VD somatocognitive therapy resulted in significantly reduction in pain scores (by an average of 66%), and significant improvement of motor patterns, especially for the scores for gait (56%) and respiration (88%).

Conclusions: Somatocognitive therapy is a new approach that appears to be very promising in the management of chronic gynaecological pain.

Short-term out-patient treatment significantly reduces pain scores and improves motor function, especially with respect to respiration, gait and movement (ability to relax).

The approach is now being used in a randomized, controlled intervention study including patient with chronic low back, neck and shoulder, and widespread pain.

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The Manual Intervention Trial (MINT)—The effect of various combinations of naprapathic manual therapy. The study protocol of a randomized controlled trial

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Objective: Naprapathy is defined as a specific system for examining, diagnostics, manual treatment and rehabilitation of pain/dysfunction in the neuromusculoskeletal system. The therapy aims to reduce pain and dysfunction through treatment of the connective tissue, muscle- and neural tissue in/around the spine and other joints, by a combination of manual techniques. Earlier trials show that Naprapathy is effective for patients with unspecific back/neck pain. The current trial aims to compare the effect of three combinations of Naprapathic manual therapy (NMT) on such pain, to examine prevalence, severity and duration of adverse reactions after NMT, and to identify subgroups of patients who have greater benefit from the treatments.

Methods: A randomized controlled trial with three arms (target number: 1050 patients). *Inclusion criteria:* Patients 18–65 years at the student clinic at The Scandinavian College of Naprapathic Manuel Medicine with a new episode of non-specific neck and/or back pain (duration ¸ one week). *Exclusion criteria*: Pain < 2 on a 10 point NRS, pregnancy, contraindication for spinal manipulation, recent trauma, specific diagnosis, red flags, recent treatment.

Treatment arms (all given by students in year 4): NMT (a combination of soft tissue techniques, stretching, and spinal manipulation/mobilization), NMT but not spinal manipulation and NMT but not stretching (treatment or advice).

Patients will get up to 6 treatments within 6 weeks. They will get questionnaires about adverse reactions at new appointments and web based or postal questionnaires regarding the outcomes four times within a year.

Primary outcomes: Pain/disability and prevalence; duration and intensity of possible adverse reactions. *Secondary outcomes*: Quality of life and perceived recovery.

Results: A pilot trial of 75 patients is finished. The main trial will take place in March 2010 to December 2012. We will report on the process and on the characteristics of the 75 included patients in the pilot trial.

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The experience of chronic pain, loss and grief

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Introduction: Based on a theoretical framework which integrates grief theory, cognitive behavioural therapy (CBT) and writing theory, 1–2 an intervention for persons experiencing loss and grief caused by chronic pain or death of someone close is planned. There seems to be lack of understanding of the connections between pain, loss and grief and how these life phenomena can be met in patient care. Understanding the process involved in one sort of grief following loss may help us understand the processes involved in another. Increased understanding of this complexity may contribute to suitable approaches in practice.

Methods: This is a mixed method design 3:

1. Qualitative theoretical study (literature review) 1–2
2. Intervention study (questionnaires and interviews):
   a. A CBT approach and writing as tools for managing grief and loss related to chronic pain
   b. A CBT approach and writing as tools for managing grief and pain related to loss by death

A structured group approach following a fixed plan. Participants: 100 with chronic pain and 40 bereaved adults are included.

Results: (1) A comparison between two previous interventions dealing with chronic pain and grief caused by death, indicate common main themes like “relearning the world” and “adaptation”. Between these themes a continuous movement emerges involving several typical experiences. (1) Life phenomena grief, loss and chronic pain seem to have many qualities in common, they may overlap, and a “common core” is identified. (2) Based on this core, a group programme, which integrates CBT and writing theory is suggested.

2. The intervention study based on these findings will be initiated April 2010.

Conclusion: This theoretical framework might offer an integrated fundament for health care workers. There is a value in future research to consider together as well as separately different kinds of losses. The results from our theoretical study will form a new platform for intervention programmes.

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Effect of buprenorphine and fentanyl in experimental induced superficial, deep and hyperalgesic pain

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Chronic pain and hyperalgesia can be difficult to treat with classical opioids acting predominately at the μ-receptor. Some opioids have different receptor binding profiles and different analgesic and anti-hyperalgesic effects. Buprenorphine and its metabolites are believed to exert the analgesic action through μ-, ?- and d-receptors. They may therefore posses another analgesic profile compared to other opioids with a more mono-receptor binding profile such as fentanyl. In the present study 22 healthy volunteers were randomized to treatment with transdermal fentanyl (25 μg/h, 72 h), buprenorphine (20 μg/h, 144 h) or placebo in a crossover experimental pain study. The experimental pain tests (phasic and tonic pain, sensitization) involved pressure at the tibial bone, intramuscular nerve growth factor (NGF), UVB burn injury

model, cold pressor test, cutaneous electrical and thermal stimulation and intradermal capsaicin induced hyperalgesia. Pain testing was carried out at baseline, 24, 48, 72 and 144 h after application of the drugs. Compared to placebo buprenorphine significantly attenuated tibial pressure pain ($P = 0.007$) as well as pressure pain in the UVB induced primary hyperalgesic area ($P = 0.006$). On the other hand fentanyl attenuated cold pressor pain compared to placebo ($P = 0.005$). The two drugs were equipotent and better than placebo to thermal pain stimulation ($P = 0.0001$). They drugs failed to show significant analgesic effect to NGF induced muscle soreness, cutaneous electrical stimulation and to capsaicin induced hyperalgesia. In equipotent doses buprenorphine attenuated bone associated pain and primary hyperalgesia more than fentanyl. These tissue and modality differentiated effects may reflect clinical observations that opioids act differently.

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Pretreatment with opioids enhances afferent induced long-term potentiation in the rat dorsal horn

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Objectives: Opioids are increasingly used against chronic non-malignant pain. Long-term opioid treatment may be associated with the development of hyperalgesia. Long term facilitation (LTF) of C-fibre evoked firing of wide dynamic range neurons in the spinal dorsal horn in response to conditioning stimulation (CS) of afferent fibres is a widely studied cellular model of spinal nociceptive sensitization. In a rat model with recording of single neurone responses we have previously demonstrated that seven days of opioid pretreatment enhances the stimulus-evoked LTF (Fig. 1, Haugan 2008 [1]). In this study we looked at the effect of long-term pretreatment with morphine on longterm potentiation (LTP) of C-fibre evoked dorsal horn field potentials, a widely used model of spinal hyperexcitability.

Methods: Female rats (Sprague-Dawley, $n = 16$) were implanted with subcutaneous Alzet mini-osmotic pumps during short-lasting Isoflurane anaesthesia. The rats were randomised to either s.c. infusion of morphine (20 mg/kg/d) or saline (NaCl 9 mg/ml) and blinded to the experimenter. After 7 days the rats were anaesthetised with intraperitoneal urethane (1.4–1.65 g/kg). C-fibre evoked field potentials in the spinal cord dorsal horn were recorded at the level of segments L4-L5. Both the potentiating stimulation (100 Hz, 4 trains, each train 2 s duration, 10 s intervals) and the test stimulation (single stimuli) were given to the sciatic nerve at C-fibre strength.

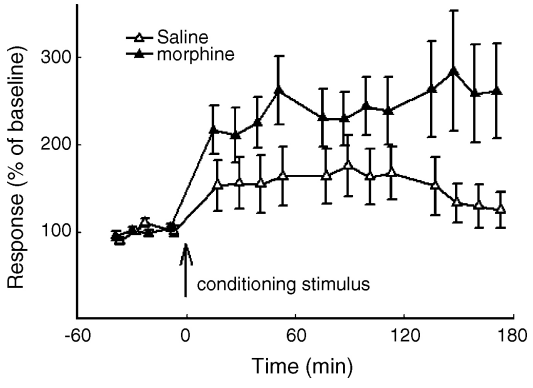

Fig. 1. Extracellular single unit recordings. From Haugan (2008).

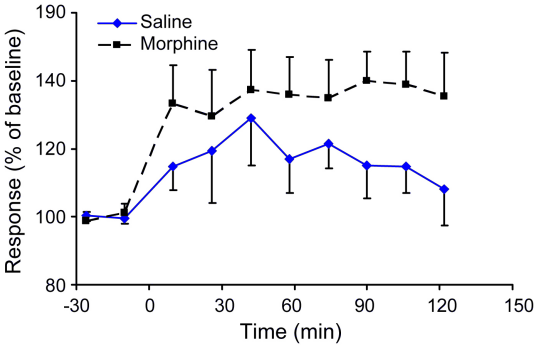

Fig. 2. Field potentials after conditioning stimulation after treatment with morphine or saline.

Results: There was a tendency that seven days of morphine pretreatment increased the potentiation of C-fiber evoked field potentials by conditioning stimulation compared to the saline group (Fig. 2).

Conclusion: Our results support our previous findings and indicate that animals treated with long term opioid show amplification of stimulus-induced central sensitisation compared to opioid naïve animals.

Reference

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Pigs in pain—Porcine behavioural responses towards mechanical nociceptive stimulation directed at the hind legs

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Objectives: In recent years, pigs are used increasingly for biomedical translational research and often considered superior to rodent models. However, only very few pain assays for quantification of behavioural nociceptive responses are available for pigs. This experiment is part of a larger project aiming at developing pain assays for pigs, and the present aim was to examine behavioural responses towards mechanical cutaneous stimulation applied to the caudal part of the metatarsus on the hind legs of pigs using an IITC Electronic von Frey Anesthesiometer.

Methods: Nine slaughter pigs (bodyweight 54 ± 0.7 kg) were subjected to handheld nociceptive mechanical stimulation using the electronic von Frey anesthesiometer (max 1000 g). The animals were kept in one group and tested while slightly fixated in a testroom, to which they had been habituated. Each nociceptive test consisted of 4 single stimulations.

Results: The animals responded behaviourally after single stimulations of 12–1000 g (8% censored) and had a mean threshold for leg movements of 540 ± 85 g. Neither the type of behavioural responses (four categories from slight leg movements to kicking)