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## 静息态脑功能MRI观察不同敏感度体质人群的针刺镇痛效应

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Title: Acupuncture analgesia effect in different sensitive constitution: a resting-state fMRI study

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关键词: [体质](#); [针刺效应](#); [磁共振成像](#); [低频振幅](#)

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摘要: 目的 研究针刺腧穴引起的中枢效应,探讨不同敏感度体质因素对针刺镇痛的影响。方法 筛选3组典型体质的健康志愿者,分为不敏感组、正常组和敏感组,每组15例。测定各组针刺左足三里穴前后的试验压痛阈值,应用配对t检验比较镇痛效应。2周后,应用功能磁共振成像(fMRI)技术对受试者针刺前后进行静息态血氧水平依赖(blood oxygen level dependent, BOLD)扫描,计算并比较各组低频振幅(amplitude of low frequency fluctuation, ALFF)值。结果 ①正常组和敏感组针刺前后压痛阈值差异均有统计学意义( $P<0.05$ )。②与针刺前比较,针刺后不敏感组在左颞下回、左梭状回ALFF值降低,未见ALFF值增高脑区;正常组在双侧小脑后叶、脑干、边缘叶、颞下回、右尾状核ALFF值增高;在左中央后回、左中央前回、双侧枕叶ALFF值减低;敏感组在双侧小脑后叶、颞下回、梭状回、额叶、基底节、前扣带回、右缘上回、右补充运动区、左岛叶ALFF值增高;在左颞中回、左中央后回、后扣带回、双侧枕叶ALFF值减低。结论 不同敏感度体质因素影响针刺镇痛效应,其中枢神经调控机制可能与针刺引起不同的脑区响应网络相关。

Abstract: Objective To determine the analgesia effect in different sensitive constitution and investigate its underlying central nerve modulating mechanism. Methods Forty-five healthy volunteers were recruited and divided into 3 typical groups according to Traditional Chinese Medicine theory on constitution, that is, insensitive group, normal group and sensitive group, with 15

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cases in each group. Pressure pain threshold (PPT) was measured in every group before and after acupuncture at Zusanli point (ST36). Then paired t test was used to compare the effect of analgesia among the 3 groups. Two weeks later, resting-state BOLD fMRI scanning was carried out by using a gradient-echo echo-planar imaging sequence before and after acupuncture at ST36. All the fMRI data were analyzed by the method of amplitude of low frequency fluctuation (ALFF). Paired t-test was used to analyze the data acquired before and after acupuncture.

**Results** Compared the PPT before and after acupuncture, normal group and sensitive group had obvious statistical significance ( $P<0.05$ ). Compared with the image before acupuncture, the insensitive group showed significant decreased ALFF values in the left fusiform gyrus and left inferior temporal gyrus. No increased ALFF was found in this group. The normal group had significantly increased ALFF values in the bilateral cerebellum posterior lobe, brainstem, limbic lobe, left inferior temporal gyrus, and right caudate, and significantly decreased ALFF values in the left postcentralgyrus, left precentral gyrus, and bilateral occipital lobes. The ALFF values in the sensitive group were increased mainly in the bilateral cerebellum posterior lobe, fusiform gyrus, inferior temporal gyrus, basal ganglia, frontal lobe, anterior cingulate, right supramarginal gyrus, right supplementary motor area, and left insular lobe, while the regions with decreased ALFF values were the left middle temporal gyrus, left postcentral gyrus, posterior cingulate, and bilateral occipital lobes.

**Conclusion** Person with different sensitive constitution has different acupuncture analgesia effect. The underlying central nervous modulating mechanism may be due to acupuncture causing response of different brain areas.

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