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LATE DIAGNOSIS OF PEDIATRIC KERION CELSI: A CASE REPORT

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Abstract: Inflammatory tinea capitis (Kerion celsi) is a severe form of dermatophytosis of the scalp, often misdiagnosed as bacterial infection due to suppuration and thick crusting. This case report describes an 8-year-old boy from Duque de Caxias, Rio de Janeiro, Brazil, presenting with an approximately one-year history of rounded alopecic patches characterized by erythema, edema, scaling, and pain, with recent worsening marked by exudation and honey-colored crusts consistent with secondary bacterial infection. The patient was initially evaluated during a practical clinical activity at a primary health care unit and received treatment for impetiginization with azithromycin (10 mg/kg/day for 5 days) and prednisolone (1 mg/kg/day for 5 days), resulting in significant improvement in suppuration and pain. Upon reevaluation at the teaching outpatient clinic, once the lesions were cleaner, dermoscopy was performed and revealed zigzag hairs and broken hairs, findings consistent with tinea capitis. Systemic terbinafine was initiated at a dose of half a 250 mg tablet daily for 30 days, combined with selenium sulfide 2% shampoo three times per week. Biweekly follow-up demonstrated favorable progression, with reduction of inflammation and progressive clinical improvement. The patient's mother reported social impairment and embarrassment related to the child's appearance prior to treatment, with improvement in self-esteem after therapy initiation. This case highlights that suppurative presentations may delay the diagnosis of inflammatory tinea capitis and underscores the value of dermoscopy in settings where immediate access to mycological culture is unavailable. Early recognition and appropriate management are essential to reduce the risk of sequelae, particularly

when prolonged disease duration complicates the initial diagnosis.

Keyword: Tinea capitis. Dermoscopy. Inflammatory alopecia.

Introduction

Superficial cutaneous fungal infections, restricted to the stratum corneum, are primarily caused by dermatophytes (tineas), which exhibit biotropism for keratinized tissues such as hair, nails, and skin, producing a variety of clinically distinct lesions. Tinea capitis is a dermatophytosis that affects the hair shaft, scalp, eyebrows, and eyelashes, most commonly caused by *Microsporum canis*, a zoophilic fungus that typically parasitizes animals but may occasionally infect humans, and *Trichophyton tonsurans*, an anthropophilic species that exclusively infects humans (SOARES et al., 2017).

Kerion celsi represents a rare and severe inflammatory form of this infection, triggered by an intense hypersensitivity response of the host to the etiologic agent, which may lead to worsening of clinical manifestations (ISA-ISA; ARENAS; ISA, 2010). In the pediatric population, this fungal infection predominantly affects school-aged boys between 3 and 7 years of age. Transmission occurs mainly through direct contact with infected animals or humans and possibly through contaminated soil, as well as indirect contact via contaminated fomites, such as shared hats, combs, or hairbrushes (HERZUM et al., 2023). The clinical manifestations of tinea capitis vary depending on the etiologic agent but are generally characterized by erythematous, scaly lesions that are often asymptomatic and frequently associated with circular areas of alopecia. In contrast, Kerion celsi represents an in-

inflammatory neutrophilic progression of tinea capitis, resulting in erythematous, regular, diffuse, and painful suppurative plaques that may present with pustules and abscesses and, if not adequately treated, may progress to cicatricial alopecia. Trichoscopic findings are also commonly observed in both tinea capitis and Kerion celsi, including comma hairs, corkscrew hairs, zigzag hairs, barcode-like hairs, and black dots (BOUREZANE, 2017). Due to the presence of suppuration, these lesions are frequently misdiagnosed as bacterial infections; however, secondary bacterial infection superimposed on a fungal infection may also occur (SILVA et al., 2017).

Beyond clinical manifestations, tinea capitis, particularly in its inflammatory form Kerion celsi, may lead to significant psychosocial consequences in affected children. Visible scalp lesions, areas of alopecia, and scaling often cause social embarrassment, stigmatization, and a negative impact on self-image, especially during school years when aesthetic perception and peer interaction play a central role in emotional development (ABDULKADER et al., 2022). Dermatoses associated with hair loss increase the risk of anxiety, low self-esteem, and social withdrawal among children and adolescents, potentially affecting school performance and social relationships (KASSIR et al., 2020). In cases of Kerion celsi, where inflammation may be pronounced and can result in cicatricial alopecia, the psychosocial burden may be even greater, highlighting the importance of early diagnosis and appropriate management not only to prevent clinical complications but also to mitigate future emotional and social consequences (PIQUERO-CASALS, 2021). The diagnosis is generally clinical;

however, laboratory tests such as fungal culture, microscopy, or molecular diagnostics may be performed to identify the etiologic agent and guide appropriate systemic therapy. Fungal culture is considered the gold standard, as it allows identification of the species and assessment of antifungal susceptibility. In direct microscopy, potassium hydroxide (KOH) is added to the specimen to dissolve keratin, allowing better visualization of spores and/or hyphae, which remain intact. Molecular biology techniques, particularly polymerase chain reaction (PCR), demonstrate high sensitivity and specificity by rapidly detecting fungal DNA fragments directly from clinical samples (MIRATA et al., 2025). Tinea capitis requires treatment with systemic antifungal agents because topical medications do not adequately penetrate the hair follicle. However, antifungal shampoos may be prescribed as adjunctive therapy for both the patient and household contacts, helping reduce fungal load and prevent reinfection from asymptomatic carriers. Oral griseofulvin remains the first-line treatment, particularly effective against *Microsporum* species, whereas terbinafine has shown equal or slightly greater efficacy for dermatophytes of the genus *Trichophyton* (TSHUDY et al., 2023). Antibiotic therapy is generally unnecessary unless a secondary bacterial infection is confirmed.

Therefore, this case report aims to describe a pediatric case of Kerion celsi with delayed diagnosis, highlighting factors that contributed to the delay in disease recognition. Specifically, this report aims to: (1) describe the clinical evolution of the patient from the onset of symptoms to diagnostic confirmation; (2) present the dermoscopic findings that supported the diagnosis of dermatophytosis; (3) report the therapeutic

response to the treatment instituted and the potential consequences of delayed diagnosis, such as cicatricial alopecia; and (4) emphasize the importance of early recognition of tinea capitis in preventing complications. The presentation of this case seeks to contribute to clinical practice by reinforcing the need for greater awareness of inflammatory forms of tinea capitis, particularly in scenarios where the condition may be misdiagnosed as a bacterial infection, thereby promoting timely and appropriate decision-making by pediatricians and dermatologists.

Case Description

Patient P.P.N.B., an 8-year-old male schoolchild from Duque de Caxias, Rio de Janeiro, Brazil, was initially evaluated at the Duque de Caxias Hospital Polyclinic during a practical session of the Integration of Teaching, Health and Community IV (IESC IV) course at Afya UNIGRANRIO Medical School. The patient reported an approximately one-year history of scalp lesions, characterized by rounded alopecic areas with erythema, edema, scaling, and broken hairs. Recently, the condition had worsened, with the appearance of exudation and yellowish crusts, compatible with secondary bacterial infection superimposed on an underlying dermatophytic process. The patient's mother reported significant impairment in the child's social interactions, noting that he felt embarrassed about his appearance, had difficulty interacting at school, and feared teasing from classmates. There was no history of chronic diseases, continuous medication use, or previous dermatologic conditions. During the initial evaluation, a large irregular alopecic area was observed, with erythematous infiltrated plaques and adherent crusts, accompanied by tenderness on pal-

pation. The initial clinical image illustrates the extent of alopecia and the thick crusted appearance of the lesions (Figure 1). The scalp appearance suggested secondary bacterial infection superimposed on an undetermined primary process.



Figure 1. Initial clinical appearance of the scalp.

Source: Authors' archive (2025).

Given the presence of honey-colored crusts, exudation, and possible impetiginization, initial treatment was directed toward bacterial infection and local inflammatory control, consisting of azithromycin (10 mg/kg/day for 5 days) and systemic corticosteroid therapy with prednisolone (1 mg/kg/day for 5 days). The patient was instructed to return the following week for reassessment. Considering the possibility of inflammatory dermatophytosis, the case was referred for follow-up at the Afya Teaching

Outpatient Clinic in Duque de Caxias. At the subsequent pediatric consultation, one week after treatment initiation, the patient showed marked improvement of the infection. After control of the secondary infection, liver function tests were requested, and in collaboration with the dermatology team, systemic antifungal therapy with terbinafine 250 mg (½ tablet daily for 30 days) was initiated, in addition to 2% selenium sulfide shampoo applied to the scalp three times per week. Biweekly follow-up during the first month of treatment demonstrated consistent clinical response and recovery compatible with appropriately treated inflammatory tinea capitis. At the last recorded follow-up, the clinical course was clearly favorable, reinforcing the importance of accurate diagnosis, early intervention, and structured follow-up in prolonged dermatophyte infections.

Discussion

Due to the presence of honey-colored crusts, exudation, and possible impetiginization, initial treatment was directed toward bacterial infection and local inflammatory control, using systemic antibiotics and corticosteroids. The patient was instructed to return one week later for reassessment, and inflammatory dermatophytosis was considered as a diagnostic hypothesis. For this reason, the case was referred for follow-up at the Afya Outpatient Clinic in Duque de Caxias, Rio de Janeiro, Brazil. At the subsequent consultation performed one week after treatment initiation, clear improvement of the secondary infection was observed, with significant reduction of pain, disappearance of crusts, and absence of secretion. The patient's mother reported significant improvement in the child's self-esteem. Fi-

gure 2 illustrates the scalp in a cleaner state with reduced inflammation, which allowed a more accurate evaluation of the morphological pattern of the lesions.



Figure 2. Clinical appearance after one week of antibiotic and corticosteroid therapy.

Source: Authors' archive (2025).

Once the infectious process was controlled, dermoscopy was performed, revealing zigzag hairs and broken hairs, characteristic findings of tinea capitis, as shown in Figure 3. These findings, together with the clinical presentation and prolonged disease course, allowed the establishment of a definitive diagnosis of inflammatory tinea capitis associated with secondary bacterial infection. This profile is consistent with the epidemiology of the disease, which predominantly affects school-aged children, the group most vulnerable to severe inflammatory forms (NNORUKA et al., 2021).



Figure 3. Dermoscopic findings compatible with tinea capitis.

Source: Authors' archive (2025).

The presence of thick honey-colored crusts and purulent secretion at presentation is typical of superimposed bacterial infection, a common finding in Kerion celsi cases. This overlap may obscure the diagnosis and delay the initiation of systemic antifungal therapy, thereby increasing the risk of cicatricial alopecia. Suppuration and thick crusting are frequently interpreted as pyoderma or abscesses, leading to inappropriate initial management that may compromise hair prognosis (SHEMER et al., 2022). Early antibiotic therapy was decisive for the rapid reduction of exudate and edema, facilitating the identification of the specific signs of inflammatory tinea capitis. Dermoscopy played a crucial role, demonstrating typical trichoscopic patterns such as zigzag hairs and perifollicular scaling. This method is considered highly sensitive for the diagnosis of scalp dermatophytosis, particularly in children and in settings where mycological culture is not readily available (XIAO et al., 2020). The therapeutic regimen adopted, initial antibiotic therapy followed by sys-

temic antifungal treatment combined with topical measures, is consistent with current recommendations for inflammatory tinea capitis with superimposed bacterial infection. Early reduction of inflammation and bacterial load facilitates antifungal activity and reduces the risk of permanent follicular damage (SHEMER et al., 2022; ABDEL-RAHMAN & FARRAND, 2021; HIGGINS & FULLER, 2019). Studies also highlight that combined systemic and topical therapy accelerates clinical response and reduces the risk of cicatricial sequelae (CHEN et al., 2020; HAY, 2018).

Beyond objective clinical improvement, a significant positive impact on the patient's quality of life was observed. The child began interacting more with peers, showing greater confidence and happiness, no longer using caps or other items to conceal the scalp. Additionally, the patient gained 1.6 kg during follow-up, reflecting improvement in nutritional status and overall well-being. This transformation demonstrates that effective treatment of tinea capitis not only reverses physical manifestations but also restores self-esteem and promotes social reintegration, aspects that are fundamental during childhood development. The favorable clinical course, with progressive reduction of tenderness, cleansing of lesions, and marked decrease in inflammatory signs, is consistent with contemporary reports. Furthermore, the psychosocial improvement, reflected in the recovery of self-esteem, corroborates findings indicating significant emotional impact in children with Kerion celsi, due to alopecia and social stigma (COSTA & QUIRINO, 2022). Despite the favorable response, it is important to highlight that severe forms of Kerion celsi may evolve to cicatricial alopecia. A re-

cent cohort study demonstrated that 27.5% of children developed permanent scarring, reinforcing that early antifungal therapy and the severity of inflammation are key determinants of prognosis (SHEMER et al., 2022).

In summary, this case highlights the importance of maintaining high clinical suspicion for inflammatory tinea capitis in children presenting with suppurative scalp lesions. The condition may be easily misdiagnosed as a bacterial infection, leading to underdiagnosis and delayed therapy, factors that substantially increase the risk of permanent sequelae. Primary care plays a central role in early recognition, which is essential for preserving hair follicles and maintaining the child's quality of life.

Conclusion

The present case highlights the importance of differential diagnosis in inflammatory pediatric dermatophytoses, particularly in clinical scenarios involving suppuration and alopecia. Delayed recognition of kerion celsi may worsen the condition and increase the risk of complications, including cicatricial alopecia. The use of adjunct diagnostic tools, such as dermoscopy, along with structured clinical follow-up, plays a crucial role in the appropriate management of these conditions. Furthermore, this report underscores the positive impact of effective treatment on the child's quality of life, including restoration of self-esteem, improved social interaction, and weight gain. These findings emphasize that a comprehensive approach involving a multidisciplinary team is essential not only for resolving the physical manifestations of the disease but also for addressing its psychosocial consequences.

This case contributes to clinical practice by reinforcing the need for greater awareness of inflammatory forms of tinea capitis, particularly in situations where the condition may be misdiagnosed as a bacterial infection, and by highlighting the importance of considering the overall impact of the disease on child development.

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