Functional MRI of Acupuncture Stimulation

The purpose of the present study is to use functional MRI to study brainstem activation produced from acupuncture of the Hegu point. Five normal healthy volunteers participated in the study. Prior to and after acupuncture stimulation, pain stimulation was applied to the subjects by touching the upper gum with the sharp edge of a plastic tube from the acupuncture needle. A visual analog scale was used to record the subjects' perceived intensity of pain. Next, the acupuncture stimulation was applied. An acupuncture needle with diameter of 0.18 mm was inserted in the Hegu point, (LI 4) of the right hand during the ON period with manual twisting using 1 Hz low frequency stimulation and was withdrawn from the hand during the OFF period. Each run consisted of four cycles of 30 sec ON and OFF periods followed a 32 sec baseline scan. The entire study consisted of five acupuncture runs with four 2-minute breaks.

The functional MRI was performed on GE 1.5 T Echospeed Horizon. Statistical analysis was performed using SPM96. The fMRI maps of acupuncture showed activation of periaqueductal grey matter in four out of five subjects and midline raphe area in two of those four subjects. Two subjects had a significant decrease in perceived pain intensity after the acupuncture. Through the use of functional MRI in humans, the study provides evidence that acupuncture stimulation of the hegu point of the hand activates the periaqueductal gray and raphe regions of the brainstem.