Can medical thermal images predict acupuncture adverse events? A case history

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ABSTRACT
Malaise and fainting are unpleasant acupuncture adverse effects. This paper shows how the use of thermography might identify subjects before the systematic responses become clinically significant.

Acupuncture adverse effects occur more often than in occasional case reports,1 and malaise or fainting are often seen.2,3 The following case report describes how monitoring changes in hand skin temperature can be used as an ‘early warning sign’ for fainting.

Thermal imaging has already been used for many years for documenting temperature variations in skin surface temperature. For medical use, such changes in skin surface temperature are known to accurately reflect changes in peripheral circulation and can provide useful diagnostic information,4–11 and also after acupuncture.12 Thus we planned to use thermography to further explore vascular responses after acupuncture. This report describes an interesting finding in a single subject that was observed during a pilot study.

The subject was a healthy, 30-year-old female student without any medical history of fainting or any other relevant symptoms or conditions. She was not pregnant and did not have any subjective complaints before entering the study. During acupuncture she was seated with her arms outstretched and fingers splayed (palms down) resting on a specially constructed mesh made from thin nylon strings. The nylon mesh was suspended above an electric heating plate maintained at about 40°C, which provided a stable thermal background for the thermal images. The subject was acupuncture naive, and received bilateral needles at LI4 Hegu. Before the start of the experiment she was acclimatised to the laboratory air temperature (23°C) for a period of 15 min. An infrared camera was positioned above the subject’s hands for continuous measurement of the entire skin surface of the dorsal aspect. After the onset of acupuncture a clear reduction in peripheral circulation of the hands (decrease in skin surface temperature) was seen. This occurred before the vegetative responses became clinically significant (figures 1 and 2). The changes in skin temperature were noticed after <1 min, and the patient fainted after about 5 min. After fainting, she was immediately transferred...
to a treatment bench where she lay in a supine position, regaining full recovery within 5 min. During the fainting period, she had no seizures, cramps or any other clinical signs that might be attributed to any underlying disease or condition. The case was thoroughly examined without finding any medical explanation or disease. An adverse effect of acupuncture was therefore thought to be the cause of the event. In addition, sleep deprivation, low intake of food and drink, anxiety and a tense situation were found to be additional factors that might have contributed to the unexpected and unpredicted adverse event.

Our case report describes how monitoring rapid vasoconstrictor response in the fingers and hands with infrared thermography may a useful technique for the rapid detection of an adverse response in otherwise healthy people undergoing acupuncture. However, although we have seen a similar response in another subject, case histories like this need to be further explored and researched before thermal imaging can be regarded as a useful tool for this purpose.

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