

Tinea capitis caused by *Trichophyton violaceum* in an immunocompetent elderly patient: a case report and review of literature

Mehdi Gheisari¹, Khatere Zahedi¹, and Nabaa Al-Zubaidi¹

¹Shahid Beheshti University of Medical Sciences

August 18, 2023

Introduction

Tinea capitis is a common infection of the scalp and hair caused by dermatophyte fungi that principally affects children¹. It is an uncommon infection in adults and generally occurs in postmenopausal women and immunocompromised patients. Adult tinea capitis may have atypical clinical presentations²⁻³⁴. The causative pathogens in children and adults belong to two genera: *Trichophyton* and *Microsporum*⁵. The clinical manifestations characterized by an erythematous and scaly plaques, itching, suppurative swelling with purulent discharge, areas of alopecia and regional lymphadenopathy. It is often misdiagnosed as a bacterial infection, leading to unnecessary antibiotic prescription or surgical intervention. Treatment delay may result in permanent hair loss⁶⁻⁷. The diagnosis of tinea capitis is made by fungal culture (gold standard), microscopy, wood's lamp and trichoscopy⁵⁻⁸.

Case report

A 75-year-old female presented with a three-month history of pruritic purulent and crusted lesions over the scalp. She had been treated with multiple oral antibiotics and a topical cream consisting of clobetasol and salicylic acid for one month without any improvement. The patient had no medical history other than hypertension. She was in a good general condition and had not received any immunosuppressant drug. There was not any similar disease in other family members. Physical examination showed multiple erythematous-edematous papules and plaques with yellow crust, pustule formation, and hair loss involving the vertex and occipital area of the scalp (Fig 1). There were no other lesions in any other parts of the skin, nails and mucosa. Values of serum blood chemistry were in the normal range. The patient's immune profile was normal. The direct exam with 20% KOH showed an endothrix infection and the mycological culture showed the growth of *Trichophyton Violaceum*. Bacterial culture was negative. Skin biopsy of the scalp lesions showed an acute superficial and deep folliculitis with intrafollicular mycelial fungal infection consistent with tinea capitis (endothrix), on hematoxylin and eosin staining (Fig 2A & 2B). PAS-stained slides showed endothrix septate hyphae invading the hair shafts (Fig 2C). Fluorescent microscopy showed endothrix infection by green fluorescent, septate hyphae and spores (Fig 2D). The patient was treated with prednisolone 15mg daily for one month and oral itraconazole 400 mg daily, which was gradually tapered to 100 mg daily at the last two months. Also, the patient and all family members were treated with 2.5% selenium sulfide shampoo. There was complete clearance of the lesions and acceptable hair regrowth (Fig 3).

Discussion

The amount of fungistatic saturated fatty acids in sebum increases at puberty and therefore dermatophyte colonization of the scalp disappears in this age⁹. This is thought to explain the rarity of tinea capitis in

adults. Although the disease was once thought to be rare in adulthood, studies have been increasingly reporting tinea capitis among adults especially in immunocompromised patients, menopausal and elderly women^{2 34}. Our patient was a 75-year-old menopause female, but not immunocompromised. In most of the reported cases, including our case, the diagnosis was delayed. This delay is probably due to both the rarity of this infection in adults and its atypical clinical presentation. The disease may resemble bacterial folliculitis, folliculitis decalvans, dissecting cellulitis, pityriasis amiantacea and its related etiologies, and scarring alopecia like lupus erythematosus¹⁰. In many studies the correct diagnoses were established by tissue culture²³. Although, for some authors, griseofulvin remains the treatment of choice for tinea capitis in children and adults, both terbinafine and itraconazole are considered acceptable alternatives^{2 3 4}. Due to the numerous reports describing treatment-resistant dermatophytosis, which has emerged as a global public health threat,^{11 12 1314} we started the treatment with high dose itraconazole as 400 mg daily. Also, we prescribed prednisone 15mg daily at the first month because of the severe inflammation. Our patient responded well to this treatment and there was complete clearance of the lesions with acceptable hair regrowth.

We reviewed tinea capitis case reports in adults indexed in PubMed between 2018 and 2023. To be included in the review, articles had to be available in the English language. Inclusion criteria included patient age [?]18 years, diagnosis of tinea capitis, no history of immunosuppression or receiving any immunosuppressant drugs, no history of other medical conditions or history of other dermatophytosis infection in other parts of the skin, no history of gardening, pet-keeping, contact with domestic animals or other individuals with the same manifestations or dermatophytosis infection and no history of contact with objects containing fomites, including brushes, combs, bedding, clothing, toys, furniture, and telephones (Table 1).

We found a total of 11 cases. Of these cases, the prevalence was higher in women (8/11) and the average age was 48.36. Three cases did not have a mycological culture and didn't mention the dermatophyte isolated. *Trichophyton tonsurans* was the most common dermatophyte, followed by *Trichophyton violaceum*. Most cases were treated with oral terbinafine 250 mg daily. One patient was treated with oral griseofulvin 500 mg every 12 hours and another one with oral itraconazole 200 mg twice daily. Most patients received combination therapy consisting of oral and topical antifungal agents. All patients reported were cured successfully without any side effects. Two cases had disseminated lesions on the face¹⁵, extremities and nails¹⁵¹⁶ years after the scalp manifestations. One case caused by *Trichophyton tonsurans* suffered subsequent herpes zoster infection, which shows that tinea capitis may be a risk factor for varicella zoster virus reactivation¹⁷.

Conclusion

Herein, we report a case of tinea capitis in a 75-year-old immunocompetent female and review the literature on this rare entity from 2018 to 2023. Despite the rarity of the disease in adults, tinea capitis should be included in the differential diagnosis of the inflammatory scalp lesions in adult or elderly patients, even in immunocompetent individuals. A KOH examination (and/or fungal culture) should be performed, to provide early and accurate treatment to minimize complications and sequelae of the disease.

References

1. Hay RJ. Tinea Capitis: Current Status. *Mycopathologia* . 2017;182(1-2):87-93. doi:10.1007/s11046-016-0058-8
2. Ahmad S, Wani Ghm, Khursheed B. Kerion mimicking bacterial infection in an elderly patient. *Indian Dermatol Online J* . 2014;5(4):494. doi:10.4103/2229-5178.142518
3. Aguirre Sotelo JP, Tarango Martinez VM, Vera Cabrera L. Kerion celsi caused by *Trichophyton tonsurans* in an adult. *An Bras Dermatol* . 2022;97(5):637-640. doi:10.1016/j.abd.2021.10.005
4. Lova-Navarro M, Gómez-Moyano E, Martínez Pilar L, et al. Tinea capitis in adults in southern Spain. A 17-year epidemiological study. *Rev Iberoam Micol* . 2016;33(2):110-113. doi:10.1016/j.riam.2015.02.007
5. Grimalt R. Management of tinea capitis in childhood. *Clin Cosmet Investig Dermatol* . Published online 2010:89. doi:10.2147/ccid.s7992

6. Grijsen ML, De Vries HJC. Kerion. *Cmaj* . 2017;189(20):E725. doi:10.1503/cmaj.160665
7. Veasey JV, Souza G De, Muzy C, Editor D. RESEARCH LETTERS t Tinea capitis : correlation of clinical presentations to agents identified in mycological culture *. 2018;93(3):465-466.
8. Gupta AK, Friedlander SF, Simkovich AJ. Tinea capitis: An update. *Pediatr Dermatol* . 2022;39(2):167-172. doi:10.1111/pde.14925
9. ROTHMAN S, SMILJANIC A. The spontaneous cure of tinea capitis in puberty. *J Invest Dermatol* . 1947;8(2):81-98. doi:10.1038/jid.1947.15
10. Buckley DA. Lesson of the week: Tinea capitis in adults. *Bmj* . 2000;320(7246):1389-1390. doi:10.1136/bmj.320.7246.1389
11. Khurana A, Agarwal A, Agrawal D, et al. Effect of Different Itraconazole Dosing Regimens on Cure Rates, Treatment Duration, Safety, and Relapse Rates in Adult Patients With Tinea Corporis/Cruris: A Randomized Clinical Trial. *JAMA Dermatology* . 2022;158(11):1269-1278. doi:10.1001/jamadermatol.2022.3745
12. Sacheli R, Hayette MP. Antifungal resistance in dermatophytes: Genetic considerations, clinical presentations and alternative therapies. *J Fungi* . 2021;7(11). doi:10.3390/jof7110983
13. Gu D, Hatch M, Ghannoum M, Elewski BE. Treatment-resistant dermatophytosis: A representative case highlighting an emerging public health threat. *JAAD Case Reports* . 2020;6(11):1153-1155. doi:10.1016/j.jdcr.2020.05.025
14. Ditte MLS, Hare KR, Karin MJ, et al. crossm Emerging Terbinafine Resistance in Trichophyton : Clinical Characteristics , Squalene Epoxidase Gene Mutations , and a. 2019;63(10):1-9.
15. Do N, Notaro E, Schillhammer G, Colven R. Tinea capitis mimicking favus in rural Washington State. *JAAD Case Reports* . 2020;6(3):187-188. doi:10.1016/j.jdcr.2019.12.013
16. Zhu Y, Niu X, Geng S, et al. A 50-Year History of Tinea Capitis. *Mycopathologia* . 2021;186(3):469-474. doi:10.1007/s11046-021-00557-x
17. Zheng YS, Zhou XY, Luo J, et al. Adult black dot tinea capitis caused by Trichophyton tonsurans complicated with herpes zoster. *Chin Med J (Engl)* . 2020;133(1):91-93. doi:10.1097/CM9.0000000000000567
18. Moqadam SD, Mofarrah R, Amiri KJ, Montazer F, Barqi A, Mofarrah R. Tinea capitis mimicking alopecia areata. *Our Dermatology Online* . 2021;12(1):40-43. doi:10.7241/ourd.20211.10
19. Takaliuang DS. Tinea Capitis In Adolescent: A Case Report. *Eduvest - J Univers Stud* . 2022;2(1):55-63. doi:10.59188/eduvest.v2i1.333
20. Goto Y, Suzuki T, Suzuki Y, et al. Trichophyton tonsurans-induced kerion celsi with decreased defensin expression and paradoxically increased interleukin-17A production. *J Dermatol* . 2019;46(9):794-797. doi:10.1111/1346-8138.15008
21. Alves F, Batista M, Goncalo M. Inflammatory tinea capitis mimicking erosive pustulosis of the scalp. *Acta Med Port* . 2019;32(11):733. doi:10.20344/amp.11588
22. Starace M, Boling LB, Bruni F, et al. Telogen-sparing arthroconidia involvement in an adult case of endothrix tinea capitis. *J Egypt Women's Dermatologic Soc* . 2022;19(3):210-212. doi:10.4103/jewd.jewd.-24.22
23. Errichetti E, Buligan C. Tinea Capitis in a Healthy Adult: An Unexpected Diagnosis Made on Dermoscopy. *Dermatol Pract Concept* . 2021;11(4):e2021083. doi:10.5826/dpc.1104a83
24. Rabhi F, Elinkichari D, Mtibaa L, Jemli B, Jaber K, Dhaoui MR. Inflammatory Tinea Capitis Mimicking Dissecting Cellulitis in a Healthy Woman. *Ski Appendage Disord* . Published online July 7, 2023:1-4.

doi:10.1159/000530498

25. Yadav A, Garg T, Saha B, Chander R, Nangia A. Tinea Capitis Masquerading Discoid Lupus Erythematosus. *Int J Trichology* . 2020;12(3):144-145. doi:10.4103/ijt.ijt_90_19

Hosted file

Figures.docx available at <https://authorea.com/users/369053/articles/660634-tinea-capitis-caused-by-trichophyton-violaceum-in-an-immunocompetent-elderly-patient-a-case-report-and-review-of-literature>

Hosted file

Figures.pptx available at <https://authorea.com/users/369053/articles/660634-tinea-capitis-caused-by-trichophyton-violaceum-in-an-immunocompetent-elderly-patient-a-case-report-and-review-of-literature>

Hosted file

Tables.docx available at <https://authorea.com/users/369053/articles/660634-tinea-capitis-caused-by-trichophyton-violaceum-in-an-immunocompetent-elderly-patient-a-case-report-and-review-of-literature>