

A Case of Localized Scalp Psoriasis Triggered by *Microsporum canis* Infected Tinea Capitis and Review of Published Literatures

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Abstract

We report a case in which patient was initially ill with tinea capitis infected by *Microsporum canis* later triggered the local scalp psoriasis. Tinea infections always confused with psoriasis, a review of published studies revealed 14 cases of fungal confused with psoriasis.

Keywords: Scalp; Lesion; Psoriasis; Spores

Received: December 16, 2016; **Accepted:** February 25, 2017; **Published:** March 03, 2017

Case Report

A 5-year-old girl presented at our clinic with 2-month history of breakage of hair associated with white scaly patches with sizes of the palm on the scalp (**Figure 1**). She was diagnosed as tinea capitis at the local hospital and was treated with oral terbinafine 125 mg for 18 days and the lesion completely healed. A month after discontinuing medicine, her condition exacerbated then she continued to take oral terbinafine, but the lesion enlarged gradually. A palm size erythema with white scales with broken hair was noticed and she felt intense itch.

Circular and oval tiny spores outside of hairs were observed by direct examination with 15% KOH smear of scales from the scalp (**Figure 2A**). Fungal culture of scales revealed light yellow filamentous colonies (**Figure 2B**) and microscopic examination of a slide culture showed large separated spindle-shaped spores (**Figure 2C**), which was consistent with the features of *Microsporum canis*. Genomic DNA was extracted using a DNA kit (Omega bio-tek, USA) and amplification of the intergenic transcribed spacer (ITS) regions flanking the 5.8S region of the rDNA was performed by PCR. The samples were subsequently sent to Invitrogen Life Technologies for DNA purification and bidirectional sequencing. A BLAST search in GenBank using the ITS sequence showed 99% homology to *Arthroderma otae* (the teleomorph of *M. canis*). The sequence has been submitted to the gene data bank and registered under the accession number of KF733019. The patient was diagnosed with tinea capitis caused by *M. canis* and treated with oral itraconazole 100mg and local application of naftifine and ketoconazole cream once a day for nearly 2 months, but the lesion did not heal completely,

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Citation: Hu W, Ran Y, Lama J, et al. A Case of Localized Scalp Psoriasis Triggered by *Microsporum canis* Infected Tinea Capitis and Review of Published Literatures. Clin Pediatr Dermatol. 2017, 3:1.

white scaly patches was also observed on the scalp (**Figure 1B**) but direct microscope examination and culture both negative. We carefully interviewed her family history, her mother and maternal grandfather had a history of psoriasis. She was advised for tissue biopsy which showed hyperkeratosis and parakeratosis, acanthosis with elongation of the epidermal rete ridges (**Figure 3**), indicated the pathology of psoriasis. Periodic acid-Schiff (PAS) and silver staining were both negative. After topical application of 0.03% tacrolimus, the patient was cured (**Figure 1C**) after 14 days.

Discussion

Psoriasis is a chronic disease of skin, with prevalence of 2-3% in the general population [1]. Several factors have been identified as being associated either with causation of psoriasis or with triggering exacerbations or remissions, including genetic determinants, racial and regional variation, injury and infection, cigarette smoking, alcohol, diet and other diseases [2]. In our case, first time the patient was diagnosed as tinea capitis at the local hospital and was clinical cured completely by terbinafine, then the tinea capitis recrudescence and triggered psoriasis at the same location. So our patient, the factor of psoriasis was *M. canis* infection. The mechanism of psoriasis triggered by *M. canis* infection remains to be studied.



Figure 1 The clinical pictures (A. white scaly patches on the scalp. B. white scaly patches was also observed. C. the patient was cured.)

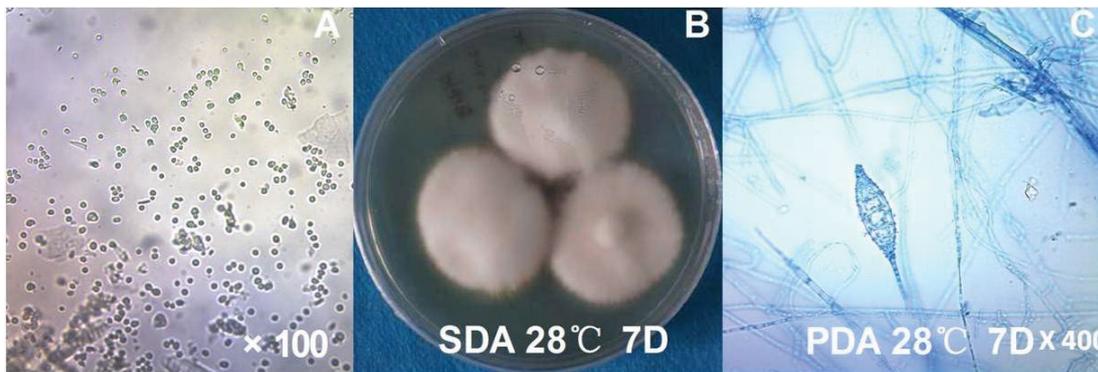


Figure 2 A Circular and oval tiny spores outside of hairs. B. White filamentous colonies. C. Slide cultures (methylene blue staining).

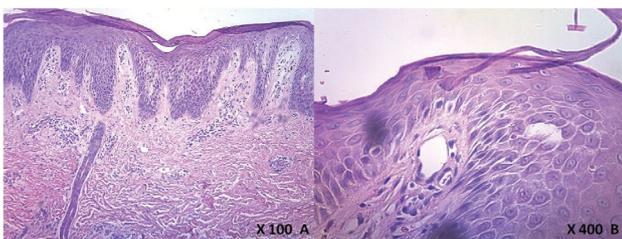


Figure 3 Hyperkeratosis and parakeratosis acanthosis with elongated of the epidermal rate rigdes (HE staining)

By reviewing the published papers there was few report of tinea infection induced local psoriasis but we found that the analogous presentations of psoriasis and tinea infections may cause potential confusion in the diagnosis. Fourteen cases of tinea infections confused with psoriasis are summarized in **Table 1**.

In summary, thirteen cases were tinea infections misdiagnosed as psoriasis, only one case was concomitant psoriasis and tinea corporis. Of the patients [3] (70%) cases presented with psoriatic atypical signs including erythema, scales were misdiagnosed as psoriasis, [4] (15%) cases apart from erythema but also pustular were misdiagnosed as pustular psoriasis, [5] (15%) cases were misdiagnosed as other types of psoriasis.

By reviewing the published papers, we conclude that most cases were tinea infections misdiagnosed as psoriasis because of their analogous presentations (erythema, scales and pustular) and their similar sites, with head, face, trunk and extremities as the most common sites. It doesn't matter with their ages, sex or living areas, the most common fungus in these cases were *Trichophyton rubrum* and *Microsporum gypseum*. Itraconazole and terbinafine remain the most effective treatment choices.

Table 1 Fourteen cases of tinea infections confused with psoriasis are summarized.

Case	Gender	Age	Location	initiate diagnosis	Final diagnosis	Main treatment
1 [3]	M	24	Face, trunk and extremities	Psoriasis erythrodermic	Tinea incognita	Itraconazole
2 [4]	M	45	Left arm	Psoriasis	Tinea incognita (<i>Trichophyton mentagrophytes</i>)	Terbinafine
3 [5]	M	57	Arms, torso, head, and neck	Plaque-type psoriasis	Tinea incognita (<i>Trichophyton rubrum</i>)	Fluconazole
4 [6]	M	63	Head, hair loss	Psoriasis	Tinea capitis	Terbinafine
5 [7]	M	36	Trunk, face and extremities	Psoriasis	Tinea corporis (<i>Trichophyton rubrum</i>)	Terbinafine
6 [8]	F	3	Face and upper trunk	Pustular psoriasis	Tinea incognita (<i>Trichophyton mentagrophytes</i>)	Terbinafine
7 [9]	F	22	Eyelid	Psoriasis	Tinea corporis (<i>Microsporum gypseum</i>)	Itraconazole
8 [10]	M	30	Crural regions	Pustular psoriasis	Tinea cruris (<i>Trichophyton mentagrophytes</i>)	Itraconazole
9 [11]	F	48	Right iliac fossa	Psoriasis	Tinea corporis (<i>Microsporum gypseum</i>)	Terbinafine
10 [12]	M	45	Trunk, extremities	Psoriasis	Psoriasis and tinea corporis (<i>Trichophyton rubrum</i>)	Itraconazole
11 [13]	F	11	face, trunk and shoulders	Psoriasis	Tinea incognita (<i>Trichophyton rubrum</i>)	Terbinafine
12 [14]	M	6	Upper limbs and trunk	Psoriasis	Tinea incognita (<i>Microsporum gypseum</i>)	Griseofulvin
13 [15]	M	6	Head	Psoriasis	Tinea capitis (<i>Trichophyton schoenleinii</i>)	Griseofulvin
14 [16]	F	41	Face	Psoriasis	Tinea incognita (<i>Microsporum gypseum</i>)	Itraconazole
15*	F	5	Scalp	Tines capitis	Tinea capitis (<i>Microsporum canis</i>) triggered psoriasis	Itraconazole tacrolimus

* our case

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