

백서에서 서로 다른 경혈의 침 자극에 의한 통증의 억제 효과

Pain-relieving effects of acupuncture at different acupoints in rats

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ABSTRACT

To clarify the distinction between three difference acupoints, the effects of acupuncture on a behavioral performance were evaluated following formalin test. Male Sprague-Dawley rats were used. Each rat received a manual acupuncture at ST36 (zusanli), SP9 (yinlingquan) or BL60 (kunlun) acupoint before formalin injection. The flinching and licking responses were counted by two blinder investigators. The pretreatment of BL60 acupoint was showed significantly inhibition in flinch behavior as compared with control group. These results suggest that acupuncture at BL60 acupoint may be effective in relieving inflammatory pain.

Keywords: pain, formalin, manual acupuncture, c-Fos, rat

1. INTRODUCTION

Acupuncture, which is a part of a 3,000 year old alternative medical therapy for natural healing, is still widely acceptable for pain-related symptoms such as rheumatic arthritis, osteoarthritis, and so on [1,2]. Its pain-relieving effect due to stimulation of acupuncture is known to be in relation with descending pain inhibitory pathway [3,4]. The present study, in this regard, aims at finding out the most effective acupoints by comparing pain-relieving effects on various body acupoints caused by acupuncture stimuli influential to inflammatory pain. Therefore, formalin-evoked inflammatory pain in the rats is made and manual acupuncture is manipulated in ST36, SP9, BL60 acupoints and non-acupoints in order to draw out the most reliable acupoints and their pain-relieving mechanism through behavioral test.

2. MATERIALS AND METHODS

Adult male Sprague-Dawley rats (200-250g) were used. The Zusanli acupoint (ST36), located between the tibia and fibula approximately 5mm lateral, 5mm lower to the anterior tubercle of the tibia. The Yinlingquan acupoint (SP9) is in a depression between the posterior border of the medial condyle of the tibia. BL60 acupoint (Kunlun) located near the ankle joint, between the tip of the external malleolus and tendo calcaneus. A lipid tissue located along the border of the body trunk at the tight on the ipsilateral side was selected as a non-acupoint.

Manual acupuncture was pre-treated in the ipsilateral site where formalin was injected with inhalation anesthesia of 2% enflurane (95% O₂ and 5% CO₂). 5% formalin with volume of 50ul^{18,19} was applied in an attempt to gain the maximized pain reactions while evading such phenomena as ceiling

effect, backward walking and freezing. The experiment was designed with five groups; a) only formalin-injected, b) formalin-injected with manual acupuncture on ST36 acupoint (ST36-For), c) formalin-injected with manual acupuncture on SP9 acupoint (SP9-For), d) formalin-injected with manual acupuncture on BL60 acupoint (BL60-For), and e) formalin-injected with manual acupuncture on non-acupoint (NA-For). After the injection the animals were put again into the chamber for video recording for 60 min.

3. RESULTS AND DISCUSSIONS

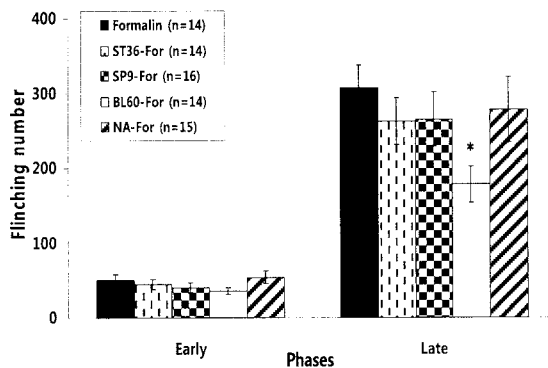


Figure 1: Comparison of flinching number between different groups (* $p < 0.05$).

In the behavioral response test of the early phase, there is no statistical significance between the only-Formalin group and the other manually acupunctured groups. Meanwhile, the results in the late phase (10~60 min.) of flinching response showed significant decrease in the BL60-For group compared with only-Formalin (Fig. 1). These results suggest that acupuncture at BL60 acupoint may be effective in relieving inflammatory pain.

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