



PREDICTIVE CLINICAL FACTORS FOR PAIN INTENSITY DUE TO KNEE OSTEOARTHRITIS IN THE ELDERLY: A MODELLING APPROACH

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BACKGROUND

It has been suggested that peripheral and central sensitization are two of the underlying mechanisms in OA chronic pain. This study aims to evaluate the role of peripheral and central sensitization associated with clinical, radiological and functional assessments predicting pain intensity in symptomatic knee osteoarthritis (KOA) older patients.

MATERIALS AND METHODS

Cross-sectional data from 104 older individuals (60 years or more) diagnosed with unilateral or bilateral KOA, according to ACR criteria. Patients were eligible if they presented knee chronic pain (at least 6 months) scored 4 or more on a 0-10 numeric rating scale (NRS) and a defective endogenous pain-inhibitory system, defined as a reduction in NRS of less than 10% during a conditioned pain modulation (CPM) task. In our CPM paradigm, we measured pressure pain threshold (PPT) and pain intensity in the most painful knee and ipsilateral thenar region before and after the conditioning stimulus, which was cold water (10°C). We calculated the percentage change in PPT scores (named CPM-PPT) and in pain intensity (named CPM-P). Pain intensity was analyzed using the Brief Pain Inventory (BPI). We assessed radiological findings using Kellgren-Lawrence (KL) method, quality of life using the Short-Form 12, self-perceived health using a 0-10 visual analogic scale, depression using Beck Depression Inventory, disability using WOMAC, and a touch-test sensory evaluation using Von-Frey filaments. Statistical analysis was done using unpaired t-test, analyses of variance (ANOVA) test and multiple linear regression (backward method). Significance was set at 0.05.

RESULTS

In our sample we had a majority of women (84.6%) with mean age of 73.9 ± 8.01 . In terms of radiological evaluation, 42.57% had a severity level of 3-4 KL. One-way ANOVA showed BPI and CPM PPT in the hand were different between KL sublevels ($p=0.01$; $p=0.041$, respectively). Tukey post-hoc test concluded that BPI was statistically significant higher in KL IV compared to KL I ($p=0.01$) and KL III ($p=0.01$); and also showed CPM response in the hand was worse in KL IV compared to KL I (0.026). Multiple linear regression demonstrated that BPI severity was predicted by WOMAC total score ($p=0.023$), self-perceived health ($p=0.031$), light touch sensibility on knee ($p=0.044$) and CPM PPT response in the hand ($p=0.009$), $p=0.000$, $R^2=0.225$.

CONCLUSION

This exploratory study provides preliminary evidence that pain intensity, assessed by BPI scale in older population with at least moderate chronic pain due to knee osteoarthritis, may be predictable by WOMAC scores, self-perceived health, CPM-PPT response and light-touch sensibility on knee.