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Case report: Dual Cutaneous Atypical Mycobacterium Infection After Tattooing

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Abstract:

A cutaneous atypical mycobacterium or non-tuberculous mycobacteria (NTM) infection commonly found in contaminated medical and cosmetic procedures such as amateur tattoos1. The main route of infection is caused by the direct inoculation of Mycobacterium spp. during the procedure. The clinical presentations of this infection have many patterns which could lead to a misdiagnosis. Microbaterial studies such as tissue culture and drug susceptibility are essential clues for both definite diagnosis and treatment. Multi-antimicrobial agents are required to treat this infection with a long period of treatment to be cured. We report an unusual dual NTMs infection in an otherwise healthy person who had tattoos.

Keywords: Atypical mycobacterium infection, Non-tuberculous mycobacteria, Skin infection, Skin and soft tissue infection

Case:

A 36-year-old Thai male from Chai Nat province presented to Dermatologic and laser clinic – Chulabhorn hospital with complaints of two weeks history of multiple painful nodules and pustules on the abdomen after tattooing, which had appeared rapidly increased in numbers over the period. He had been treated previously from a private clinic with a topical corticosteroid cream, without improvement. He was otherwise well and was not allergic to anything.

Physical examination showed multiple ill-defined fluctuated painful erythematous to purplish dermal to subcutaneous nodules along with tattoo painting with purulent discharge on abdomen (Figure 1, 2)

Laboratory Data:

Gram's Stain: negative, AFB: negative, Modified AFB: negative, KOH: negative

Histopathology (S62-01443):

The section shows skin and subcutaneous tissue that reveal ulcerative surface covered with fibrinopurulent exudate. There are abundant lymphoplasmacytic cells infiltration in the dermis, perivascular and periadnexal areas. Multiple granulomas are present, composed of epithelioid histiocytes and lymphocytes. (Figure 3, 4)

Figure 1. Clinical image of tattoo infected lesion

Figure 2. Clinical image of ulcerative tattooing lesion

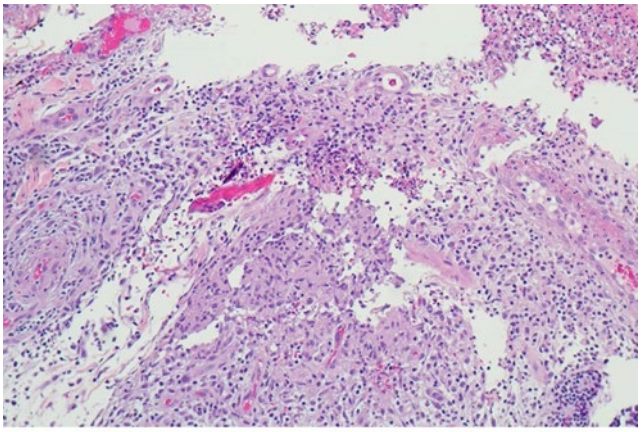

Figure 3. Pathological image show mixed cell granulomatous dermatitis

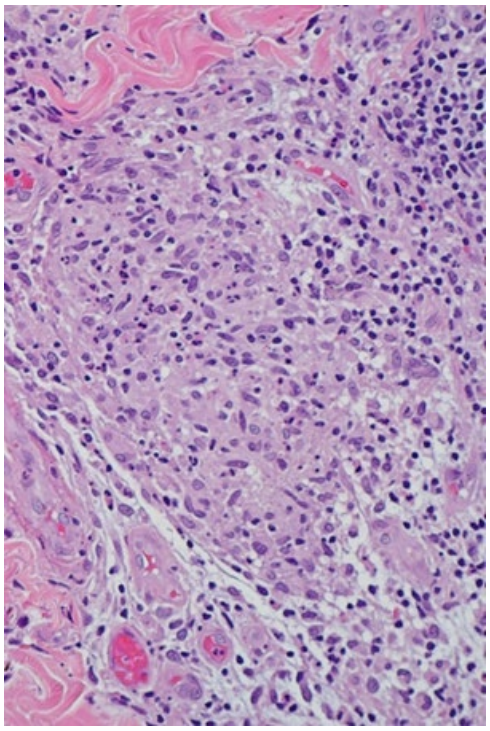

Figure 4. Pathological image demonstrates lymphoplasmacytic cells infiltration composed of epithelioid histiocytes and lymphocytes

Microbiology study:

The tissue culture was positive for Mycobacterium abscessus and Mycobacterium chelonae. Drug susceptibility demonstrated resistance to Moxifloxacin, Ciprofloxacin, Doxycycline, Imipenem, Trimethoprim/sulfamethoxazole; and susceptibility to Amikacin and Clarithromycin.

Diagnosis: Dual Cutaneous atypical mycobacterium infection after tattooing

Discussion

Tattoo is a popular cosmetic and spiritual procedure that approximately around 16% of the general population in the survey in 2003 which are also increasing in the number over the decade[1]. Tattoo-associated NTM skin infections

are reported as sporadic and extensive outbreaks[1,2,3]. NTM is found in the environment such as water which is a main pathogen source of contamination. Amateur or professional tattoo artists use contaminated reagents for tattoo ink dilution that a major route of NTM epidemic. Most of all cutaneous and soft tissue atypical mycobacterium infections are caused by direct inoculation or traumatic event primarily via contaminated tattoo ink during a procedure[3,4].

NTM infections should be considered in all tattoo-associated reactions since it is a great mimicker. Clinical manifestations of the infection are varied and not specific patterns. The presentations are reported such as ulceration, verrucous plaque, nodules appearing abruptly along tattoo scrolling within 7- 28 days[1,4]. Skin biopsies are needed for both histology and microbiology study. Tissue culture for cutaneous NTM infection yields a 50% positive. Other molecular studies such as PCR are essential to confirm the NTM infection. The sensitivity and specificity of detecting NTM in paraffin-embedding tissue by nested PCR are 60% and 96%, respectively[5]. Drug susceptibility testing is also important for an optimal regimen since there is a high prevalence of antimicrobial resistance among NTMs.

The common pathogens to infection of the skin are M. marinum and M. hemophilum and the rapid grower mycobacterium[6,7] (M. abscessus, M. massiliense, M. chelonae, M. fortuitum). M. fortuitum is a common pathogen that caused skin infections after surgical procedure[8]. Histology showed mixed cell granuloma. The management remains a challenge since there is no randomized controlled trial on antimicrobial regimens. Updated management guidelines recommend using at least two active antimicrobial agents (macrolide and fluoroquinolones) to culture the resistance. Extended excisional biopsy to obtain free margin should be performed if possible[9]. Our patient has been treated with the combination of ciprofloxacin 1000mg/day and azithromycin 500mg/day for 6 months with clinical responses.

References

1. Falsey RR, Kinzer MH, Hurst S, et al. Cutaneous inoculation of nontuberculous mycobacteria during professional tattooing: a case series and epidemiologic study. *Clin Infect Dis*. 2013;57(6):e143-e147. doi:10.1093/cid/cit347
2. Bedard BA. Tattoo-Associated Nontuberculous Mycobacterial Skin Infections- Multiple States, 2011–2012. Morbidity and Mortality Weekly Report. Published online August 24, 2012. Accessed February 4, 2022. https://soar.suny.edu/handle/20.500.12648/2354
3. Drage LA, Ecker PM, Orenstein R, Phillips PK, Edson RS. An outbreak of Mycobacterium chelonae infections in tattoos. *J Am Acad Dermatol*. 2010;62(3):501-506.doi:10. 1016/j.jaad.2009.03.034
4. Safranek TJ, Jarvis WR, Carson LA, et al. Mycobacterium chelonae wound infections after plastic surgery employing contaminated gentian violet skin-marking solution. *N Engl J Med*. 1987;317(4):197-201. doi:10.1056/NEJM198707233170403
5. Kim YN, Kim KM, Choi HN, et al. Clinical Usefulness of PCR for Differential Diagnosis of Tuberculosis and Nontuberculous Mycobacterial Infection in Paraffin-Embedded Lung Tissues. *The Journal of Molecular Diagnostics*.2015;17(5):597-604.doi:10.1016/j.jmoldx.2015.04.005
6. Hsiao CH, Tsai TF, Hsueh PR. Characteristics of skin and soft tissue infection caused by non-tuberculous mycobacteria in Taiwan. *Int J Tuberc Lung Dis*. 2011;15(6):811-817. doi:10.5588/ijtld.10.0481
7. Dodiuk-Gad R, Dyachenko P, Ziv M, et al. Nontuberculous mycobacterial infections of the skin: A retrospective study of 25 cases. *J Am Acad Dermatol*. 2007;57(3):413-420. doi:10.1016/j.jaad.2007.01.042
8. Uslan DZ, Kowalski TJ, Wengenack NL, Virk A, Wilson JW. Skin and soft tissue infections due to rapidly growing mycobacteria: comparison of clinical features, treatment, and susceptibility. *Arch Dermatol*. 2006;142(10):1287-1292. doi:10.1001/archderm.142.10.1287
9. Kasperbauer S, Huitt G. Management of extrapulmonary nontuberculous mycobacterial infections. *Semin Respir CritCare Med*.2013;34(1):143-150.doi:10.1055/s-0033-1333576

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