CASE REPORT

Tinea of vellus hair: a diagnostic and therapeutic challenge

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SUMMARY

Tinea infection is a common superficial fungal infection of the skin, hair and nails. Tinea of vellus hair is a rare form of dermatophytosis that is difficult to diagnose and treat. Herein, the authors report the case of a patient who had an itchy rash on the cheek. Microscopic and mycological studies confirmed the diagnosis of tinea of vellus hair. The patient was treated with systemic antifungal therapy with clinical improvement. This report aims to describe an infrequent subtype of common disease and review clinical clues, tools for diagnosis as well as treatment plans.

BACKGROUND

The vellus hair is short and light-coloured; it is a barely noticeable thin hair found on the body and face. Tinea of vellus hair is diagnosed when the vellus hair is infected by a dermatophyte.¹ Diagnosis using potassium hydroxide (KOH) preparations is easily made but underutilised, and this form of infection does not respond well to topical antifungal therapy.² We report the case of tinea of vellus hair on the face with fascinating clinical characteristics and microscopic study.

Figure 1 A clinical picture of the tinea of vellus hair.

CASE PRESENTATION

A healthy 26-year-old woman presented with a localised, scaly, erythematous and annular rash on her right cheek for a month ([figure 1](#)). She had a history of using a topical corticosteroid on this itchy lesion without clinical improvement. She denied any animal contact with her face. Her physical examination showed solitary, erythematous to purplish, annular plaque on the right cheek with a few papules, pustules and a crusted scale on the lesion.

INVESTIGATIONS

Microscopic examination of KOH skin scraping revealed many arthrospores in a vellus hair ([figure 2](#)) with undetectable hyphae in the epithelial cells. A fungal culture from the scraping of the lesion was positive for *Trichophyton mentagrophytes*.

TREATMENT

The patient was treated with oral itraconazole 400 mg/day for a week.

OUTCOME AND FOLLOW-UP

After 1 week of complete treatment, the patient reported significant improvement. During follow-up at 1 month, the lesion was wholly resolved, and there was no clinical recurrence after 10 months.

DISCUSSION

Tinea of vellus hair is commonly reported in children, but it can occur in adults.^{2 3} Most patients have a history of contact with pets, previous topical corticosteroid or topical antifungal use, and resistance to treatment.^{2 4} Clinically, the lesions are usually found on the face, but they can present on any part of the body.² The features are an intense inflammation and excoriated scaly plaques with tiny follicular papules or pustules.³ In the current report, the patient had a predisposing factor: using topical corticosteroid. Her clinical picture was not a classic of tinea infection. In the differential diagnosis, contact dermatitis, Majocchi's granuloma (MG) and granulomatous diseases were also considered.

MG is a granulomatous folliculitis in the deep dermis and subcutaneous tissue. Tinea of vellus hair could be distinguished from MG by clinical presentations, common organism and histopathology. The clinical features of MG are typically erythematous nodules with follicular pustules on the lower extremities, and the majority of patients

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Figure 2 Microscopic examination with potassium hydroxide preparation shows many spores with an ectothrix pattern in the vellus hair.

are culture-positive for *T. rubrum*.^{5,6} The diagnosis needs to be confirmed by histopathological studies, which are characterised to demonstrate foreign body granulomatous inflammation from disruption of the hair follicles and to identify infection of the terminal hair.^{2,6}

In the last several years, dermoscopy, a non-invasive assessment, as an additional tool has become useful with diagnostic clues and during follow-up.^{3,4} The findings, which suggest fungal invasion to the vellus hair, are translucent hair and Morse code-like or barcode-like hair.^{3,7}

The definite diagnosis depends on microscopic and mycological studies. Patients who have the clinical characteristics of tinea of vellus hair should undergo skin scraping with KOH examination. The endothrix and ectothrix parasitism of the vellus hair can be found depending on the mycological species. In approximately 60% (8 in 13) of patients who had been treated with topical antifungals for 4 weeks previously, hyphae in the stratum corneum cannot be detected; thus, technicians and physicians should carefully observe the vellus hairs when considering this condition.²

A mycological study is undertaken to confirm the diagnosis. *Microsporum spp* and *Trichophyton spp*, which are classified as zoophilic and geophilic dermatophytes, are commonly reported on tinea of vellus hair.² The most common zoophilic infection is *Microsporum canis*, which has an ectothrix pattern.⁴ None of the anthropophilic species were found.^{2,3} These might determine the

severity of the pathogen, which incidentally contacts the human skin and produces a deep infection into the vellus hair.

The indication of systemic antifungal therapy in dermatophytosis is recommended for tinea capitis, tinea unguium, and tinea with extensive, multiple or recurrent lesions.⁸ The previous study showed tinea of vellus hair was resistant to topical antifungals and needed systemic therapy.² Our patient was treated with one pulse of itraconazole with clinical improvement within 2 weeks and no clinical recurrence. To our knowledge, there is no standard regimen for treatment interventions including dosage and duration of systemic antifungals; further studies should be conducted in order to make a guideline protocol for treatment of this disease.

In conclusion, tinea of vellus hair is an uncommon manifestation of dermatophytosis. There are fewer than 30 reported cases. This disease is easily misdiagnosed and challenging to treat. The authors point to the need for physicians to consider this rare illness.

Learning points

- ▶ Tinea of vellus hair is a rare form of superficial fungal infection by dermatophytes.
- ▶ The clinical feature is tiny follicular papules or pustules into an intense inflammatory plaque.
- ▶ Microscopic potassium hydroxide preparation commonly cannot detect hyphae in the epithelium, especially in patients who have received topical antifungal therapy; technicians and physicians should carefully observe vellus hairs when considering this uncommon disease.
- ▶ The treatment of tinea of vellus hair requires systemic antifungal therapy.

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