

Cat's Curse: A Case of Misdiagnosed Kerion

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Abstract

Kerion is an inflammatory type of tinea capitis which can be mistaken for bacterial infection or folliculitis as both conditions display similar clinical features. It occurs most frequently in prepubescent children and rarely in adults. We report a 26-year-old woman who presented with multiple tender inflamed nodules on her scalp. Her condition was misdiagnosed as bacterial abscess and treated with multiple courses of antibiotics without improvement. Later, her condition was re-diagnosed as kerion based on clinical appearance, history of contact with infected animal and Wood's lamp examination. Symptoms and lesions resolved completely with systemic antifungal treatment leaving residual scarring alopecia. The delay in the diagnosis and treatment of this patient resulted in permanent scarring alopecia.

Introduction

Kerion, also known as kerion celsi, is an inflammatory fungal infection of the hair follicle and shaft which is transmitted from human to human or from animal to human, gaining entry through broken hair shaft or traumatised scalp. Though the exact prevalence of this condition is unknown, it is found to be more common among children. Different pathogens have been implicated to cause kerion and the predominant pathogen is dermatophyte fungi of the genus *Trichophyton and Microsporum*.^{1,2}

Its classical symptoms are extremely tender inflammatory boggy nodules, hair loss and purulent discharge and are hence, frequently mistaken for folliculitis or carbuncle secondary to bacterial infection. Severe hypersensitivity reaction to the fungal element is thought to be responsible for the emergence of inflammatory tinea capitis. Kerion is commonly seen on the scalp although it may occur anywhere including the vulva.³ The most common complication is

scarring alopecia, although rare life threatening cases have been reported.⁴

We report a case of kerion on the scalp of an adult, which was misdiagnosed as bacterial infection, resulting in delayed definitive treatment causing protracted symptoms and scarring alopecia.

Case Summary

A 26-year-old woman presented with multiple tender nodules on her scalp for one month. The lesions started with a single tender nodule on the vertex and gradually increased in number and size with subsequent purulent discharge. She received five different types of antibiotics, including one intramuscularly, over 4 weeks from several general practitioners without any improvement. She was single, lived with her family and had just started working as an executive officer in a software company. There was no history of any recent travel. No other

family members had similar lesions but her pet cat had patchy bald areas for many months.



Figure 1.
A. Multiple erythematous nodules on the frontal and vertex. **B.** Loss of hair, purulent discharge and yellow crusts were seen.

Examinations revealed multiple erythematous, tender, boggy nodules ranging from 2 to 4 cm in size on the frontal and vertex areas of the scalp. Yellow crusts, purulent discharge and

patchy hair loss were also noted (Fig 1). The left anterior cervical lymph nodes were palpable and tender. Wood's lamp examination revealed yellow-green fluorescence over the affected area. Plucked hair samples and scalp scrapings were sent for fungal culture. Swabs from the lesions were cultured for bacteria and fungi. A provisional diagnosis of kerion secondary to *Microsporum canis* was made and the patient was prescribed oral itraconazole 200mg daily, analgesics and ketoconazole shampoo for 6 weeks. Her household contacts were examined and no similar lesions were found. She was advised to seek treatment for her pet cat. Six weeks later, all lesions cleared leaving residual scarring alopecia in the affected areas. Swabs and hair samples for bacterial and mycological culture were negative.

Discussion

Kerion is a type of tinea capitis associated with painful, inflamed, boggy, deep abscesses, purulent discharge and regional lymphadenopathy. Failure to diagnose this condition early results in permanent alopecia in the affected areas. *Microsporum* especially *Microsporum canis* is the most common pathogen responsible for kerion in humans.⁵ It is a zoophilic species found in animal hosts such as dogs, cats, rabbits and guinea pigs. An infected animal may present with skin manifestations or may appear normal. Typical skin lesions in animals include patchy areas of hair loss on the head, ears or paws with surrounding inflammation. The diagnosis of this condition is clinically supported by presence of fluorescence under Wood's lamp examination and microscopic examination of the affected hair with potassium hydroxide (KOH). Definitive diagnosis is made by isolation of the fungus from culture of hair and scalp scales. However, fungal culture is often negative due to the difficulty in isolating the fungus, in which case treatment may be initiated based on clinical suspicion.⁶

In this patient, the diagnosis of kerion was

based on clinical features, history of contact with an infected animal and presence of yellow green florescence under Wood's lamp examination. Negative bacterial culture may be due to treatment with antibiotics prior to sampling in addition to the fact that kerion itself is an inflammatory lesion secondary to hypersensitivity reaction to fungal elements, and not due to bacterial infection.

Systemic antifungal therapy for two to six weeks is the treatment, which may be extended until clinical clearance is achieved. Griseofulvin, terbinafine, itraconazole or fluconazole may be used. A recent Cochrane review states that the efficacy of these medications is similar in the treatment of tinea capitis due to *Trichophyton* species.⁷ Itraconazole given in doses of 5 mg/kg/day either continuously or in pulses has been shown to be effective against *Microsporum* spp in children, with success rates of 88% after six weeks of therapy.⁸ Topical antifungal as monotherapy is not recommended as these agents are unable to penetrate the hair follicle adequately.⁹ Periodic monitoring during treatment with itraconazole is recommended as it can affect haemopoiesis, renal and hepatic function. It can also worsen heart failure and interact with drugs such as terfenadine, cyclosporin, statins, digoxin and warfarin. Terbinafine is safer compared with itraconazole with fewer side effects such as gastrointestinal disturbances. Griseofulvin may cause photosensitivity, hypersensitivity, enhance effects of alcohol and cause disulfiram-like reactions.

The role of oral or intralesional corticosteroids is controversial and probably unnecessary as the disease can be cured via systemic antifungal treatment.¹⁰ Adjunct topical therapies such as selenium sulphide or ketoconazole shampoo or

creams reduce disease transmission and shorten treatment duration. Antihistamines may be prescribed if pruritus is present to reduce dissemination of spores due to scratching. Antibiotic treatment is unnecessary as bacteria is not the underlying cause of kerion. Surgical excision of the lesion is also not recommended.⁹

Patients with kerion must avoid sharing hair brushes, combs, head scarves, beddings and towels with others to prevent transmission of fungal spores. Household contacts and animals should be screened and treated accordingly to prevent recurrences. Asymptomatic carrier state is rare in cases of *Microsporum canis* infection as it tends to manifest with obvious inflammatory clinical signs compared with *Trichophyton* spp which commonly presents with non-inflammatory lesions.⁹

Conclusion

As illustrated in this case, kerion is easily misdiagnosed as a bacterial infection due to its clinical presentation and appearance. Lack of response to antibiotic therapy should alert physicians to consider a non-bacterial aetiology. History of contact with infected animals may give a clue to the underlying diagnosis. In the absence of laboratory facilities, a trial of oral antifungal agent is justified while monitoring treatment response. This case also highlights the importance of proper care, early identification and treatment of an infected pet which could have prevented transmission in the first instance. In summary, clinicians should have a high index of suspicion for fungal infection when dealing with inflammatory scalp lesions. Treatment should be initiated early to prevent scarring alopecia and psychological distress.

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