
034 CENTRAL SENSITIZATION IN KNEE OA: PRELIMINARY RESULTS FROM THE MOST STUDY

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Purpose: Mechanisms contributing to knee pain in osteoarthritis (OA) are not well understood. Mechanical and inflammatory stimuli in the joint may lead both to changes in the peripheral threshold of nociceptors (peripheral sensitization) and a central amplification of signals in the CNS (central sensitization), resulting in heightened pain sensitivity. We hypothesized that knee OA, particularly OA severity and duration, may be associated with central sensitization. We therefore examined whether knee OA was associated with temporal summation, an augmented pain response to repetitive mechanical stimuli which indicates the presence of central sensitization.

Methods: The Multicenter Osteoarthritis (MOST) Study is cohort study of persons with or at high risk of knee OA. Participants underwent knee radiography at baseline, 30, and 60 months. At 60 months we carried out an evaluation of temporal summation using a 60g monofilament at the wrist and separately over each patella. Temporal summation was defined as being present when, after touching the skin with the monofilament repeatedly at a frequency of 1Hz for 30 seconds, the subject reported new pain or increased pain at the site being tested. Persons were categorized by number of knees (0, 1 or 2) with OA at 60 months (OA defined on x-ray by KL≥2). Knees were categorized according to KL grade, OA presence and OA duration. We examined the relation between OA (presence, severity, duration) with temporal summation cross-sectionally using Poisson regression for person-based analyses and with GEE for knee-based analyses, adjusting for potential confounders. We also used a within-person knee-matched analysis among persons with knees discordant for temporal summation to explore these relationships while eliminating between-person confounding using matched conditional logistic regression.

Results: To date, data on 920 participants’ 60-month clinic visit are available (mean age 68.0, mean BMI 30.8, 67.3% female). The age- and sex-adjusted prevalence of temporal summation at the wrist among persons with 0, 1 and 2 knees with OA were 55%, 53%, 57%, and at either patella were 61%, 56%, 63%, respectively. Persons with 1 and 2 knees with OA were 0.85 and 1.09 times as likely to have temporal summation at the wrist (95% CI 0.59-1.22 and 0.73-1.54, respectively), and 0.74 and 1.04 times as likely to have temporal summation at either patella, respectively (95% CI 0.51-1.06 and 0.73-1.48, respectively), than persons with no knee OA. In knee-based analyses, OA presence, severity and duration were not associated with presence of temporal summation at the patella. For example, presence of knee OA was associated with 1.16 times higher prevalence of temporal summation compared with no OA (95% CI 0.91-1.49). However, in the within-person knee-matched analyses, knee OA was associated with 2.30 times higher prevalence of temporal summation than no OA (95% CI 1.10-4.83). Further, knees with KL grade ≥3 had 2.80 times higher prevalence of temporal summation than knees with KL grade 0 (95% CI 1.06-7.40). Even among knees with some degree of radiographic abnormality, those with KL grade ≥2 had a higher prevalence of temporal summation than those with KL grade 1 (prevalence ratio (PR) 1.59, 95% CI 1.01-2.52). Knees with a longer duration of OA also had higher prevalence of temporal summation than those without any OA (PR 2.56, 95% CI 1.03-6.37).

Conclusions: In these preliminary results from a large cohort, the presence, severity and duration of OA were associated with temporal summation when between-person confounding could be adequately controlled for. Such findings suggest that severity and chronicity of pathology are associated with central sensitization. Future work will include longitudinal evaluation of central sensitization and its manifestations in OA.