Tattooing and piercing: An underestimated issue for immunocompromised patients?

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ermanent tattooing and body piercing have gained tremendous popularity in Western countries, among the young especially [1]. In France, one out of ten individuals, and one out of five among the 25–34 years old are tattooed according to a recent survey [2]. European countries have started to take actions to improve these practices by training and educating tattooists and piercers, allowing to improve the safety for customers [3,4]. Unfortunately, complications may still occur as regulations focus on the control of the infection risks. Interestingly, the potential issues related to body-art among patients with inflammatory/autoimmune disorders and under immunosuppressive therapies have been stressed only recently [5,6]. Young patients may be willing to have a tattoo or a piercing, while being under such therapy. In our experience, they do not always perceive the risks, and get tattooed/pierced without any medical advice, when the treatment is fully effective and the disease controlled especially. Intriguingly, there is to date very few cases of complications related to body-art in a context of immunosuppression. Does this mean that body-art is safe for our patients?

This editorial is a viewpoint based on my own experience in the field of body-art complications, regular contact and work with tattooed individuals and tattooists of the French national tattoo syndicate and a review of the literature. Before hand, one should remember that piercing and tattooing are two totally different procedures, with different risks and complications and therefore deserving a separate discussion.

Piercing

Body piercing (BP) is defined by the penetration of jewellery through the skin. Virtually any part of the skin surface can be pierced through the skin [7]. A wide number of complications has been reported [7]. However, acute infections, and less often chronic infections, are the most
important [7,8]. They occur independently of the piercing site and range from 10 to 25% [7–9]. Inoculation occurs during the procedure (primary inoculation) or secondarily, by lack of aftercare during healing, manipulation of the pierced tract or after changing jewellery. There is often a delay in the diagnosis as the symptoms may be underestimated by the patient, considered as part in the healing process or by fear of consultation with potential approach judgment by the physicians [9].

The most commonly isolated bacteria are *Staphylococcus aureus*, group A streptococci and *Pseudomonas aeruginosa* [7–9]. Infection is often localized and dissemination is rare but possible. Bacterial endocarditis is the most severe infection after piercing [10]. Transmission of hepatitis is established [8]. However, it should be stressed that inoculation of blood-transmitted diseases remains nowadays exceedingly low in parlours that respect rules of hygiene, asepsis and sterilization [4]. HIV transmission remains theoretical, with only one case of infection by piercing considered as “possible” to date [11]. Severe infections with unusual bacteria (*lactobacillus*) and fungi (*aspergillus*) may occur in immunocompromised patients, especially in case of amateur piercings or medical conditions (uncontrolled diabetes, leukaemia) [12–14]. To date, no case report of severe complications related to BP in a patient under immunosuppressive therapy has been published (PubMed MEDLINE search using the key-words “piercing” AND “corticosteroids, methotrexate, mycophenolate mofetil, infliximab, etanercept, adalimumumab”).

**Tattooing**

Tattooing involves the introduction of exogenous pigments and/or dyes into the dermis to produce a permanent design. Complications include nowadays chiefly hypersensitivity reaction to tattoo inks, localization of chronic dermatoses, benign or malignant tumors and cutaneous infections [15]. However, contrarily to BP, the risk of pyogenic infection after tattooing is largely overstated nowadays. If the tattoo is performed in a parlour under strict rules of hygiene and asepsis and with correct aftercare during the healing phases [15–17]. Infections occur mainly in case of amateur tattoos or if performed by unlicensed tattooist. Infection may also occur in case of severe immunodeficiency, as illustrated by a lethal case of *echtyma gangrenosum* in a young patient with acute leukaemia [18].

Besides, the sterility of the manufactured inks has been recently questioned as potential contamination by a microorganism may occur during the manufacturing process or during their use. Ink stocks are sometimes withdrawn because of bacterial contamination. Besides, several microbiological studies have showed contaminations of opened or sealed inks [19], even though results are sometimes surprisingly normal [20]. Lastly, outbreaks due to *Mycobacterium* species have been recently reported in the USA due to contaminated inks in immunocompetent patients [21].

To date, no case of severe infection after tattooing in patients under immunosuppressive therapies has been published (PubMed MEDLINE search using the key-words “tattoo or tattoos or tattooing” AND “corticosteroids or methotrexate or mycophenolate mofetil or infliximab or etanercept or adalimumumab”). However, performing tattoos under immunosuppressive therapies is not totally harmless. I have the personal experience of three young patients who were tattooed while under immunosuppressive therapies. Their data are summarized in Table 1. One of them has been published in the *Journal* [22]. Briefly, oral corticosteroid therapy and methotrexate were not responsible for any specific adverse event while anti-tumor necrosis factor-alpha drugs were responsible for increased fatigue, diminished stamina after session, delay in tattoo healing and secondary cutaneous infection after a

| Table 1 | Characteristics of three patients having undergone tattooing while under immunosuppressive therapies |
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| Gender, age | Underlying pathology | Treatment | Physician aware of the tattooing | Adverse event |
| F, 40 | NA | Methotrexate + CS | NA | None |
| F, 29 [19] | Psoriasis | Infliximab | No | Delay in healing Psoriasis flare on the tattoo |
| F, 27 | Ankylosing spondylitis, IBD | Methotrexate | NA | None |
| F, 27 | Ankylosing spondylitis, IBD | Adalimumab + methotrexate | NA | Delay in healing Fatigue Local infection by aftercare error (no cleaning with soap) |

CS: systemic corticosteroids; IBD: inflammatory bowel disease; NA: not available.

1Same patient.
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session due to aftercare error (use of moisturizing cream but no cleaning with soap). Another patient experienced psoriasis koebnerization on a tattoo performed between two infusions of infliximab [22]. This patient did not considered warning us of the tattoo session.

Suggestions to conceal body-art wishes and immunosuppressive treatments

When initiating an immunosuppressive treatment in a young patient, the physician should enquire for potential wish for a tattoo or BP. Increase awareness should be brought on patients who are already tattooed or pierced, as they may be more likely to get a new one. The type of body-art (piercing or tattoo) and level of immunosuppression, related to the therapies, but also the disease itself and potential comorbidities (diabetes…) have to be taken into account. Non-judgemental approach is mandatory to allow a better adhesion of the patient to potential contra-indications. Reasons for contra-indications should be explained to the patient, stressing that they are only temporary and in relation to the risk of severe infections. Piercing or tattooing can always be reconsidered, when the treatment is withdrawn or at a maintenance level.

It remains reasonable to delay/avoid any body-art procedure, when the disease is active and the treatments are currently at high dosage. Any BP, irrespective of its location, may infect quite easily, especially after its performance. Besides, the healing delay varies from several weeks up to a year according to the location [7]. It seems unwise to allow a patient under immunosuppressive therapy to have a piercing, on the orofacial area, the ear cartilage and the genital areas especially. Navel piercing is exposed to a long delay of healing (up to 12 months) due to repeated traumas, and therefore to a risk of secondary infection. As opposite to what was suggested by others [6], we strongly discourage piercing, irrespective of its location and even if it is performed by an expert in an established licensed studio.

As regards tattooing, the situation is more open as the risk of infections is rather low – but not null! –. Our small personal experience suggests that treatments such as corticosteroid therapy at maintenance level or methotrexate at low dosage are not strict contra-indications for tattooing. Biologics, anti-tumor necrosis alpha mainly, may be responsible for a delay in healing as well as pyogenic infection if aftercare is not performed adequately. We agree with O’Connor and Phelan [5] that advising patients against tattoo under mild immunosuppressive treatment systematically is not supported by experience and literature data. However, the patients may develop other complications on tattoos such as a koebner phenomenon on tattooed area (psoriasis, sarcoidosis or chronic cutaneous lupus…) or a hypersensitivity reaction to a tattoo pigment [15]. The role of etanercept in an anecdotal case of granulomatous tattoo reaction has been speculated [23].

If the permission for a tattoo is granted, the patient should choose a tattooist who respects the rules of asepsis and hygiene in his/her parlour. We believe that the tattooist should be aware of the peculiar situation and the condition of the patient so that he can take the maximum precautions to avoid potential inoculation, such as using new tattoo bottles for the patient, performing shorter session, paying attention to any unusual local symptom before a new session, and patient to consult immediately in case of such symptoms.

Conclusion

With the increased popularity of tattooing and piercing, it is nowadays far from being rare not to have a patient without any tattoo or BP. Some of the young patients who are treated efficiently by immunosuppressive therapies may be attracted by this trend and interested in acquiring a tattoo or BP. To date, there is very few data regarding the risk for patients with inflammatory or autoimmune disorder under immunosuppressive treatments. A majority of patients may be discouraged by physicians to get any body-art or decide by themselves not to have any, which could explain the rarity of reported complications. However, our personal experience shows that this is not always the case. BP should be contra-indicated, while tattooing can be possible according to the situation. Additional data and experience from other physicians would be of help in defining whether this issue is overestimated or, on the opposite, underestimated and therefore implies active measures of prevention and information of the patients.

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