Permanent tattooing, has gained tremendous popularity for the past 20 years among the Western population. In Europe, the prevalence of tattoos is estimated around 10% (1, 2), with the highest prevalence among the 20–35 years old (25%) (2). In Finland, it is currently estimated that 15% of the 20–30-year-old individuals are tattooed (3). Tattoo inks are currently a combination of organic dyes, metallic salts and various additives including solvents, such as isopropanol, and preservatives (4). Several publications have shed light on possible toxic or carcinogenic compounds that could be introduced in the skin or develop in situ as by-products under various conditions (such as UV light or laser exposure) (5–8). It is only recently that European countries and the council of Europe have started to take actions regarding the tattoo ink marketing, especially by withdrawing some inks that contained potential hazardous components from the market (9). However, the composition of tattoo inks is still not subjected to a strict homogenous regulation. Also, there is currently no test available to assess the safety of inks for the purpose of tattooing. Despite accumulation of the dye to local lymph nodes, which is a well-known consequence of tattooing (7, 10), the potential local and systemic carcinogenic effects of tattoos and tattoo inks remain to date unclear. We report here two additional cases of melanoma that developed on tattoos in two Finnish patients.

CASE REPORTS

Patient 1. In June 2006, a 61-year-old Caucasian Finnish man presented with an inflammatory ulcerated tumoural plaque of the right thigh overlying an old tattoo. Upon examination, a superficial, extensive, heterogenous and asymmetric pigmented lesion underlied and surrounded the tumour lesion (Fig. 1A). According to the patient, the pigmented lesion evolved during the past 5 years. Complete physical examination and full body computed tomography scan were normal. Excision of the lesion confirmed the diagnosis of superficial spreading melanoma with a nodular component (Breslow thickness 15 mm, Clark level IV). Sentinel lymph node exploration was negative. No relapse had occurred before 2009, after which no information was available.

Patient 2. In May 2012, a 32-year-old Caucasian Finnish man presented with a 1.3 cm brown, polychromatic, asymmetric lesion on the upper back within a large black tattoo performed a couple of years earlier (Fig. 1B and C). The patient acknowledged that a small naevus pre-existed before tattooing and gradually changed during the following years. However, careful examination revealed that only the borders of the pigmented lesion reached the tattoo drawing. Physical examination was otherwise normal. Pathology of the surgically removed mole confirmed the diagnosis of a non-ulcerated superficial spreading melanoma (Breslow thickness 0.4 mm, Clark level II). Tattoo pigments were mainly located on the upper part of the papillary dermis, mainly around capillaries, on both spared edge of the excision margins. Very few dark pigments were found at the very same location as the tumoural area, confirming that the tattooist had most likely avoided tattooing over the initial pigmented lesion. The patient has been symptom-free for 12 months.

DISCUSSION

From 1938 until now, approximately 50 cases of skin cancers have been reported on tattoos, including 16 melanomas (for review see ref 11). Currently, the development of melanoma
Incidentally, we strongly recommend that the pathologists always use the ICD code for tattoo pigmentation (2013 ICD-10-CM diagnosis code L81.8) in case of any tumour arising on a tattoo so that future epidemiological studies regarding the risk of cancer on tattoos can be performed easily in national cancer registries.

The authors declare no conflicts of interest.

REFERENCES


