A Chinese Tattoo Paint as a Vector of Atypical Mycobacteria-outbreak in 7 Patients in Germany

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Tattoos and permanent make-up are very popular nowadays. While the risk of infection by viruses such as HCV and HIV is well established, little is yet known about the associated risk of mycobacterial infections. We report seven cases of cutaneous inoculation of atypical mycobacteria secondary to the application of permanent make-up.

CASE REPORTS

Seven female patients developed granulomatous, partly purulent skin reactions in the area of the eyebrows days to weeks after the local application of permanent make-up (Fig. 1). All patients also showed swelling of the loco-regional lymph nodes. Skin and lymph node biopsies taken from 6 out of 7 patients revealed distinct tuberculoid granulomata with typical central necrosis (Fig. 2). Five patients underwent lymph node extirpation for diagnostic and therapeutic reasons. In two cases, mycobacteria were detected by rhodamine-auramine staining. DNA of atypical mycobacteria was detected in five specimens at the National Reference Center for Mycobacteria in Borstel, Germany. In two of the patients, an atypical mycobacterium that had not been described before was detected by PCR. The undefined mycobacterium bore features of *M. haemophilum*. Unfortunately, it could not be cultivated for further characterisation.

All patients were treated by the same cosmetician using a dark brown ink imported from China. The ink was found to be contaminated with a multitude of different bacteria, including Gram-negative bacteria such as *Ralstonia pickettii* and ubiquitous atypical mycobacteria like *M. lentiflavum*.

The patients showed different disease courses. Three patients required systemic tuberculostatic therapy, comprising ethambutol, clarithromycin and rifampicin, due to the persistence of skin lesions for several months. Under therapy, the skin lesions and lymphadenopathy improved slowly but continuously. Interestingly, one patient showed complete spontaneous healing without any intervention.

Fig. 1. An erythematous plaque with ulceration on the left eyebrow of one of the patients.

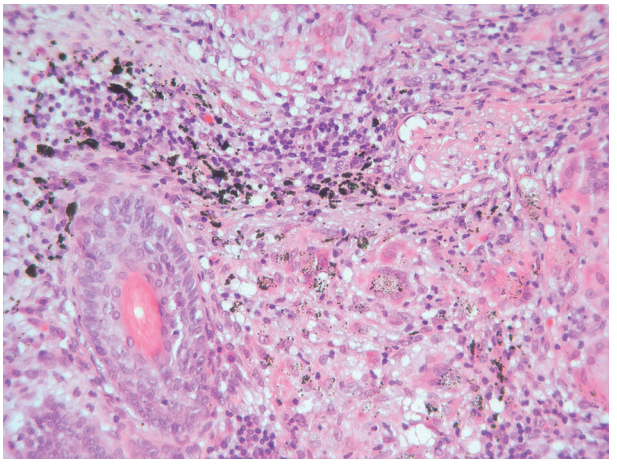

Fig. 2. Histology showing the dark tattoo pigment within the dermis and an associated granulomatous inflammatory reaction involving giant cells (HE staining, ×20).

DISCUSSION

Our case series of mycobacterial infections after the application of permanent make-up demonstrates that this procedure may cause serious infections. The pigments are introduced into the epidermis and upper dermis with tiny solid needles that are moistened with tattoo colourant. In contrast, in conventional tattoos, pigments are usually deposited into the mid-dermis. The various risks and side effects of both procedures include infection with HIV, hepatitis B and C, bacteria and fungi. Other associated risks are sarcoidal foreign body reactions, allergic and photoallergic reactions. Furthermore, there have been isolated reports of basal cell carcinoma, squamous cell carcinoma and malignant melanoma (1). The inks used in tattoos and permanent make-up are composed of pigments and multiple other ingredients and can be contaminated with different bacteria. Moreover, non-sterile equipment and procedures may transmit infections.

Infections with atypical mycobacteria, which are found ubiquitously, have been reported after surgical procedures, acupuncture, subcutaneous injections and tattoos (2). Similar outbreaks have been reported after tattooing in young healthy individuals (3). In Australia, ink contaminated with *M. chelonae* was used on multiple clients, causing infections in three of them (4).

To our knowledge, this is the first report of a series of serious atypical mycobacterial infections after the application of permanent make-up and presumably caused by contaminated ink. It clearly highlights the need for general legal regulation of body art.

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