

一般口演

(5) Studies on factors affecting the needle insertion pain in human subject

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【Background and objective】

Needle insertion (NI) pain is a non desirable phenomenon that may happen in acupuncture therapy. Acupuncturists refer that a ‘resistance’ is felt when a painful needle insertion occurs. Others say that such unpleasantness may be avoided when punctured accordingly to respiratory phase, nevertheless it lacks in references. Thus, the aim of this study is to clarify the influence of the resistance and the respiratory phases in the NI pain.

【Methods】

Fifty-eight healthy subjects of both sexes (20-44 years) with informed consent participated in this study. Disposable needles (30mm in length, 0.16mm in diameter, SEIRIN) with guide tube were used. *Pre-exp*. Experimenter and volunteer evaluated the NI pain in masked manner. *Exp 1*. A device which mimic NI was designed for a quantitative study. The device consists of an acupuncture guide tube attached to a 5ml syringe, in which a 25 g weight slides down for 13mm to hit the needle accurately. The depth of the NI was used as an indicator of the ‘resistance’ and the pain intensity was measured by VAS. In each point, electrical stimulation (2Hz, pulse width 1ms) was applied and pain thresholds were measured. *Exp 2*. The NI pain was measured at different respiratory phases, which was monitored by a spirometer (HI-201, NIHON KOHDEN).

【Results】

The matching rate was 61% (36/59) in *Pre-exp*, and 71% (104/147) in *Exp 1*. The relation between the depth and the pain intensity measured by VAS showed relative high correlation($r=0.73$; $n=19$) in *pre exp*, but no correlation were detected in *Exp 1*. The average thresholds of points that provoked no pain and NI pain were 1.17mA and 0.78mA, respectively ($p<0.02$, t-test). *Exp 2* showed that NI pain differed among the respiratory rhythm, and exhalation phase was significantly more painful than those of inhalation one ($p<0.02$).

【Discussion】

Despite the low matching rate, the ‘resistance’ variable was suggested to be one of the sources of NI pain. The low thresholds to electrical stimulation at NI pain points indicated the regional difference of pain sensitivity might be another source of NI pain. Acupuncturists based on their clinical experience mention that NI pain can be avoided/minimized when exhaling; our experimental results showed that in such phase pain was enhanced significantly. In spite of this conflict, respiratory rhythm seems to play a role in needling technique.