Conflict of interest: None reported.

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Painful burning sensation on a tattoo during magnetic resonance imaging

The occurrence of burning sensations on tattoos and permanent makeup during magnetic resonance imaging (MRI) has mainly been reported between the end of the 1990s and the mid-2000s.[1–5] However, large surveys performed in 2002[6] and 2015[7] support that such a side effect remains anecdotal. We report, however, a new case in a young woman with an old tattoo.

A 32-year-old woman presented for the removal of a dark blue tattoo on the right flank. It had been done by a beautician in southern Italy in 2009. The patient recalled that her tattoo was sometimes itchy and swollen with papules. After a traffic accident, she needed an MRI of the back and knee. Sixty seconds after the MRI was initiated, the patient felt tingling, stinging, and excruciating burning sensation on the tattoo. The pain level was evaluated retrospectively to be 10/10 on a numeric scale. The symptoms disappeared when the procedure was stopped. A CT scan was performed instead without any complication. At presentation, the tattoo was unremarkable (Fig. 1). Upon request, tattoo laser removal was scheduled. A 1,064 Q-switched laser test session (3 J/cm^2) triggered local erythema, itch, and headaches. Erythema subsided 3 weeks after with corticosteroids (Fig. 2). CO_2 laser has been performed as replacement without further side effects.

We report a new case of burning sensation on a dark tattoo that led to MRI disruption. This side effect is currently known by radiologists but remains hopefully exceptional.[1] To the best of our knowledge, the last cases were reported in 2011[8] and 2012.[9] Symptoms may range from slight tingling/stinging to burning sensation with warmth feeling and premature termination of the session. Transient local erythema and swelling may be observed.[3,5,8,9] To date, only one case of second degree burn has been reported.[4] Symptoms resolve without sequelae within a few hours to a few days. Tattoos are almost always dark colored. The tattoo design can be a fine lettering[8] or plain patches.[4,9] Interestingly some authors stressed that tattoos applied with a *loop* pattern are most at risk for a cutaneous reaction.[3,8] Our patient presented fine tattooed lines in various loops that suit previous observations.

The main hypothesis is that tattoos containing electrically conductive material, such as iron oxide pigments, may create during MRI an electric current that increases local temperature and may lead to a thermal cutaneous burn.[8] Some authors recommend application of ice packs over tattoos during MRI.[10] A Danish study recently challenged this hypothesis as the authors failed to find that tattoo inks underwent an increase of temperature to a relevant level during MRI.[11] The symptoms may indicate possible involvement of the neuropathic pathway, such as transient receptor potential channels in the skin.[11] However, the study was conducted *in vitro* in capped dishes. The possible interaction of MRI with tattoo ink in a biological skin sample and the role of loop patterns were not investigated.

In our case, we did not perform any biopsy to analyze the composition of the pigments. Q-Switched test was associated with an unexpected local reaction that prompted us to remove the tattoo with CO_2 laser. As the tattoo was performed 9 years ago by a beautician, it is highly likely that the tattoo ink did not

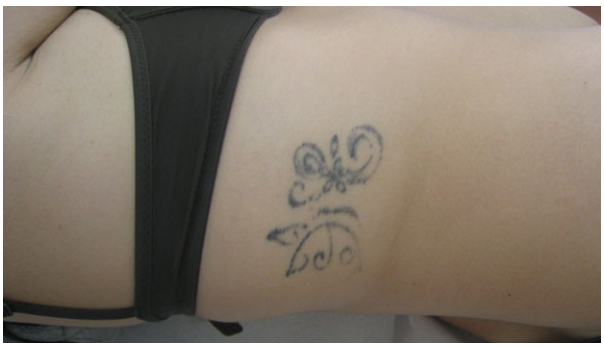
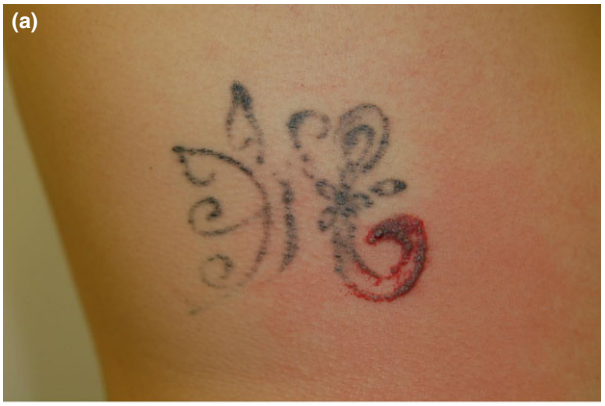


Figure 1 Nine-year-old dark tattoo of the right flank. The tattoo looks normal apart from color fading and poor aging probably due to low tattoo skills and poor ink quality



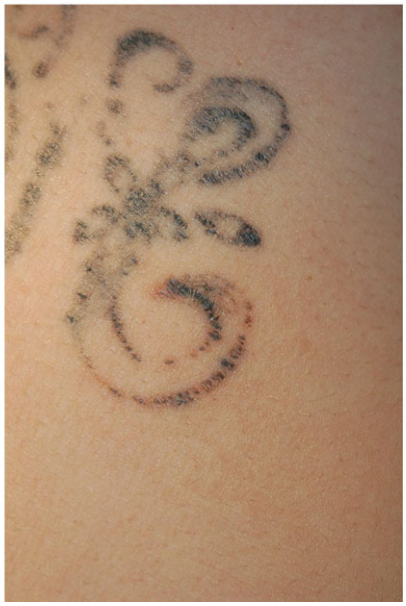


Figure 2 (a) Acute erythema in the vicinity of the Q-switched laser test. (b) Erythema subsided 3 weeks after application of betamethasone dipropionate ointment

respect the current recommendation of the Council of Europe published in February 2008 (ResAP(2008)1) and implemented by various European countries within the following years.

To conclude, MRI-induced burning sensations on tattoos are exceptional but can still happen. Screening forms should still carry a field for tattoos and patients be reminded about possible "heating" feeling of the tattoo.[10] Caution is warranted with dark tattoos with loop patterns, especially those performed before 2009, in Europe especially.

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Ecthyma gangrenosum caused by *Klebsiella pneumoniae* and *Streptococcus vestibularis* in a patient with acute myeloid leukemia: an emerging pathogen

Ecthyma gangrenosum (EG), a cutaneous infection most commonly associated with Pseudomonas bacteremia, usually occurs in immunocompromised patients.[1] However, EG-like lesions have been observed in patients with other bacterial and fungal infections.[2,3] Only three cases with *Klebsiella pneumoniae* have previously been reported to be a cause of EG.[4–6] To our knowledge, no case of EG secondary to *Streptococcus vestibularis* has been reported in the literature so far. We