Tattoo-associated mycotic infections

Presenters

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Background

- **Tattooing** is a **body modification practice** that is enriched with religious, cultural and social meaning. This type of procedure is even used for **medical purposes**, such as scar camouflage, breast surgery and in the management of alopecia areata. Even so, the increase in tattooing has been associated with the **rise in adverse reactions** related to it.
- **Between 2 and 27%** of tattooed people are reported to have had some sort of **complication related to tattooing**.

- Up to 7% of patients are believed to develop tattoo-related infections
- Atypical mycobacterial infections have been reported in tattooed people, as well as warts and hepatitis
- Numerous reports in the literature about bacterial and viral infections

- **AIM** $\rightarrow$ <u>evaluate the impact of mycotic infections in tattoo practice</u>

Materials and Methods

- PubMed search
- Keywords: "fungal", "infection", "tattoo" and "tinea“
- Time frame: 2009-2020
- No language restriction.
- Search strategy: (tatto*[tiab]) AND ((infection[tiab]) OR (fungal[tiab]) OR (tinea[tiab])).
- The search was performed in September 2020.

Results

- 393 results were retrieved from PubMed and a total of **7 works** were **included in our study**
- **10 patients** affected by tattoo-related fungal infections were identified
- In 4 cases the sex and the age of the patients were not stated, hence no definitive conclusions regarding male:female ratios could be made

Table 1. Summary of tattoo-related mycotic infections.

- **Most** of the evidence identified consists in case reports describing the development of **tinea on tattooed skin** (Microsporum canis, Microsporum gypseum, Trichophyton rubrum and Epidermophyton floccosum)
- Tinea lesions: erythematodesquamative patches with central resolution and a vesiculopustular rim
- 3 cases : close contact with an infected animal as a possible causative agent of fungal transmission.
- The pathogen is often inoculated in the tattoo while the latter is being executed or during the wound repair phase, either by direct contact with an infected source or by telluric contamination.
- **1 immunocompromised kidney transplant patient** with an adverse tattoo reaction after a rejection episode had been tackled with several immunosuppressants

Type of infection	Authors	Year	Type of manuscript	Number of patients	Onset after tattoo execution	Immunocompetent patient(s)
Tinea	Oanță A, et al.[15]	2016	Case report	1	18 days	Yes
	Gathings RM, et al.[16]	2018	Case report	1	4 years	Yes
	Schwob E., et al[17]	2020	Case report	1	12 days	Yes
	Ishizaki S, et al.[18]	2012	Case report	1	2 months	Yes
	Panda M, et al.[14]	2019	Case series	4	>2 months	Yes
Aspergillus	Kluger N, et al.[19]	2014	Case report	1	A couple of weeks	Yes
Purpureocillium lilacinum	Trinh SA, et al.[20]	2017	Case report	1	3 months	No (Renal transplantation)

- Given the fact that only ten cases have been described in the time interval of 10 years and 9 months, **fungal infections of tattoos** seem to be **a relatively rare event** when considering the published evidence.
- Even before 2009, not many cases of fungal tattoo complications have been reported. Namely, there is testimony of only 6 additional cases, with the **earliest** being from 1981.
- Most cases involved immunocompetent patients with an **average lesion onset of about a couple of months after tattooing**. $\rightarrow$ fungal infections on tattoos are not confined to immunodepressed individuals like it may be assumed by their higher risk of developing infections.

Why do they occur?

- infection may not be related to the tattooing process per se (2 months delay in symptom onset compared to the average period of incubation of Tinea, which is 4-10 days)
- Poor skin hygiene, lack of tattoo aftercare
- immunocompromised district (ICD) theory (Ruocco et al., 2009): skin that is more susceptible to infections after tattoing
- immunosuppressive role of black ink (polycyclic aromatic hydrocarbons - > inflammation) (?)
- Mechanical “overworking of the skin”

Conclusions

- Given the increasingly frequent practice of tattooing, it is critical to **consider all the risks** related to it, with infections being no exception.
- **All hygienic practices must be implemented** in order **to reduce the risk of contamination** both during the execution of the tattoo and during the healing phase and subsequent care.
- **Although mycotic infections account for a small percentage of tattoo adverse-effects**, they should be taken into account, especially when the clinical features are suggestive and previous anti-inflammatory therapies have failed, in order to begin effective treatment as soon as possible and tackle the condition.

Thank you