently many formularies have started to include Acetaminophen IV (APAP IV).

Methods

This study was a retrospective single center study. There were 3 cohorts: Acetaminophen IV, Control, and Ketorolac. The duration of anesthesia, the amount of opioid in morphine equivalents, the amount of Acetaminophen IV/Ketorolac utilized, and the pain scores were collected. The t-test, ANOVA, and the Kruskal Wallis test for pain scores were utilized for statistical analysis.

Results

The APAP IV showed increased: mean rank of pain, total opioid usage, duration of anesthesia, and duration in the PACU, as compared to the control and ketorolac cohorts. There was no significant difference between the APAP IV cohort and the control cohort; however, trends in mean opioid usage and mean pain rank suggest that APAP IV doesn't offer any advantages over use of opioids alone.

Conclusions

Although the literature suggests that there is a decrease in pain scores and opioids administered when acetaminophen IV is utilized, the results of this study did not support that conclusion.

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6. Outcomes in an Interdisciplinary Comprehensive Pain Management Program

Authors

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Introduction

Chronic pain is an epidemic in the United States. The National Pain Strategy calls for patient-centered integrative pain management practices [1]. Most research on outcomes of integrative comprehensive pain management programs (CPMP) utilizes self-report outcomes only and there is a paucity of observed functional testing measures for this population. The objective of this study was to determine if a battery of observed functional tests (BOFT) are correlated to self-reported functional measures for patients with chronic pain participating in an integrative CPMP and if this BOFT can provide useful outcomes information not obtained from self-report measures.

Methods

164 consecutive patients participated in an integrative Comprehensive Pain Management Program. The program consisted of cognitive behavioral therapy, therapeutic exercise, neuro re-education, psychology and pain education. Patients completed a 30-minute BOFT that included lifting, walking, sit to stand and step up tests as well as several standardized self-report functional outcome measures at the beginning and conclusion of the program.

Results

Patients made significant improvements on self-report measures including Patient Specific Functional Scale, Modified Oswestry Disability Index, and Neck Disability Index ($P < 0.001$). Patients also made significant improvements on each of the components in the BOFT ($P < 0.001$). Global Rating of Change mean score was +3.9 (scale -7 to +7) with SD of 1.9. No significant correlations were found between any the self-report measures and the BOFT.

Conclusions/Discussion

The results of this study provide evidence that the CPMP was effective in improving both self-report and observed measures. The fact that these measures were not correlated, suggests that both types of measures have value in providing a more descriptive picture of patient outcomes than either type alone.

References

- National Pain Strategy

7. Gender & Age Differences in Coping Skills & Catastrophizing in the Chronic Pain Population

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Objective

Chronic Pain conditions are often long term and significantly affect one's mental and physical well-being. Psychotherapists who treat chronic pain especially focus on increasing patient coping strategies and reducing patient's catastrophized thinking. However, there is not a large amount of current literature examining the differences in coping strategies between demographics. Additionally, further exploration is needed in analyzing which of these populations is especially vulnerable to catastrophized thinking in the chronic pain population.

Methods

The Coping Strategies Questionnaire (CSQ) is a self-report measure examining the use of several pain coping skills (distraction, distancing, coping self-statements, ignoring, and prayer) and the amount of catastrophized thinking one engages in. This poster will present data from 100 patients who completed the CSQ as part of a pain-clinic evaluation and will examine the relationship between patient scores, their age, and gender. Furthermore, the relationships between different coping skills and catastrophizing will also be analyzed.

Results

All CSQ coping strategy factors had positive moderate-large correlations. The strongest positive relationship was between prayer and distancing; $r = .506$, $n = 100$, ($p < .001$). There was a significant inverse relationship between age and distancing; $r = -.198$, $n = 100$, ($p < .001$). T test means for age demonstrated participants between the ages of 18-64 endorsed using all coping strategies and catastrophizing more than those 65 and older. Means for gender demonstrated female participants endorsed using all coping strategies and catastrophizing more than males. Significant gender mean differences included the use of the coping strategies: coping self-statements $t(98) = 2.214$, $p = .029$ and distancing $t(98) = 2.012$, $p = .047$.

Conclusions

The following results may be incorporated into clinical practice to improve outcomes for chronic pain patients of all gender and ages in order to enhance utilization of coping strategies and reduce catastrophizing.

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8. The Impact of Invalidating Doctor-Patient Experiences on Treatment Adherence in Chronic Pain Patients

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Introduction

Chronic pain disorders often have unclear etiologies and lack a physical explanation for the persistence of pain. In the context of the biomedical model, which is biased towards objective, organic indicators of illness, patients with chronic pain are subject to stigma and invalidation. Research shows that chronic pain patients report feeling blamed, doubted, and dismissed by medical professionals and this can lead to mistrust and hesitation to follow treatment recommendations. Patient beliefs have been found to be predictors of treatment adherence. This study sought to explore whether chronic pain patients who experience invalidation from their doctors also have negative beliefs about treatment adherence.

Methods

Chronic pain patients (N=30) at Stroger Hospital Pain Clinic completed paper-and-pencil surveys before their first appointment. Participants were included if they were new patients to the clinic. Patients were excluded if they were under 18, had pain symptoms for less than 6 months, or were opiate dependent pain patients referred for non-opiate pain management. Participants provided demographic information and chronic pain history. They also completed a measure assessing invalidation and beliefs about treatment adherence. A correlation analysis and log linear analysis were performed.

Results

There were significant correlations between validation and beliefs about treatment from validating providers ($r = .73$, $p = .01$) and invalidation and beliefs about treatment from invalidating providers ($r = .65$, $p = .01$). Invalidation was correlated with the number of doctors seen ($\chi^2 = 14.38$, $df = 7$, $p = .05$) and the number of years in pain ($\chi^2 = 22.24$, $df = 12$, $p = .04$).

Discussion

Increases in validation were associated with better beliefs about treatment, while increases in invalidation were associated with more disagreement about treatment. Invalidation was higher in patients who have experienced chronic pain for more years and who have seen more doctors.

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9. Overcoming the US of Passive: Increasing Active CAM Use with Pain Education

Authors

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Introduction

A general conclusion about the treatment of chronic, non-cancer pain is that the results from passive modalities are disheartening. Perhaps this may be due to the propensity of patients to seek out passive versus active treatments; They tend to go for short-term relief at a long-term cost. While passive treatments can be effective, it is critical to shift the patient into a model of active care. There is also scientific evidence to support the use of CAM. The current study tested the hypotheses that Veterans would report a more significant increase in active versus passive CAM utilization after completing a formal pain education program.

Methods

103 Veterans completed a 12-week, "Pain Education School" program at a Midwestern VA Medical Center between November 4, 2011-October 26, 2012. As part of the introduction and conclusion of the program, all Veterans completed a pre- and post-education assessment which included the Complementary and Alternative Medicine Questionnaire©, SECTION A: Use of Alternative Health Care Providers. The primary intervention outcome analyses were paired samples t-tests to compare pre- and post-assessment means of CAM counts after completing a patient pain education program.

Results

Nearly 44% (N=45) of Veterans reported not using any type of CAM at baseline; Approximately 16% reported not using CAM after completing the program. The current findings specifically indicate that younger Veterans were more likely to seek passive CAM modalities than their older counterparts, $F(5,97)=3.84$, $p=.003$. Significant differences were found between the pre- and post-test measures of use of active ($p=.000$) and of passive CAM modalities ($p=.007$).

Conclusions

The results of the current study confirmed that there was a shift away from passive to more active CAM modalities upon completion of the pain education program. Thus, the program was found to be more aligned with the goal of pain management—that patients engage in more self-management.

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10. The Effects of a Pilot Functional Medicine Clinic on Chronic Pain Among Veterans

Authors

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Introduction

According to the CDC, chronic diseases and conditions are among the most common and costly of all health problems. According to the American College of Preventative Medicine, these diseases are preventable and reversible if a comprehensive, individualized approach that addresses genetics, diet, stress, physical activity, and sleep is implemented through integrated functional medicine teams and based on empirical research. The purpose of the current study was to determine whether participation in the Functional Medicine clinic would significantly decrease pain intensity, weight, waist/hip circumference, medical symptoms/toxicity, perceived stress, and insomnia and increase walking speed.

Methods

51 Veterans aged 18-75 years old with chronic pain conditions were recruited for a pilot Functional Medicine clinic at Jesse Brown VA Medical Center between May 4, 2016-April 26, 2017. The group treatment protocol consists of 4 sessions that were approximately 60-75 minutes in duration. Patients were coached to change their environment and live an anti-inflammatory lifestyle. As part of the first and last session, all participants completed a pre-intervention assessment that included the MSQ, the PSS, and the ISI. Paired sample t-tests were used to evaluate the impact of the program on Veterans' scores on the aforementioned indices.

Results

There were significant differences in measures of medical symptoms/toxicity, $t(21) = 2.66$, $p = .015$; and perceived stress, $t(21) = 3.07$, $p = .006$. Further inquiry found a significant change in the head, $t(21) = 2.54$, $p = .019$; joint/muscles, $t(21) = 3.05$, $p = .006$; weight, $t(21) = 2.24$, $p = .036$; energy/activity, $t(21) = 2.46$, $p = .023$; and the mind, $t(21) = 2.70$, $p = .013$.

Conclusions

Veterans who participated in a Functional Medicine clinic witnessed significant decreases in perceived stress and joint/muscle symptoms. This pilot clinic serves as a means of initiating the Functional Medicine framework while reinforcing the self-management approach.

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INDUSTRY SPONSORED ABSTRACT

Effectiveness and Safety of Intrathecal Ziconotide as the First Agent in Pump for Adult Patients With Severe Chronic Pain

Authors

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Introduction

The Patient Registry of Intrathecal Ziconotide Management (PRIZM) evaluated effectiveness and safety of intrathecal ziconotide in clinical practice.

Methods

PRIZM was an open-label, long-term, multicenter, observational study of adult patients with severe chronic pain who meet ziconotide prescribing information criteria. This interim analysis (7/5/16) of ziconotide as the first versus second-or-later IT agent in pump reports percentage change from baseline to month-6 and month-12 in “average pain for the past 24 hours” on the 11-point Numeric Pain Rating Scale (NPRS; primary efficacy endpoint at week 12) and Patient Global Impression of Change (PGIC) score at months 6 and 12.

Results

Enrollment closed at 93 patients (6/30/15). Fifty-one patients (54.8%) received ziconotide as the first agent in pump (FIP+); 42 (45.2%) did not (FIP-). Mean (SD) baseline NPRS scores were 7.4 (1.9) and 7.9 (1.6) in FIP+ and FIP- patients, respectively. Mean (SEM) percentage changes in NPRS scores at month 6 were -28.2% (5.4%) in FIP+ (n=30) and 0.7% (6.6%) in FIP- (n=26) patients and at month 12 were -31.6% (7.4%) in FIP+ (n=19) and -12.8% (7.4%) in FIP- (n=16) patients. Improvement from baseline in PGIC score was reported in 66.7% of FIP+ patients (n=30) versus 40.9% of FIP- patients (n=22) at month 6, and 92.9% of FIP+ patients (n=14) versus 76.9% of FIP- patients (n=13) at month 12. The most common adverse events (AEs; ≥ 15% of patients combined) were nausea (25.5% vs. 21.4%; FIP+ vs. FIP- patients, respectively), confusional state (15.7% vs. 21.4%), dizziness (17.6% vs. 16.7%), auditory hallucination (17.6% vs. 11.9%), and diarrhea (15.7% vs. 14.3%).

Conclusions/Discussion

In this interim analysis, greater improvements in efficacy outcomes were observed when ziconotide was initiated as the first IT agent in pump versus second-or-later agent in pump. The AE profile of ziconotide was consistent with the prescribing information.

Funding

Jazz Pharmaceuticals

INDUSTRY SPONSORED ABSTRACT

Sustained Effectiveness of Intrathecal Ziconotide Use as the First Agent in Pump in Patients With Severe Chronic Pain

Authors

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Introduction

The Patient Registry of Intrathecal Ziconotide Management (PRIZM) evaluated the effectiveness and safety of intrathecal ziconotide treatment in the clinical practice setting.

Methods

PRIZM was an open-label, long-term, multicenter, observational study of adult patients with severe chronic pain who meet ziconotide prescribing information criteria and initiate ziconotide as the sole agent in the pump. This interim subset analysis (as of 07/05/16) of ziconotide as the first versus second-or-later intrathecal agent in pump reports change from baseline over time (month 3, 6, 9, and 12) in “average pain for the past 24 hours” with the 11-point Numeric Pain Rating Scale (NPRS; primary efficacy endpoint).

Results

Enrollment closed at 93 patients; data are available for these patients in this interim analysis. Of 93 patients enrolled, 44 were active in the study at month 12, 33/44 had NPRS scores at all data collection timepoints, 18/33 received ziconotide as first-in-pump (FIP+) and 15/33 did not (FIP-). Mean (SD) baseline NPRS scores were 7.4 (1.2) in FIP+ and 8.3 (1.2) in FIP- patients. Mean percentage change (SE) in NPRS scores for FIP+ and FIP- patients were -18.7 (6.7)% and -12.2 (4.7)% at month 3, -36.0 (7.5)% and -12.0 (5.4)% at month 6, -16.7 (7.8)% and -30.0 (6.0)% at month 9, and -30.3 (7.7)% and -14.5 (7.7)% at month 12, respectively. The most common adverse events (AEs; in ≥25% of patients combined) were auditory hallucination (38.9% in FIP+ versus 20.0% in FIP-), peripheral edema (38.9% versus 0%), and amnesia (27.8% versus 6.7%).

Conclusions/Discussion

These data from a limited number of patients suggest that there may be a greater sustained treatment response for up to 12 months when ziconotide was initiated as first-line intrathecal therapy versus second-or-later agent in the pump. The AE profile of ziconotide was consistent with the prescribing information.

Funding

Jazz Pharmaceuticals.