Platform Presentation #1 Abstract

OSTEOARTHRITIS PAIN SEVERITY AND LOCATIONS IN INDIVIDUALS WITH AND WITHOUT DIABETES

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Purpose/Hypotheses: Osteoarthritis (OA) and diabetes mellitus (DM) are common chronic diseases with negative impact on pain severity and locations of OA. Limited research has examined pain characteristics and locations of OA in people with diabetes and OA. We conducted this study on localized OA, which is defined as having less than three locations of OA diagnoses, in people with and without diabetes to determine the feasibility and limitations of conducting a study using de-identified data. Therefore, the first aim of this retrospective analysis was to examine pain intensity among patients with localized OA and DM (OA+DM), compared to patients who have localized OA but do not have DM (OA only). The second aim was to explore common localized OA locations that are associated with pain intensity in patients with OA only and OA+DM.

Subjects: Data from 711 OA+DM patients (50.6\% females, mean age = 64.00 years, SD ± 10.44) and 1831 OA only patients (53.12\% females, mean age = 63.21 years, SD ± 11.72) were analyzed.

Materials/Methods: Retrospective electronic review of de-identified data for patients who were seen in a large academic medical system were selected using a clinical data repository system (i2b2). A query was built by selecting two groups: patients who had the diagnoses codes of both localized OA and type2 diabetes (OA+DM) and patients who had diagnoses codes of localized OA without DM (OA only). These diagnoses code queries were conducted with a search of documented pain intensity ratings using a numeric scale (0-10) and pain locations such as knee, hip, shoulder and other joints that were selected as the variables of interest. The query linked pain intensity to pain locations using the same date to minimize non-musculoskeletal pain complaints such as headache. Pain intensity scores were averaged for each patient. Two-way ANOVA was used at an alpha level of 0.05.

Results: There was a statistically significant difference in average total pain intensity between the OA+DM group (5.95 ± 1.56) and the OA only group (5.53 ± 1.56), p < 0.001. Figure 1 shows the overall pain intensity for all locations in patients with OA+DM and OA only. Average pain intensity was statistically different between locations, p < 0.001. Due to multiple locations of OA, the overall sample based on locations consisted of 5,164 observed cases. Our results showed that back, hip, knee, leg, shoulder and arm OA locations were the most frequent locations.

Conclusion: Patients with OA+DM may experience higher pain intensity compared to patients with OA only. Limitations in this study include not accounting for other associated risk factors such as pain medications, surgical interventions, neuropathy and obesity.

Clinical Relevance: It is known that pain can negatively impact function and quality of life in people with OA. The results of this study indicate that a co-existing diagnosis of DM may increase the intensity of pain in this population, and is an important area for future study.
POOR SLEEP QUALITY IN PEOPLE WITH PAINFUL NEUROPATHY

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Purpose/Hypotheses: Sleep is known to have a direct influence on glucose metabolism and insulin sensitivity. Previous studies have shown that people with pain due to diabetic peripheral neuropathy (DPN) have decreased sleep quality (SQ) compared to the general population using various subjective questionnaires. However, Pittsburgh Sleep Quality Index (PSQI), the standard self-report sleep quality questionnaire, has not been used to assess SQ among patients with DPN. Therefore, the purpose of this study is to examine SQ using the PSQI and assess the relationship between SQ and pain in people with DPN.

Materials/Methods: Eighteen participants (mean age=58.1 years, SD±5) with DPN who were sedentary, had type 2 diabetes, and peripheral neuropathy were analyzed. This is a secondary analysis of data collected in a larger study of aerobic exercise in people with DPN. At baseline, participants completed the PSQI to assess SQ and the Brief Pain Inventory (BPI) to assess clinical pain. BPI is comprised of two components: the Pain Severity Index and the Pain Interference Index. Descriptive statistics were calculated. Pearson’s correlations were used to assess the relationships between PSQI, Pain Severity Index, and the Pain Interference Index. Alpha was set at=0.05.

Results: The study showed 14 out of 18 participants (77.8%) scored >5 on PSQI (mean 9.94 ±4.35) indicating poor SQ. In the BPI, the mean score of pain severity index was 3.36±2.21, and the mean score of pain interference index was 3.54±2.9. The area of daily living most affected by pain was sleep (mean 4.1±3.03). There was a significant positive correlation between PSQI and BPI-Pain severity index ($r=0.642$, $p=0.004$) and between PSQI and BPI-Pain interference index ($r=0.591$, $p=0.01$).

Conclusion: A large majority of individuals with DPN reported poor SQ. Furthermore, poorer sleep quality was significantly associated with higher pain severity and more interference with daily living. Interestingly, sleep was reported as the activity of daily living that was most affected by pain.

Clinical Relevance: Poor SQ was found to be highly prevalent in a sample of individuals with DPN and may contribute to perception of pain. From a pragmatic point of view, sleep and pain may interact with each other in influencing glycemic control. Therefore, novel interventions should be considered to address sleep as well as pain in these individuals, which may impact diabetes management.
Platform Presentation #3 Abstract

A MIND-BODY EXERCISE FOR PATIENTS WITH PARKINSON’S DISEASE: A PILOT STUDY

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Purpose/Hypotheses: About 96% of individuals affected by Parkinson’s disease (PD) experience sleep disturbances that significantly impact quality of life. Past studies suggested that inflammatory cytokines may be associated with various symptoms of PD including sleep disturbances. Specifically, tumor necrosis factor (TNF)-α is often elevated in patients with PD. Benefits of Qigong, a mind-body exercise, have been shown in different neurological conditions, but there is still a lack of clinical evidence of effects of Qigong exercise in people with PD. The purpose of the current study was to gather pilot data on the effectiveness of Qigong exercise on sleep quality and inflammatory biomarkers and to explore any possible association in changes between sleep quality and the biomarkers.

Materials/Methods: A total of ten patients with mild to moderate PD defined as Hoehn and Yahr (HY) stage between 1 and 3 were recruited and randomly assigned into two groups (experimental, n=5; control, n=5) receiving six weeks of Qigong or sham Qigong intervention, respectively. To determine whether intervention produced any changes, sleep quality was measured using the PD sleep scale and the levels of TNF-α in serum were assessed by enzyme-linked immunosorbent assay (ELISA), before and after the intervention. Collected data were analyzed using descriptive statistics, paired and unpaired t-tests, and Pearson’s correlation coefficients.

Results: Qigong exercise significantly improved the total sleep quality (p<0.001) and reduced the PD symptoms at night (p=0.036). The level of TNF-α in the experimental group was significantly decreased consistently in all subjects after the intervention with a decrease in mean value (p=0.036) from 13.8±0.6 pg/ml to 12.3±1.6 pg/ml while the mean value of the control group showed a trend to increase (p=0.246), from 13.2±3.2 pg/ml to 15.1±2.2 pg/ml. A correlation between changes in disturbed sleep at night and the level of TNF-α in the experimental group was strong (r=0.771) even though not significant (p=0.115).

Conclusion: Qigong exercise helped alleviate PD symptoms, improved sleep quality and decreased TNF-α levels in patients with PD. TNF-α may have a potential to influence the sleep quality in patients with PD.

Clinical Relevance: A decreased sleep quality significantly affects PD patients’ quality of life. Qigong exercise is a cost-effective approach to improve the sleep quality of patients with PD. The current study helps to reveal clinical benefits of Qigong exercise as well as a possible mechanism of action through the inflammatory biomarker, TNF-α.
Platform Presentation #4 Abstract

PHYSICAL THERAPY TO THE LUMBOSACRAL SPINE IN WOMEN WITH URINARY INCONTINENCE: A RETROSPECTIVE REVIEW


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Purpose/Hypotheses: To examine clinical physical therapy (PT) outcomes of women with urinary incontinence (UI) treated with lumbosacral (LS) spine manual PT, therapeutic exercise and postural corrections.

Subjects: This was a retrospective analysis of cross-sectional data from 145 female patients with UI who were treated with LS spine manual PT, therapeutic exercise and postural corrections at a single, private PT clinic.

Materials/Methods: Examination and evaluation of each patient was performed by a physical therapist. Treatment and plan of care were established based on clinic protocol: patient education, postural corrections, LS spinal manual PT, therapeutic exercise and home exercise program. The following instruments were administered pre- and post- episode of care to assess urinary and spinal function: Pelvic Floor Impact Questionnaire (PFIQ-7), Pelvic Floor Distress Inventory (PFDI-20), Oswestry Disability Questionnaire (Oswestry) and Urogenital Distress Inventory (UDI-6).

Data Analysis: All statistical analyses were conducted using SAS software for Windows version 9.3 (Cary, NC). Descriptive statistics were presented as means and standard deviations for continuous variables (e.g. age), and frequencies and proportions for categorical variables (e.g., tobacco usage). A difference in difference analysis was conducted to identify the effect of individual factors that may possibly contribute to the improvement in the outcome measures. A general linear model was conducted to identify significant independent factors associated with the improvement in the four outcomes measures. All statistical tests were two-sided. P-value <0.05 was considered to be statistically significant.

Results: Average age was 56 (SD=15) years with the average BMI being 26.3 (SD=5.5). Average PFIQ-7 score decreased from 56.0 to 14.2 (delta=41.9), average PFDI-20 score decreased from 98.5 to 45.1 (delta=53.4), average Oswestry score decreased from 24.5 to 11.4 (delta=13.1) and average UDI-6 score decreased from 49.1 to 20.3 (delta=28.8). The improvements in the four outcomes were statistically different between pre- and post- episode of care.

Conclusion: Lumbosacral spine manual PT, therapeutic exercise and postural corrections for LS nerve dysfunction decreases UI. Patients with worse baseline symptoms reported greater improvement after PT.

Clinical Relevance: Urinary incontinence affects 25-45% of women in the United States. Traditional PT treatment for UI has focused on pelvic floor muscle (PFM) strengthening, but effectiveness is limited, in part, due to the inability to properly contract PFM. Nerves of the LS spine control PFM and dysfunction of these nerves can contribute to poor neuromotor control, resulting in UI. Physical therapists have the unique skill set to effectively treat the underlying cause of UI.