Skin changes after manual or electrical acupuncture

Edwin Yong Miao

ABSTRACT

Pigmentation of the skin after electroacupuncture (EA) or acupuncture in patients is not well recognised. Reporting and studying skin changes after acupuncture or EA would increase awareness among health services providers. This case series includes four cases of short-lived or long-term skin pigmentation after EA or acupuncture.

Skin pigmentation or dark spots appeared in these four cases: after 12 treatments in Case 4, during the 14 treatments in Case 3, after one treatment course (16 treatments) in Case 1 and during the sixth month in a long-term treatment of duration 2 years (one or two treatments per week) in Case 2. These skin changes faded gradually after cessation of a course of acupuncture or EA. Skin pigmentation was hardly seen in one case after 14 days, and in another case after 42 days. Pigmentation of the skin could still be seen in one case after 42 days and could still be seen in another case after 2 years, however, in both cases, pigmentation has reduced in size and colour intensity by more than 50%.

It is likely that pigmentation of the skin is a specific consequence of needling and may be closely linked to acupuncture dosage regardless of whether stimulation is given manually or by EA.

Case 1

Male, 49-years-old, skin colour: yellow, Australian Chinese. The patient had had EA in 2008 for a low back condition, protrusion of the lumbar intervertebral disc. He had had a typical sciatica nerve pain, which was reported by a radiologist as L4-5 disc protrusion. EA was conducted twice a week, 30 min per session for a total of 16 sessions, using 0.35×50 mm needles, with a depth of 40–45 mm. Needles used were of a common brand in Australia: Carbo Ultraclean metal needles with guide tube for single use, made in China, Australian Therapeutic Goods Registration (TGA) number: AUSTL 52108. The power voltage used was 9 V direct current (DC), 9 V output voltage, intermittent waves at 80 Hz with 20 two-second bursts per minute. The EA apparatus used was G6805-1 made by Shanghai Medical High Tech Devices, China. Intermediate waves, with a range of different forms and frequencies, were used. An AC adaptor was used. The patient relied on Panadene Forte (paracetamol 500 mg and codeine Phosphate 30 mg), one tablet, twice a day for 2 years before commencing on EA treatments, but stopped using Panadene after 10 sessions of EA. He continued EA treatments because he was experiencing mild low back pain two or three times a week, lasting about 2–5 hours. Pigmentation of the skin was recorded 6 months after commencing EA. On 24 December 2010, the skin pigmentation at the acupuncture needle sites was reported to be still present, though by 31 January 2011, after 6 weeks without EA, skin pigmentation was fading and only four of the 10 sites needed could be seen, and only very faintly (figure 1).

Case 2

Male, 26-years-old, skin colour: white, Australian, Caucasian. The patient had EA for his severe low back condition, for a diagnosis of myofascitis. He commenced EA in 2008 and treatment was continued for 2 years until 2010, once or twice a week. Each session lasted 30 min, using 0.50 x 60 mm needles, with a depth of 50–55 mm. Needles were Carbo single use needles with guide tubes, needles’ number: AU 52108; the power voltage used was 6 V DC, 35–50 V (output) intermittent waves at 50 Hz, with 18 two-second bursts per minute. The EA apparatus used was G6805-1 made by Shanghai Medical High Tech Devices, China. Intermediate waves, with a range of different forms and frequencies, were used. An AC adaptor was used. The patient relied on Panadene Forte (paracetamol 500 mg and codeine Phosphate 30 mg), one tablet, twice a day for 2 years before commencing on EA treatments, but stopped using Panadene after 10 sessions of EA. He continued EA treatments because he was experiencing mild low back pain two or three times a week, lasting about 2–5 hours. Pigmentation of the skin was recorded 6 months after commencing EA. On 24 December 2010, the skin pigmentation at the acupuncture needle sites was reported to be still present, though by 31 January 2011, after 6 weeks without EA, skin pigmentation was fading and only four of the 10 sites needed could be seen, and only very faintly (figure 1).

Case 3

Female, 20-years-old, skin colour: light yellow, Australian Chinese. The patient had manual acupuncture for insomnia. She was given 16 twice
weekly sessions lasting 20 minutes each, using 0.25×30 mm Carbo needles with a depth of 5–10 mm. Carbo single use needles with guide tube, TGA number: AUSTL 52108. The manual technique consisted of 5 seconds stimulation repeated every 3–4 minutes in every session. The stimulation consisted of a mixture of twisting, pushing, pulling and shaking methods to aim for de qi status. This mixture of methods was applied until de qi status was obtained. Pigmentation of the skin at needle sites, for example ST36, was noticed after 14 sessions. However, after the last session on 23 December 2010, she took a holiday break of 2 weeks, after which the skin pigmentation at the needle sites was hardly noticeable.

Case 4
Male, 35-years-old, skin colour: white, obese with body weight 112 kg, Australian Greek. He received EA for numbness of the feet which was diagnosed as due to mild lumbar canal stenosis. He had had twelve 30 min sessions with DC intermittent waves with 50 Hz, the range of frequency was 18 cycles/min, (The same DC device as used in case 2), using 0.30×75 mm needles with depth of 70–74 mm. The needle brand was Holy Dragon Japanese style metal handle needles with guide tube for single use, Australian TGA approved, CE 0197. Skin pigmentation was recorded at the last treatment session dated 20 December 2010. Skin pigmentation was still noticeable 42 days later (figure 2), but they were lighter marks and had reduced in size from 4 mm to 2 mm.

DISCUSSION
Literature searches for pigmentation caused by acupuncture were conducted in PubMed/Medline, EMBASE, Scopus, Cochrane Library, SpringerLink, MD Consult, AMED, Open J-Gate, ScienceLink Japan, Google Scholar and the Chinese databases, VIP, Wangfangdata, CNKI. One extensive review of significant adverse events associated with acupuncture included a few reports of argyria associated with unusual forms of acupuncture treatment. It seems then that there are no published reports of acupuncture causing skin pigmentation in humans.

From my clinical observation, pigmentation of the skin is a very common side effect among patients who have received courses of manual acupuncture or EA (more than 12 sessions, at least twice a week). Our group completed a randomised controlled clinical study of EA for the treatment of the third lumbar transverse process syndrome, in which six out of 36 in the manual acupuncture group and 11 out 57 in the EA group developed pigmentation of the skin at the needle sites. This phenomenon was recorded in the original research data but not described in the published report because we believed that such skin change was likely to be short-lived.

Skin change seems especially prevalent among paralysed patients. I observed more than 100 patients who suffered from post-stroke paralysis in a rehabilitation hospital where acupuncture with high frequency manual methods using large gauge needles (0.42–0.45 mm in diameter) was administered once a day. Pigmentation of the skin could be seen in every patient, even those who did not receive EA.

A brief review of EA technique aspects may increase our understanding of EA apparatus: During treatment, the patient’s sensation is produced by the front and rear edges of the electric wave; the width of the wave is associated with the phenomena of electrolysis, electrophoresis, electrodiagnosis and the production of the heat; the wider the width of the wave, the greater the width, the greater the effect (figure 3). Ionisation is more likely to occur with one-way current than with two-way, balanced current (figure 4). Most EA apparatus uses a
wave width of 0.4–1 ms, and also produces waves in alternate directions to avoid phenomena such as ionisation. Because of technical difficulties, most EA apparatus commonly used in clinical settings, which have so-called balanced electrical waves, actually have the positive wave larger than the negative one, rendering the waves unbalanced (figure 5). The unbalanced waves produce weak ionisation.

KWD-808II Multi-purpose Health Device and G6805-1 device are commonly used in clinical settings and the technical aspects of their design is generally suitable. In the cases reported above, the skin pigmentation is highly unlikely to have been caused by chemical burn effect or by physical overheating, since these are too mild to have any impact on the patient’s skin. The fact that the positive and negative waves are not exactly balanced could create mild ionisation. But we believe that electrolysis is unlikely to play a role in skin pigmentation because any ferric ions released would readily be removed from the site. Furthermore, only manual methods were used in case 3. We cannot be sure what causes skin pigmentation, but we can speculate that it may be associated with vigorous movement of the needles possibly causing microhaemorrhages.

In reality, pigmentation of the skin may be linked to the size of the needles, the depth, the frequency (eg, intermittent electrical waves of higher frequency), stimulation methods such as stronger manual techniques and the total duration of stimulation over all sessions. For EA, the use of 50–100 Hz causes more physical stimulation than lower frequencies so we regard it as a higher dose. The total dosages in a treatment course can be calculated by the time of each session multiplied by the number of sessions. The stronger the dosage the more chance there is a skin changes.

A further review of the records from December 2010 provided some more information. Of the 18 cases treated with intermittent EA, eight had higher intensity of stimulation (with the switch set to the second or third mark out of four on the apparatus): both cases described above, cases 2 and 4, were included in this higher dose group. For the 11 cases treated with manual techniques, six cases only received needle shaking as this is most acceptable to patients. The needles were stimulated more strongly by twisting, pulling and pushing in five cases, which included the one whose skin pigmentation is reported here.

CONCLUSION
Skin pigmentation occurs with manual acupuncture and with EA, but the mechanism is not clear. It seems unlikely to be due to ionisation by EA, but it may be linked to the overall strength of stimulation of the needles.

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