

CASE REPORT

Tinea capitis (Favus) in a 8-year-old child: Case report

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Key Clinical Message

In examining any scalp itch or skin lesions, especially in children with long hair, fungal lesions under the hair may not be diagnosed in a timely manner. Additionally, fungal infection of the scalp, known as tinea capitis, is considered a chronic condition and if left untreated, it can lead to alopecia (hair loss) and permanent scarring.

Abstract

Tinea capitis (TC) is a common cutaneous fungal infection in childhood. In this report, we describe the case of an 8-year-old child presenting with erythematous scalp lesions accompanied by hair loss. Upon examination, palpation revealed a swollen and tender left parotid gland. Notably, the frontal region of the scalp exhibited erythematous lesions and scaly red plaques resembling yellowish paste-like dough. Subsequent clinical evaluation and culture analysis confirmed the diagnosis of TC. The patient received treatment with Terbinafine 125 mg for a duration of 8 weeks. Follow-up examinations conducted after 3 months showed no signs of recurrence. Accurate diagnosis and timely treatment, along with adherence to medication regimens, are crucial in cases of TC, and differential diagnoses should be considered. Treatment should commence promptly upon diagnosis to prevent complications such as scalp baldness and transmission to others. This case report underscores the significance of establishing a precise diagnosis and effective treatment for this dermatophytosis to mitigate the risk of recurrences or therapeutic shortcomings, particularly in infants.

KEYWORDS

case report, Favus, fungal, pediatric infections, tinea capitis

1 | INTRODUCTION

Tinea capitis (TC) is a dermatological condition caused by a superficial fungal infection affecting the scalp, eyebrows, and eyelashes, with a particular predilection for hair shafts and follicles. It falls under the category of superficial mycosis or dermatophytosis and is commonly

known as ringworm of the scalp or tinea tonsurans. The incidence of TC is increasing globally. Dermatophytes, fungi that typically infect keratinous tissues in humans and some animals, invade the superficial layers of the epidermis, particularly the stratum corneum, as well as keratin-rich appendages such as hair and nails, where they proliferate.¹

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TC is frequently observed in children, particularly in developing countries, often resulting in hair loss of varying severity.^{2,3} The etiology of TC varies geographically and may change over time within a region. Factors such as hygiene practices, immune status of the host, socioeconomic conditions, use of antifungal medications, genetic predisposition, climate, migration patterns, drug resistance, and characteristics specific to the dermatophyte species can influence the primary causative agents.^{4,5}

Clinical presentations of TC range from scaly, non-inflamed dermatosis resembling seborrheic dermatitis, to inflammatory conditions characterized by scaly erythematous lesions and hair loss. In severe cases, it can progress to deeply inflamed abscesses called kerion, potentially leading to scarring and permanent hair loss.¹ The manifestation of the disease depends on the interaction between the host and the causative agents. Favus is a severe form of TC; it is a chronic inflammatory dermatophytic infection usually caused by *Trichophyton schoenleinii*. Favus typically affects scalp hair but may also infect glabrous skin and nails.⁶ On the other hand, non-inflammatory type usually will not be complicated by scarring alopecia.

This patient had a fungal infection of the Favus type, in which the *T.schoenleinii* fungus was reported in fungal culture. This infection was caused by a specific species of fungus called *T.schoenleinii*, which had affected the hair shafts in a beehive pattern. The distinct feature of thick, yellow crusts adhering to the scalp is unique.

We present a case of TC favosa in a child admitted to the Medical Science Department, University of Golestan, Iran.

2 | CASE REPORT

An 8-year-old boy weighing 25 kg presented to the hospital for treatment due to erythema accompanied by scaling, sticky yellow discharge, relative hair loss, and fungal eruptions on the frontal scalp, which had appeared 3 months prior to the visit. Before hospitalization, the patient had visited several physicians and had received medication.

For instance, they had only taken three doses of cephalexin capsules, two doses of terbinafine for 2 days, and a single dose of betamethasone injection, and sulfur shampoo for 1 week. However, due to irregular medication use and worsening symptoms, including pain, swelling of the left tragus and neck, increased severity of skin lesions, and secretions, he sought specialized pediatric infectious disease care. The patient had no history of contact with animals or participation in judo or other sports. Additionally, there was no identifiable source of infection for the patient. The child was not diabetic, immunocompromised,



FIGURE 1 Illustrates the case of an 8-year-old boy who exhibited erythematous scalp lesions accompanied by hair loss.

or otherwise prone to infection. There was no history of topical steroid use. Examination revealed a swollen and tender left parotid gland upon palpation. Erythematous lesions and scaly red plaques resembling yellowish paste-like dough were visible on the scalp in the frontal region, measuring 3 × 4 cm (Figure 1).

General examination showed the patient to be alert and well-looking, with no signs of anemia, jaundice, cyanosis, or respiratory distress. Vital signs were stable, with a blood pressure of 90/60 mmHg, a pulse rate of 100 bpm, a respiratory rate of 20 breaths per minute, an oxygen saturation of 97%, and a body temperature of 37°C.

2.1 | Diagnosis, investigations, and treatment

The diagnosis was initially made based on clinical observation and confirmed by paraclinical findings.

Laboratory tests showed a hemoglobin level of 13.2 g/dL (MI/Cumm) white blood cell count of 13,700/mm³, poly 70%, ESR: 25 mm/h, CRP: +1. Urine analysis and cultures were negative. The hair from the balding area, along with some skin, was taken and placed as a thin sheet on a glass slide, then observed under a microscope. The arrangement of the spores relative to the hairs (inside the hair shaft or outside) helped determine the probable type of baldness. Subsequently, to accurately and definitively diagnose the type of fungus, sample cultivation was also requested. Performing a blood culture is time-consuming and expensive.

During hospitalization, the patient was treated with intravenous vancomycin 300 mg three times daily, intravenous ceftriaxone 1 g three times daily based on clinical findings of pain and swelling in the left tragus, along with

laboratory findings of increased white blood cells with a left shift (predominantly increased poly WBC), are present. oral terbinafine tablets 250 mg half tablet daily, serum therapy, and 5 mL hydroxyzine syrup twice daily.

2.2 | Outcome and follow-up

The patient tolerated the treatment well with no reported adverse reactions. Relative improvement was noted after negative wound cultures, resolution of lesions, improvement in lymphadenopathy swelling, and resolution of secondary bacterial infection. Consequently, the patient was discharged after 3 days with continued home treatment, emphasizing the use of terbinafine 250 mg tablets—half a tablet daily for 8 weeks. Upon re-examination 2 days later, a reduction in discharge was observed. Furthermore, the patient revisited 3 months after discharge and was examined by the physician, showing complete recovery with no signs of residual lesions.

Important follow-up diagnostics for TC in children include regular visits to monitor symptom resolution and check for persistent signs of infection or complications. Repeat fungal cultures or direct microscopy (KOH preparation) of scalp scrapings or hair samples are necessary to confirm eradication of the fungus, especially if symptoms persist. Ensuring adherence to the prescribed antifungal medication regimen and addressing any issues related to incomplete or incorrect usage is also crucial.

3 | DISCUSSION

TC, commonly known as scalp ringworm, is the quintessential form of dermatophyte infection, frequently encountered in childhood. It constitutes approximately 1% of superficial fungal infections in regions such as northern and western Europe. The epidemiology of TC poses a multifaceted challenge, as the causative agents remain unidentified in numerous global regions. Traditionally, the prevalence of TC was believed to be higher in developing nations due to factors such as inadequate hygiene, overcrowding, and low socioeconomic conditions.^{7,8}

This prevalent dermatophyte infection primarily affects prepubertal children, with rare occurrences in adults, typically observed between the ages of 5 and 10 years.⁹ Predisposing factors for male children include short hair, frequent trimming with contaminated tools, increased exposure to the external environment, and contact with animals. Poor hygiene conditions, delayed diagnosis, use of home remedies, and lack of timely medical access may contribute to its regional dominance.¹

The clinical presentation varies from non-inflammatory to severe inflammatory forms. Non-inflammatory variants include gray patches and black dots, while inflammatory lesions may manifest as kerion and favus, potentially leading to cicatricial alopecia if untreated.¹⁰ Our patient experienced inflammatory lesions due to irregular medication use, resulting in erythematous lesions, scaly red plaques, and ultimately alopecia.¹¹

The differential diagnosis of inflammatory TC includes various conditions such as pityriasis amiantacea, bacterial folliculitis, impetigo, pyoderma, pyogenic abscess, erosive pustular dermatosis, pustular psoriasis, Langerhans cell histiocytosis, dissecting cellulitis, and folliculitis decalvans.¹²

A fungal culture is widely acknowledged as the preferred method for diagnosing dermatophytosis.¹ Nonetheless, due to its cost and time-intensive nature—usually taking 7–14 days for results—fungal cultures are typically limited to cases where diagnosis uncertainty exists or when the infection proves severe, widespread, or resistant to treatment.¹³ In this patient, treatment was initiated by a pediatric infectious disease specialist and a dermatologist, based on the patient's history and clinical manifestations. Additionally, samples of the patient's skin secretions were taken for fungal culture analysis.

Considering that without treatment and with prolonged illness, permanent hair loss accompanied by atrophy occurs, it is therefore recommended to complete the treatment course. Griseofulvin is the drug of choice for treating TC in children, typically administered for 6–12 weeks or until fungal tests return negative. However, its long treatment duration poses compliance challenges. Alternatively, oral antifungals such as terbinafine, ketoconazole, itraconazole, and fluconazole offer shorter treatment durations and good safety profiles. Terbinafine, a fungicidal agent, inhibits squalene epoxidase in the fungus's cell membrane.¹⁴ Although generally well tolerated, it may cause side effects such as headaches, gastrointestinal discomfort, taste disturbances, and, rarely, severe reactions such as pancytopenia and hepatic failure.¹⁵

A Cochrane review revealed both terbinafine and griseofulvin as effective treatments for TC in children, with terbinafine showing better efficacy against *Trichophyton* species and griseofulvin being more effective against *Microsporum* species.¹ Our patient's symptoms disappeared after an 8-week course of 125 mg of terbinafine tablets.

Additionally, antibiotics may be necessary to treat secondary bacterial infections. Topical antifungal therapies alone are not recommended due to inadequate penetration into hair follicles.¹ However, they can reduce spore

transmission and serve as adjuvant therapy to systemic antifungals.

All household members should be examined and treated if TC is detected in one individual. Measures to prevent transmission include discouraging the sharing of personal items, properly cleaning fomites, and regularly using antifungal shampoos.^{7,8} Early and appropriate treatment yields an excellent prognosis for non-inflammatory cases, although severe inflammatory forms pose a risk of permanent alopecia.¹

4 | CONCLUSION

Accurate identification of cutaneous lesions of fungal infection, such as Favus, through observation and patient history, aids in timely diagnosis and treatment. Failure to treat and prolonged illness can lead to permanent hair loss accompanied by atrophy.

AUTHOR CONTRIBUTIONS

Negarin Akbari: Resources; supervision; validation; visualization; writing – original draft; writing – review and editing. **Zahra Sabzi:** Validation; visualization; writing – review and editing. **Jabbar Parhiz:** Supervision; validation; visualization; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors report no conflict of interest.

DATA AVAILABILITY STATEMENT

All data are included in the case report.

CONSENT

Written informed consent was obtained from the patient's parents to publish this report in accordance with the journal's patient consent policy.

HOME RECOMMENDATION

Personal items of the patient such as combs, towels, hats, etc., can easily transmit fungal agents within the

household. Therefore, personal hygiene and completing the treatment course are emphasized.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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