THU0418

NEUROPATHIC-LIKE PAIN IN PERSONS WITH HAND OSTEOARTHRITIS AND ASSOCIATIONS WITH PERIPHERAL AND CENTRAL SENSITIZATION

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Background: Despite no current knowledge of lesions or disease of the sensory nervous system in osteoarthritis (OA), subgroups of knee OA patients report neuropathic-like pain. The neuropathic-like pain component has been suggested to reflect central sensitization.

Objectives: To describe the prevalence of neuropathic-like pain in persons with hand OA and explore whether neuropathic-like pain associate with peripheral and/or central sensitization.

Methods: These cross-sectional analyses included 280 participants with hand OA from the Nor-Hand study. A modified PainDETECT questionnaire was used to characterize neuropathic-like hand pain (mPD-hand, 0-36 scale). We conducted quantitative sensory testing (QST) of pressure pain thresholds (PPT) and temporal summation (TS). Low PPTs at local sites (painful finger joint and non-painful finger joint) indicate peripheral and/or central sensitization, while low PPTs at extra-segmental sites (radioulnar joint, musculus trapezius and tibialis anterior) indicate central sensitization. TS, defined as an increase in pain ≥ 2 on a numeric rating scale (NRS, 0-10) during a repetition of ten punctate stimuli at the wrist, indicate central sensitization. Participants with painful hand OA (NRS of hand pain above the patient acceptable symptom score of ≥ 4), were categorized as having either nociceptive pain (mPD-hand ≤ 12) or neuropathic-like pain (mPD-hand score > 12). We examined whether reporting nociceptive or neuropathic-like pain, as compared to no/mild pain (NRS hand pain below 4) was associated with QST results using regression analyses.

Results: In this study sample, 88% were female, median age was 61 (IQR 57-66) years and 94% fulfilled the ACR criteria for hand OA. Median mPD-hand score was 8 (IQR 3, 13). Half of the participants (n=144, 51%) reported NRS pain ≥ 4 , of whom 58 (40%) had neuropathic-like pain. Those with neuropathic-like pain reported higher mean (SD) NRS pain severity than persons with nociceptive pain (5.9 (1.6) vs 5.3 (1.5), $p=0.01$). We found that neuropathic-like pain was associated to higher pain sensitization reflected by lower PPT at the painful finger joint (Table), non-painful finger joint (beta -1.6, 95% CI -2.3, -0.9), radioulnar joint (beta -1.1, 95% CI -1.8, -0.4), trapezius (Table) and tibialis anterior (-1.0, 95% CI -1.8, -0.2) and presence of TS (Table). The associations between nociceptive pain and sensitization were weaker than the associations observed for neuropathic-like pain (Table).

Abstract THU0418 –Table 1. Associations between neuropathic-like pain and quantitative sensory testing

	PPT painful finger joint ¹		PPT trapezius muscle ¹		Temporal summation ²	
	Mean (SD)	beta(95% CI)	Mean (SD)	beta(95% CI)	N(%)	OR(95% CI)
No/Mild pain (n=136)	4.3 (2.1)	0.0 (ref.)	4.9 (2.1)	0.0 (ref.)	43 (32%)	0.0 (ref.)
Nociceptive pain (n=86)	3.9 (1.7)	-0.5 (-1.0, 0.1)	4.1 (1.9)	-0.6 (-1.1, 0.0)	35 (41%)	1.3 (0.7, 2.4)
Neuropathic-like pain (n=58)	2.9 (1.4)	-1.6 (-2.2, -0.9)	3.6 (1.9)	-0.9 (-1.5, -0.2)	39 (67%)	3.8 (1.8, 8.2)

¹Linear regression, ²logistic regression. Adjusted for age, sex, BMI, use of analgesics, level of education, sleep disturbance, Pain Catastrophizing Scale, the Hospital Anxiety and Depression Scale and radiographic hand OA severity (Kellgren-Lawrence sum score).

Conclusion: Of persons with painful hand OA, 40% have a neuropathic-like pain component. Reporting neuropathic-like pain is associated with peripheral and central sensitization, indicated by low PPTs and presence of TS. Our results suggest that patients who report neuropathic-like symptoms are more likely to have sensitization-associated pain.

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THU0419

BIOMARKERS OF BONE AND CARTILAGE TURNOVER CTX-I AND CTX-II PREDICT TOTAL JOINT REPLACEMENTS IN OA

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Background: Osteoarthritis (OA) can lead to joint failure and ultimately total joint replacement (TJR). Identifying risk-factors of developing joint failure is of interest for clinicians and researchers. Currently late-stage clinical trial design for evaluating new treatments in OA is evolving with the possible utilization of accelerated approval pathways. This may require outcome studies with longer duration, in which joint failures may qualify as an endpoint. However, TJRs are relatively rare events and are known to be biased by doctor/patient interactions as well as local practice guidelines, and consequently, there is a need for objective non-invasive measures, such as soluble biomarkers (BM), to enrich the population for this outcome. BM may act as important tools in investigating the association between biochemical/pathological processes and risk of joint failure. Degradation of collagens type I and II are known to be involved in OA disease progression, and the biomarkers CTX-I (C-telopeptide of crosslinked collagen type I), a marker of bone degradation, and CTX-II (C-telopeptide of crosslinked collagen type II), a marker of cartilage degradation, may reflect disease progression with clinical relevance for the risk of joint failure.

Objectives: To evaluate baseline (BL) BM sCTX-I and uCTX-II as predictors of TJR.

Methods: Data from two clinical trials investigating oral salmon calcitonin (SMC) in OA, NCT00486434 and NCT00704847, was analyzed post-hoc. Data was dichotomized by the bottom and top quartile of the respective BM concentration at BL to compare the number TJRs of the knee or hip in groups with high vs. low sCTX-I or uCTX-II, respectively. For means of visualization, plotted in Kaplan-Meier curves.

Cox Proportional Hazard Regression was performed to determine the association of BL sCTX-I and uCTX-II to the incidence of TJR while adjusting for co-variables; age, BMI, and gender. Data from both treatment groups were analyzed. Only the first reported incident was included in the analysis for each subject.

Results: A total of 68 TJRs of knee or hip were reported, of which 49 were knees and 18 were hips. One patient underwent two TJRs, resulting in 67 subjects with events.

Results from the Cox Proportional Hazard Regression adjusted for covariates of age, BMI, and sex (table 1), indicate that high BL sCTX-I compared to low was associated with a 3.4 times higher risk of undergoing an arthroplasty of the knee or hip within a two-year period ($p=0.04$). High BL uCTX-II compared to low was associated with a 3.1 times higher risk of undergoing a TJR of the knee or hip during the study period ($p=0.04$), and an 8.9-fold increased risk of undergoing a knee replacement during the study period ($p=0.02$).

TJR events over time in groups of high or low uCTX-II through the study are illustrated in figure 1.

Abstract THU0419 –Table 1. Cox Proportional Hazards Regression analysis

Group	Low CTX-I N = 336, high CTX-I N = 340			Low CTX-II N = 318, high CTX-II N = 322		
	HR top vs. bottom quartile	95% CI	P-value	HR top vs. bottom quartile	95% CI	P-value
Knee or hip replacement (Cases: CTX-I = 23, CTX-II = 27)	3.40	1.05-11.06	0.042	3.08	1.04-9.10	0.043
Knee replacement (Cases: CTX-I = 16, CTX-II = 19)	2.72	0.70-10.57	0.15	8.94	1.50-53.48	0.017