

Short Communication

Allergic reaction to India ink in a black tattoo

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An 18-year-old girl presented with intensely pruritic erythematous papules of 2 months duration, discretely scattered within and around a black tattoo on her right outer malleolus (Fig. 1). The tattoo had been made 3 months earlier by an amateur, who had used India ink (Pelikan 17 black) as a pigment. The symptoms were only partly responsive to topical corticosteroid therapy.

Patch tests with the GIRDCA standard series were positive to nickel sulfate (+) and neomycin (+). The India ink brought by the patient and applied as is on the back, semi-occluded with Micropore[®] tape, yielded a clear eczematous reaction (++) at D3 and D4. The patient denied permission for biopsy.

According to the manufacturer, Pelikan 17 black India ink contains carbon black and natural resins. X-ray microanalysis of the ink was performed with a scanning electron microscope (SEM-Philips 515) attached to an energy dispersive spectrometer (EDS-EDAX 910). The inorganic component of the tattoo ink showed multiple elemental peaks, namely sodium, chlorine, barium, sulfur, potassium, silicon and traces of aluminium. No nickel was detected. As no further information was available, we could not further identify the sensitizer.



Fig. 1. Papular eruption within and around the amateur India ink tattoo on the patient's malleolus.

Discussion

Allergic cutaneous reactions to tattoos are not infrequent and are generally due to the metallic salts used to prepare the pigments. In order of decreasing frequency, red (mercury), green (chromium), yellow (cadmium) and blue (cobalt) pigments have been reported as producing various localized or generalized reactions in sensitized individuals. Photoactivation may also occur (1). Reactions to black areas in tattoos, in contrast, seem to be extremely rare. Black colour in tattoos can be produced with India ink (containing carbon particles), logwood (containing chrome), iron oxide and titanium oxide (2). We are aware of only one sure reaction to a black tattoo reported in the literature (3), plus 5 reported reactions to cosmetic eyebrow tattoos that, although not specified, were very likely brown-black in colour (4-6).

In the 1 reported black tattoo reaction, carbon particles were suspected as the causative agent, while iron oxide was held responsible for 3 of the cosmetic tattoo reactions (5, 6) and ink impurities for the remaining 2 (4). In all cases, a foreign body or epitheloid granulomatous reaction to the tattoo pigment was demonstrated, but patch or intracutaneous testing to the tattoo ink was either negative or not performed. Exceptional observations of verruca plana and sarcoidosis occurring selectively in black tattoos have also been reported (7-9).

Apart from its rarity as a black tattoo reaction, our case is peculiar because it was caused by India ink. Since its development, India ink has been the mainstay of the tattooist's craft and it is still used worldwide for outline and pure black tattooing (10). Furthermore, due to its long-term safety, it has been widely used by endoscopists for colonic tattooing and by radiologists for skin marking of radiotherapy fields (11, 12).

To our knowledge, this is the 1st reported case of an allergic eczematous reaction to India ink in a tattoo. Whether, in our patient, sensitization was due to inorganic elements, to carbon particles or to resinous components of the ink, we cannot say.

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