

Acupuncture pretreatment could prevent arthritic pain in rats

TS KOO · YS KIM · JE LEE · HS HWANG · SM CHOI

Dept. of Medical Research, Korea Institute of Oriental Medicine, Daejeon.

Abstract

The usage of acupuncture has gained popularity as an alternative method of treatment for certain chronic pain conditions. However, the efficacy of acupuncture in various diseases has not been fully established and the underlying mechanism is not clearly understood. To determine whether acupuncture pretreatment has prophylactic analgesia in arthritic pain, we examined the effects of electroacupuncture (EA) stimulation before induction of arthritis on pain-related behavior.

EA was applied to an acupoint (ST-36 or SP-6) on the contralateral hind limb with 10 Hz of frequency at an intensity of 1 mA which is equivalent to 5 times the muscle twitch threshold for 30 minutes under isoflurane anesthesia. Arthritis was induced immediately after EA termination by injecting 2% carrageenan into the knee joint of the rat. The weight-bearing force (WBF) of the affected limb during locomotion was measured before and at various times after arthritis induction.

After arthritis induction, rats showed reduced WBF on the affected limb (<10% of total body weight from the normal 55% WBF), indicating a painful stepping condition. Pretreatment of EA applied to the ST-36 point significantly prevented reduction of WBF of the arthritic limb. However, EA applied to the SP-6 point, an acupoint located near ST-36, was not effective. In addition, the effect of EA was blocked by intraperitoneal injection of naloxone (1 mg/kg). These data suggest that EA has prophylactic analgesic effects on arthritic pain, which is mediated by an opioidergic mechanism and is produced by stimulation of a remote site in a point specific manner.