follow up, after the patients had taken part in a CBT-ACT based 4 weeks in-hospital pain rehabilitation program (PRP).

Methods: Blood samples were collected from 52 well characterized chronic pain patients. Plasma from matched healthy blood donors were used as controls. At one year after the treatment program, 28 of the patients were available for follow up. Instead of only analyzing single inflammation-related substances, we used a new multiplex panel enabling the simultaneous analysis of 92 inflammation-related proteins, mainly cytokines and chemokines (Proseek Inflammation, Olink, Uppsala, Sweden). Multivariate statistics were used for analysis.

Results: Clear signs of increased inflammatory activity were detected in the pain patients. Accepting a false discovery rate (FDR) of 5%, there were significant differences in 43 of the 92 inflammatory biomarkers. The expression of 8 biomarkers were 4 times higher in patients compared to controls. Three biomarkers, CXCL5, SIRT2, AXIN1 were more than 8 times higher. The conventional marker for inflammation, CRP, did not differ. Of the 28 patients available for follow up one year after the intervention, all showed lower levels of the inflammatory biomarker initially raised.

Conclusions: The results indicate that CPP suffer from a low grade of chronic systemic inflammation, not detectable by CRP analysis. This may have implications for the general pain hypersensitivity, and other symptoms, often described in this group of patients. We conclude that inflammatory plasma proteins may be measureable molecular markers to distinguishes CPP from pain free controls, and that a CBT-ACT pain rehab program seem to decrease this inflammatory activity.

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Fixed or adapted conditioning intensity for repeated conditioned pain modulation

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Aims: Conditioned pain modulation (CPM) is used to assess descending pain modulation through a test stimulation (TS) and a conditioning stimulation (CS). Due to potential carry-over effects, sequential CPM paradigms might alter the intensity of the CS, which potentially can alter the CPM-effect. This study aimed to investigate the difference between a fixed and adaptive CS intensity on CPM-effect.

Methods: On the dominant leg of 20 healthy subjects the cuff pressure detection threshold (PDT) was recorded as TS and the pain tolerance threshold (PTT) was assessed on the non-dominant leg for estimating the CS. The difference in PDT before and during CS defined the CPM-effect. The CPM-effect was assessed four times using a CS with intensities of 70% of baseline PTT (fixed) or 70% of PTT measured throughout the session (adaptive). Pain intensity of the conditioning stimulus was assessed on a numeric rating scale (NRS). Data were analyzed with repeated-measures ANOVA.

Results: No difference was found comparing the four PDTs assessed before CSs for the fixed and the adaptive paradigms. The CS pressure intensity for the adaptive paradigm was increasing during the four repeated assessments ($P < 0.01$). The pain intensity was similar during the fixed (NRS: 5.8 ± 0.5) and the adjusted paradigm (NRS: 6.0 ± 0.4). The CPM-effect was higher using the fixed condition compared with the adaptive condition ($P < 0.05$).

Conclusions: The current study found that sequential CPM paradigms using a fixed conditioning stimulus produced an increased CPM-effect compared with adaptive and increasing conditioning intensities.

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Combined treatment (Norspan, Gabapentin and Oxynorm) was found superior in pain management after total knee arthroplasty

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Background: Gabapentin (GAB) has recently been introduced for postoperative pain treatment in orthopedic surgery. As persistent postoperative pain is still a major problem in total knee arthroplasty (TKA), studies on the effect and side effects of Gabapentin in addition to the commonly used morphine (MOR), Oxynorm (OXY) and Norspan (NOR) are highly warranted. In the present study, four relevant treatment algorithms, gabapentin and morphine (GAB/MOR), gabapentin and Oxynorm (GAB/OXY), Oxynorm (OXY) and Gabapentin, Oxynorm and Norspan (GAB/OXY/NOR) were examined.

Patients and methods: A total of 241 patients were followed systematically during one month following TKA in four consecutive series: 60 patients were treated with GAB/MOR, 62 patients with GAB/OXY, 59 patients with OXY, and 60 patients with GAB/OXY/MOR. On the day before surgery and on postoperative day 1, 14, and 30, pain during rest, pain during walking and side effects (constipation, dizziness, and nausea) were reported (VAS).

Results: After 30 days, pain greatly decreased in all groups, with a superior effect of GAB/OXY/NOR for pain during rest and only slightly more side effects at day 1.

Conclusions: In management of postoperative pain following TKA, data indicated that GAB/OXY/NOR was superior, compared to GAB/MOR, GAB/OXY, and OXY.

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Effects of conditioned pain modulation on the withdrawal pattern to nociceptive stimulation in humans – Preliminary results

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Aims: Conditioned pain modulation (CPM) is a paradigm employed to assess descending control of spinal nociception.