Anna Maimer

Dr. med.

The effect of acupuncture analgesia on the pain-related impairment of forced vital capacity after thoracotomy – a comparison of two different acupuncture entities

Promotionsfach: Chirurgie

Doktorvater: Prof. Dr. med. Falk-Udo Sack

Background: Impaired pulmonary function is commonly found in patients following heart surgery. The predicament between pain-induced deterioration of spontaneous breathing on one hand and respiratory depression as a potential side-effect of high-dose opioids on the other hand remains a challenge to analgesia treatment in early post-thoracotomy care. Due to the absence of pharmacological side-effects acupuncture analgesia might therefore present a useful supplement to the existing multimodal analgesia regimen in use. Previous trails investigating the analgesic potential of acupuncture against post-thoracotomy pain and various other painful conditions revealed inconsistent findings.

Study objective: The objective of this trail was to investigate the additional analgesic benefit of two different acupuncture entities – Western medical acupuncture and classical Chinese acupuncture – compared to a control group exclusively receiving standard analgesia treatment against post-thoracotomy pain. Western medical acupuncture presents a common approach to acupuncture where acupoints are selected according to their ascribed therapeutical indications. In classical Chinese acupuncture acupoint selection depends on the holistic Chinese medical diagnosis of a patient.

Methods: This prospective, randomized, controlled, observer-blinded, three-armed, clinical trail included 100 patients with acute post-thoracotomy chest pain following heart surgery. Subjects were recruited from the intermediate care (IMC) unit in the Department of Heart Surgery at Heidelberg University Hospital between 2005 and 2008.

Study intervention: Group 1 received a verum form of Western medical acupuncture (WMA), Group 2 received a verum form of classical Chinese acupuncture (CCA). In both intervention groups acupuncture was applied in addition to standard analgesia and acupuncture treatment was similar with respect to treatment-length, type of needles, number of acupoints, stimulation technique and acupuncturist; the only systematic difference between Group 1 and 2 was the acupoint selection.

Outcome measures: Percental pain reduction (PPR) from baseline chest pain after treatment served as primary efficacy parameter, post-treatment change in forced vital capacity (FVC) compared to baseline-FVC was chosen as secondary efficacy parameter. The primary endpoint was defined as a PPR of at least 40%, the secondary endpoint was defined as an increase in FVC of at least 300 cm^3.

Results: The primary endpoint (at least 40% pain reduction) was reached by 15% of Group 1-patients and 97% of Group 2-patients. Sixty-four percent of patients in Group 2 reached the secondary endpoint, showing an increase in FVC of 300 cm^3 or more, while acupuncture treatment in Group 1 failed to achieve the secondary endpoint in all cases.

Limitations: Small sample size, single-blinding and short study period

Conclusion: The investigated form of classical Chinese acupuncture was found to be clearly superior to the investigated form of Western medical acupuncture with respect to its immediate analgesic effect and the resulting FVC-improvement. As the two acupuncture treatments merely differed in their acupoint selection the observed difference in treatment effect can be understood as a difference in the cumulative acupoint-specific effects of the chosen acupoints. Furthermore, one can argue that the process of selecting acupoints according to a holistic classical Chinese medical diagnosis results in a superior form of acupuncture yielding better treatment effects. Before recommending the investigated form of classical Chinese acupuncture as a supplement in post-thoracotomy analgesia treatment a long-term trail with a larger study population and repeated acupuncture treatments is needed to evaluate the sustainability and reproducibility of the observed, immediate analgesic effects.