

Effect of static magnetic field on pain associated with frozen shoulder

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Abstract

To examine the effectiveness of application of a static magnetic field (SMF) in reducing pain associated with frozen shoulder, a pathophysiological study of shoulder pain was performed using thermography and deep body thermometry in conjunction with the patients' subjective and objective symptoms. A total of 40 patients (18 men and 22 women; age range, 27 to 83 years; mean age, 57.3 years) with pain associated with frozen shoulder for a duration of 1 week to 36 years (mean, 7 years) were investigated. The subjective and objective symptoms were evaluated with inspection and palpation in conjunction with a visual analogue scale. Patients were randomly assigned to be exposed to active or dummy magnets in a doubleblind test. Active magnets [Ferrite Magnets (130 ± 10 mT, 15 mm in diameter and 7.2 mm in height)] were applied externally to the painful area. In other patients, dummy magnets (0 mT) were applied externally as a placebo. All patients wore 12 pieces of active or dummy magnets for 3 weeks, after which the magnets were removed. Before the treatment, the skin temperature of the painful area was generally lower than that of a healthy or painless area. Upon application of the active magnets, the subjective and objective symptoms significantly improved at 3 weeks, accompanied by an increase in the skin temperature of the painful area. The pain relief persisted in the patients with shoulder pain up through 1 week after removal of the active magnets. These findings suggest that SMF application gradually increases the blood circulation in areas with ischemic pain, thereby improving the subjective and objective symptoms.

Keywords: STATIC MAGNETIC FIELDS, FROZEN SHOULDER, THERMOGRAPHY.