Osteoarthritis (OA) is an increasingly prevalent disease with substantial impact on those affected by it and on the society. Knee OA, one of the most prevalent of all types of OA, is characterized by failed regeneration of joint damage, resulting in pain and functional limitation for the patient. Persistent post-operative pain (PPP) is a largely underestimated clinical problem known to affect between 5% and 85% of patients undergoing surgery. The pathophysiology of OA pain and PPP remains poorly understood, but a mechanism-based understanding is widely accepted and provides a basis for the understanding of pain. Peripheral and central pain sensitization have been demonstrated as prominent mechanisms influencing the pain in knee OA, while the state of the nociceptive system in patients with PPP after revision of total knee arthroplasty (re-TKA) is unknown. Since 20% undergoing a TKA have an unfavorable pain outcome, knowledge about mechanisms, such as sensitization, involved in the PPP are needed. It is recommended that the treatment of knee OA includes education, exercise, and weight loss, supplemented with insoles and pain medication if needed, and that sensitization should also be treated using a multimodal approach. However, little is known of the combined effects from the recommended treatments on pain-related measures and sensitization in knee OA, even though this could potentially prevent pain and sensitization from progressing and become severe and widespread.

The overall aim of this thesis was to examine pain sensitization in patients with PPP after re-TKA, compare this to painful knee OA and explore whether the spreading of sensitization differs within groups based on an assessment of local knee pain sensitivity, and investigate whether a multimodal non-surgical treatment program consisting of neuromuscular exercise, patient education, diet, insoles, and pain medication improves pain and sensitization in knee OA.

The thesis established that patients with PPP after re-TKA have prominent widespread sensitization, involving pain mechanisms similar to those previously demonstrated in patients with knee OA. Furthermore, it was found that spreading sensitization and temporal summation were more pronounced in patients with PPP after re-TKA compared to patients with knee OA, despite similar clinical pain intensities, and that subgroups of patients with high knee pain sensitivity within the population of PPP and knee OA are more affected by spreading sensitization than those with low knee pain sensitivity. Lastly, the thesis demonstrated that a multimodal non-surgical treatment program resulted in greater improvements in outcome with regard to pain intensity, spreading of pain, and functional limitations than usual care in patients with knee OA not eligible for TKA, while no between-group differences were found with regard to change in peripheral or central sensitization.

Time and place
The Ph.D.-defense will take place in the Auditorium, Forskningens Hus, Sdr. Skovvej 15, 9000 Aalborg, Friday 10th of April at 3 PM.

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