

Case Report

White Piedra hiding in plain sight: A case of persistent hair shaft nodules in a seven year old girl.

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Abstract

White piedra is typically an asymptomatic superficial fungal infection of the hair shaft caused by yeasts of the genus *Trichosporon*. It presents as white to light-coloured nodules that may partially or completely encircle the affected portion of the hair shaft and are typically soft and loosely attached. This feature is useful in distinguishing the condition from other hair shaft disorders, such as the nits of pediculosis capitis, which attach firmly to one side of the hair shaft.

This case study describes the clinical and environmental characteristics of a seven-year-old girl presenting to our clinic with a long-standing, previously undiagnosed hair shaft condition that was ultimately identified as white piedra.

This case highlights the importance of recognising the characteristic clinical features of white piedra while also considering environmental factors and hair care practices that may contribute to its development and persistence in paediatric patients.

The condition was treated successfully with a combination of topical antifungal therapy, mechanical removal of hair shaft nodules, modification of hair care practices, and attention to contributing environmental factors such as heat and humidity.

Keywords: White piedra; *Trichosporon*; Hair shaft nodules; Trichoscopy; Paediatric dermatology; Superficial mycosis

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1. Introduction

White piedra (WP) is a relatively rare, asymptomatic superficial fungal infection caused by the yeasts of the genus *Trichosporon*, affecting the hair shaft. It presents as white to light-coloured nodules that are typically soft and loosely attached, allowing the nodule to be moved along the hair shaft. Hair fragility is not a common feature. White piedra most commonly affects scalp hair and, to a lesser extent, the beard, moustache, eyelashes, armpits, and pubic areas [1]. It has been reported more frequently in women and younger children, which may be related to hair length and grooming practices that favour prolonged moisture retention around the hair shaft [2].

The first report of white piedra was described by Friedrich Beigel in 1865 in Germany, based on observations of natural human wigs. For many years the fungus responsible for white piedra was recognised as *Trichosporon beigelii*. With advances in molecular biology, around 50 species have now been identified, divided into four clades, of which 16 are known to be pathogenic to humans. The species most associated with WP are *Trichosporon inkin*, *Trichosporon ovoides*, and *Trichosporon cutaneum*, while *Trichosporon asahii* and *Trichosporon loubieri* have occasionally been implicated [1].

In paediatric patients, white piedra may be overlooked because the nodules can resemble other conditions affecting the hair shaft, such as the nits of *Pediculus capitis*, which attach firmly to one side of the hair shaft. This similarity may lead to misdiagnosis, particularly when white piedra is relatively uncommon and not initially suspected, as occurred in the present case.

Here, we describe a case of white piedra in a seven-year-old girl presenting with long-standing hair shaft nodules that had remained previously undiagnosed. To our knowledge, this represents the first reported case of white piedra in the Northern Territory, Australia.

2. Case Report

A seven-year-old girl presented to our clinic with a 12-month history of persistent whitish nodules along the hair shaft, distributed at irregular intervals. Her mother had previously consulted multiple professionals, including hairdressers and doctors, without resolution. On several occasions, she was advised to treat her daughter for head lice. She had also tried various products, such as Selsun Gold, Selsun Blue, and antifungal creams.

Examination revealed a healthy scalp with abundant, thick, long hair. The patient's mother provided a history of repeatedly tying her daughter's hair back while it was still wet, particularly for school, to avoid head lice and nits. The nodules were most prominent in the areas where the hair remained tied and damp. Combined with the warm and humid climate, these conditions likely created a favourable environment for *Trichosporon* proliferation.

Based on history, clinical examination, trichoscopic analysis, and environmental and behavioural factors, a diagnosis of white piedra was made.



Figure 1: A- . Patient's hair tied in a braid, demonstrating habitual styling that may contribute to fungal growth. B- Hair remaining damp due to habitual styling, providing a favourable environment for *Trichosporon* proliferation. C- White nodules along the hair shaft, concentrated in areas of prolonged dampness and habitual styling.

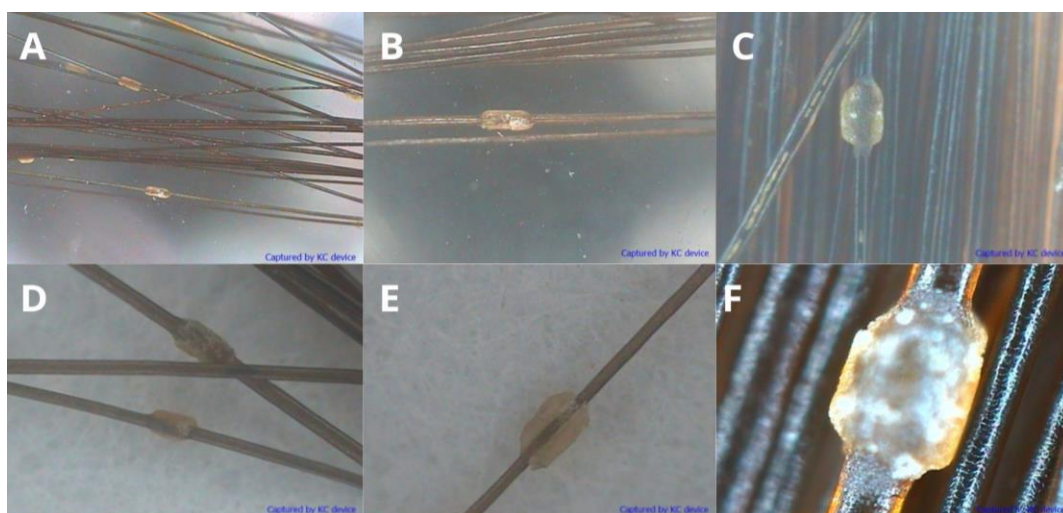


Figure 2: A and B- White piedra nodules under trichoscopy at 60× magnification. **C, D and E-** White piedra nodules under trichoscopy at 150× magnification. **F-** White piedra nodule under trichoscopy at 700× magnification

3. Treatment.

The patient was reluctant to cut or shave her hair; therefore, treatment was initiated with a combination of topical antifungal therapy and mechanical removal of the nodules. While awaiting fungal culture results, a natural topical antifungal rinse and oil blend was applied on alternate days alongside a prescribed antifungal shampoo (2% ketoconazole), applied twice weekly for four weeks. The natural topical treatment was intended to complement the antifungal shampoo by disrupting fungal cell walls. The patient was also advised to physically remove loosely adherent nodules. These measures were well tolerated and found to be beneficial by the patient's mother.

The initial fungal culture was contaminated. A repeat culture was submitted; however, it returned negative, likely due to the prior initiation of therapy. Despite the negative culture, the clinical diagnosis was considered reliable given the characteristic hair shaft nodules and supporting trichoscopic findings.

Following the treatment regimen, the hair shaft nodules progressively resolved, with no recurrence reported at follow-up. Mechanical removal of loosely attached nodules, in combination with antifungal shampoo therapy, was reported by the patient's mother to be particularly beneficial, along with modification of hair care practices, including avoiding tying the hair up when wet.

4. Discussion

This case highlights the diagnostic challenges of white piedra in paediatric patients, particularly when hair shaft nodules are mistaken for nits. In the present case, the patient experienced a 12-month delay in diagnosis after being repeatedly treated for head lice and using multiple treatment products, before the characteristic nodules along the hair shaft were correctly identified.

White piedra is an uncommon superficial infection caused by yeasts of the genus *Trichosporon* and may be overlooked in children because the nodules resemble nits associated with *Pediculosis capitis* [3]. This similarity can contribute to diagnostic confusion in paediatric patients, particularly as school-aged children frequently wear their hair tied back for prolonged periods to reduce the risk of *Pediculosis capitis*.

In addition, this case supports previous observations in the literature [4] that species of *Trichosporon* proliferate more readily under conditions such as prolonged damp hair, frequent tying of hair, and warm, humid environments. These factors have been associated with an increased risk of colonisation, particularly in women and children with longer hair.

Early recognition of the characteristic nodules, evaluation of hair care practices, and assessment of environmental conditions as part of the clinical evaluation can facilitate timely diagnosis and effective management.

5. Conclusion

White piedra is an uncommon superficial fungal infection of the hair shaft that may be misdiagnosed due to its similarity to the nits of *Pediculosis capitis*. Although shaving or cutting the affected hair has historically been recommended, this approach is often unacceptable owing to social, cultural, or religious considerations, particularly as the condition most frequently affects women and young children. Alternative management strategies, such as minimising the frequency of tying hair back—especially when wet—may help disrupt the moist environment in which *Trichosporon* species appear to thrive.

Future studies may further clarify the relationship between *Trichosporon* species and the geographic regions in which they occur, particularly in relation to the warm and humid environments these yeasts appear to favour.

Topical antifungal therapy, such as 2% ketoconazole combined with mechanical removal of the nodules, achieved successful treatment while preserving the hair in this case. Trichoscopy also proved a useful diagnostic tool, allowing close visualisation of the characteristic nodules and assisting in differentiation from nits, thereby reducing diagnostic confusion.

This case highlights the importance of raising awareness—not only in differentiating white piedra from similar hair shaft conditions in paediatric patients, but also in considering the impact of hair care practices and environmental factors during clinical assessment—to support more effective management and reduce the risk of recurrence.

Declaration of Patient Consent: The author certifies that all appropriate patient consent forms have been obtained. In the form, the patient's parent/guardian has given consent for the patient's images and other clinical information to be reported in the journal. They understand that the patient's name and initials will not be published and that due efforts will be made to conceal her identity.

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