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Chronicity and sensory-clinical phenotyping of musculoskeletal pain syndromes

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The dissertation investigated the differentiation of subsyndromes in a spectrum from regional to widespread chronic musculoskeletal pain on the basis of mechanism-related somatosensory and clinical phenotypes within the framework of the multidimensional model of chronic pain. The first study analyzed the dimensional structure of the chronicity construct and its necessary and sufficient components. The second study identified discriminable pain-related phenotypes in two exemplary syndromes of chronic musculoskeletal pain by a stepwise cluster-analytic approach and related these to secondary comorbidity and psychosocial factors.

In the first study, diagnostic entrance data of 185 patients with chronic regional vs. widespread musculoskeletal pain (unspecific back pain, fibromyalgia syndrome) from regional pain clinics and of 170 active employees in a nationwide prevention program were included in a retrospective cross-sectional analysis to reanalyze the construct of chronicity. The marker sets of three established chronicity indices (IASP Pain Taxonomy Axis IV, Chronic Pain Grade, Mainz Pain Staging System) were reanalyzed by correlations and frequency distributions of successive duration classes. Factor and latent class analyses were applied to assess the dimensional structure of pain and chronicity. Pain intensity distributions showed inhomogeneous courses from short to long durations differing between groups. Both dimensions, pain intensity and duration, related unsystematically to CPG and MPSS. Different dimensions and clusters of chronicity markers were discovered, that differed between the groups (three dimensions and clusters in patients, two dimensions and clusters in employees). In fact, there was evidence for at least three weakly coupled core domains of chronicity, i.e., the primary clinical pain characteristics, the direct consequences of current interference with activities and aspects of the patient history (duration and health care utilization).

In the second study, the sensory and clinical characteristics of the patient sample were reanalyzed to identify necessary and sufficient markers differentiating subsyndromes with different sensory-clinical phenotypes along the continuum from regionally confined to extensively widespread pain. For this purpose, 107 chronic unspecific back pain patients and 78 patients with fibromyalgia syndrome were taken as exemplary instantiations with circumscribed diagnoses. Four clusters of differential sensory-clinical phenotypes covering a spectrum from regional to widespread pain were discovered on the basis of four pressure pain sensitivity markers (number of sensitive ACR tender and control points, test pain intensity and pressure pain threshold) and two clinical pain markers (number of pain regions, present pain intensity). A consecutive discriminant analysis showed that the pressure sensitivity markers alone sufficed already to discriminate between the clusters with a high correct rate. The sensory-clinical phenotypes differed also in other somatic symptoms and impairment but not in psychopathology nor in psychosocial co-factors.

The project showed that differential diagnostics of chronic musculoskeletal pain requires at least a multifactorial determination of its chronicity with respect to the necessary components of duration, severity and impairment and the identification of the individual pain phenotype by comprehensive sensory and clinical assessment. This is considered as the prerequisite of differential indication of specific modules in multimodal pain therapy to avoid unselective polypragmasia.