

A Case of Tinea Capitis in an Adult Due to *Trichophyton Rubrum*

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Tinea capitis in adults, especially healthy, is known to be rare but a significant increase in case has recently been observed. *Trichophyton rubrum* is an anthropophilic, the commonest dermatophyte affecting man but rarely involves the scalp and hair. We describe a 63-year-old healthy woman with tinea capitis due to *T. rubrum* who has clinical improvement after oral terbinafine therapy. (Ann Dermatol 12(3) 189~192, 2000).

Key Words : Tinea capitis, Adult, *Trichophyton rubrum*

Tinea capitis is a superficial fungal infection of the hair and scalp skin caused by several species of dermatophytes^{1,3}. The incubation period is variable (1-3weeks) and the clinical appearance varies depending on the species of causative dermatophyte. Tinea capitis in adults is known to be rare^{2,6}. Secretion of sebum and colonization by *Pityrosporum orbiculare* were supposed to protect the scalp against dermatophytic invasion after puberty.⁷ Here we report a case of tinea capitis of a 63-year-old healthy woman caused by *Trichophyton Rubrum* which is a rare causative fungus of this disease.

CASE REPORT

Patient, 63-year-old Korean female sought medical attention with a skin lesion on the scalp which showed diffuse hair loss similar to manifestation of female androgenetic alopecia with scattered scaly brownish papules especially on central parietal scalp during 5 months(Fig. 1A,B). But no broken hairs and pustules were seen. Her other health condition was good. Potassium hydroxide(KOH)

examination of scales showed multiple hyphae with septum. Punch biopsy on a papular lesion on parietal scalp was done. Histopathological finding revealed perifollicular inflammatory infiltration with spreading into fat septum and lobules and septal hyphae in horny layer and opening area of hair follicle(Fig. 2A,B). Culture of scales of the lesion was done on Sabouraud dextrose agar. The result showed moderately, slow growing whitish cottony colonies(Fig. 3A) with reddish brown pigmentation on reverse side of potato dextrose agar(Fig. 3B). They presented with negative urease test and no requirement of vitamins for growth. On microscopic examination, multiple septate hyphae and microconidia were observed(Fig. 4). *T. rubrum* was confirmed as a causative agent.

Systemic treatment with terbinafine 250mg daily for 30 days and ketoconazole shampoo led to significant clinical improvement with new hair growth.

DISCUSSION

Tinea capitis occurs rarely in normal, healthy adults. Only 3-5% of tinea capitis occurs in adults over 20 years of age but a significant increase in cases has recently been observed^{1,3}. According to the literature^{4,6}, postmenopausal women develop tinea capitis more often than other groups of adults, which may be explained by hormonal changes resulting in reduction of sebaceous secretion. The rare occurrence of the disease in adults in

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Fig. 1A,B. Clinical appearance of diffuse alopecia and scaling.

general may be explained by a modification of sebum quality, which becomes richer in fungistatic saturated fatty acids after puberty⁸. The scalp is at the same time colonized by another fungus, *Pityrosporon orbiculare*, as well, which may interfere with other

dermatophytic invasion⁷. Some authors suggest that thicker adult hair may protect against dermatophytic attack⁹.

The clinical presentation of tinea capitis in adults varies, regardless of the causative fungus and immune status of the patient. Diffuse scaling of the scalp associated with or without alopecia are the most frequent clinical features; this appearance may induce a misdiagnosis, especially with seborrheic dermatitis^{5,6,5}.

The etiologic agents of tinea capitis in adults are the same as in children and certainly depends on the

Fig. 2A. Perifollicular inflammatory infiltration with spreading into subcutaneous tissue (H&E, × 40).
B. Appearance of hyphae within horny layer and hair follicle orifice (PAS, × 100).

Fig. 3A, B. Culture on Sabouraud agar media ; Whitish cottony colonies showed growth of *Trichophyton Rubrum*.

Fig. 4. Presence of multiple septate hyphae and microconidia (lactophenol cotton blue, $\times 200$).

geographic origin of the patient, but all the dermatophytes causing tinea capitis in children can infect the adult scalp. *T. rubrum* is an anthropophilic fungus and the commonest dermatophyte affecting man but rarely involves scalp and hair. Tinea capitis caused by *T. rubrum* is rarely reported in the United States¹⁰ and other countries except in Benghazi, Libya, where it accounts for the most frequent cause of cases.¹¹ In Korea, an epidemiologic study¹² of the tinea capitis of adults showed *Microsporum canis* as the most common causative agents, and two cases of tinea capitis of adults due to *T. rubrum* were reported^{13,14}. In this case, we could not demonstrate the pattern of hair invasion by the fungi - ectothrix or endothrix - and hyphae were observed only in the opening of hair follicle. But we could diagnose this case as tinea capitis because regrowth of hair was observed after adminis-

tration of antifungal agent.

Treatment is usually the same in adults and children. Griseofulvin has been known to be the drug of choice, because of its efficacy and tolerance, but other oral antifungal agents, such as itraconazole and terbinafine, showed successful outcome of treatment in many reports¹²⁻¹⁴. Our patient was treated with terbinafine 250mg daily for 30 days and ketoconazole shampoo and showed significant clinical improvement.

In conclusion, a high degree of clinical suspicion of tinea capitis in adults is essential when patients, and particularly women, are complaining of chronic scaling with or without alopecia: microscopic examination and fungal culture are required. We experienced this uncommon case of tinea capitis in a healthy adult due to *Trichophyton Rubrum*, so reported with the review of literature.

REFERENCES

1. Babel DE, Baughman SA: Evaluation of the adult carrier state in juvenile tinea capitis caused by *Trichophyton tonsurans*. *J Am Acad Dermatol* 21:1209-1212, 1989.
2. Cremer G, Bournerias I, Vandemeleubrouche E, et al: Tinea capitis in adults: misdiagnosis or reappearance? *Dermatology* 194:8-11, 1997
3. Lee JYY, Hsu ML: Tinea capitis in Adults in Southern Taiwan *Int J Dermatol* 30:572-575, 1991
4. Vannini P, Guadagni R, Palleschi GM, et al: Tinea capitis in the adult: Two case studies. *Mycopathologia* 96:53-57, 1986
5. Aste N, Pau M, Biggio P: Tinea capitis in adults.

- Mycoses 39:299-301, 1996
6. Gianni G, Betti R, Perotta E, Crosti C: Tinea capitis in adults. *Mycoses* 38:329-331, 1995
 7. Weary PE: Pityrosporum ovale: Observation on some aspects of host-parasite interrelationship. *Arch Dermatol* 98:408-422, 1968
 8. Hayes AG, Buntin DM, Wible LO: Black dot tinea capitis in a man. *Int J Dermatol* 32:740-742, 1993
 9. Schiff BL, Kelly P, Ronchese F: Microsporum canis tinea capitis in adults. *Cutis* 14:246-249, 1974
 10. Stiller MJ, Rosenthal SA, Weinstein AS: Tinea capitis caused by *Trichophyton Rubrum* in a 67-year-old woman with systemic lupus erythematosus. *J Am Acad Dermatol* 29:257-258, 1993
 11. Kanwar AJ, Belhaj MB: Tinea capitis in Benghazi, Libya. *Int J Dermatol* 26:371-373, 1987
 12. Oh SH, Kim SH, Suh SB: Tinea capitis of Adults in Taegu city for 11 years (1978-1988). *Kor J Dermatol* 27(6):666-679, 1989
 13. Ryu YS, Park YM, Yi JY, et al: A case of tinea capitis caused by *Trichophyton Rubrum*. *Infection* 28(2):191-194, 1996
 14. Kim KH, Lee WJ, Jun JB, et al: A case of Kerion Celsi in An adult caused by *Trichophyton Rubrum*. *Kor J Dermatol* 33(6):1114-1118, 1995