



Case report

Inflammatory ringworm due to *Microsporum audouinii*, case of a severe form in an immunocompetent girl in Mauritania

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ABSTRACT

Introduction: Ringworms of the scalp are very commons in Mauritania and among them; inflammatory ringworms are representing very rare forms. We present the case of a severe inflammatory ringworm caused by an anthropophilic dermatophyte, *Microsporum audouinii*.

Observation: This is an 8-years-old girl with ulcerative lesions on the scalp without adenopathy, without fever and in a good general condition. Direct examination of the mycological sample of hair and scales showed the presence of ecto-trix spores. Culture in SCA media allowed the identification of *Microsporum audouinii*. The establishment of an antifungal treatment orally and a local antiseptic allowed to have a clinical and mycological remission after 30 days.

Conclusion: *Microsporum audouinii* is most often responsible for very soft trichophytia, but under certain conditions, it can cause inflammatory ringworm.

Introduction

Ringworms of the scalp are fungal infections caused by dermatophytes; all are capable of causing TCC except *Epidermophyton floccosum* and *Trichophyton concentricum* [1].

In Mauritania, ringworms of the scalp are frequent in schools with a prevalence of 10.50 %. They are most often due to the species *T. soudanense* and *T. rubrum* [2].

The clinical manifestations of ringworm are highly variable. Among them, an inflammatory form with deep, tender, pus-exuding plaques called kérien or inflammatory ringworm [3]. Kérien are often caused by zoophilic dermatophytes, especially *T. mentagrophytes* and *T. verrucosum* and rarely *M. canis* [4].

We report the case of a severe inflammatory ringworm caused by *Microsporum audouinii* in an 8-years-old immunocompetent girl.

Patient information

It is an 8-years-old girl living in urban areas, Nouadhibou, the economic capital of Mauritania and without contact with animals.

She was referred to a dermatology and venereology department for an ulcerated lesion suggestive of a scalp infection. Faced with an infectious-looking lesion of the scalp suggesting the possibility of ringworm and in particular a Kérien [Fig. 1].

The lesions were not accompanied by adenopathy and the general condition of the child was quite good and without fever. The patient was referred to the laboratory with a request for a mycological examination of the scalp.

Mycological diagnosis

The mycological examination was carried out at the laboratory of the Specialty Hospital Center in Nouakchott. Hair, dander and pus swabs were taken.

We carried out a direct examination and culture of the pus on a bacteriological medium and direct examination of the hair and scales after clarification with 10 % KOH then a culture of the hair and scales on the Sabouraud-Chloramphenicol-Actidione medium.

Direct examination of hair and scales showed the presence of ecto-trix spores and mycological culture after 12 days at 25 °C yielded flat,

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Fig. 1. Extensive inflammatory lesions of the head.

spreading, greyish-white colonies with a dance surface and a little downy [Fig. 2].

Microscopic examination of the colonies shows the presence of a sterile mycelium producing rare terminal or thick-walled intercalary chlamydospores [Fig. 3].

The search for bacteria was negative. Based on the mycological examination (macroscopic and microscopic examination of the colonies), we were able to identify the *Microsporium audouinii* which is an anthropophilic dermatophyte.

Given the severity of the clinical form and the nature of the species, immunosuppression was suspected. The retroviral serology was carried out and it is negative and the blood count showed only a slight increase



Fig. 2. Macroscopic appearance of a 12-day-old colony.

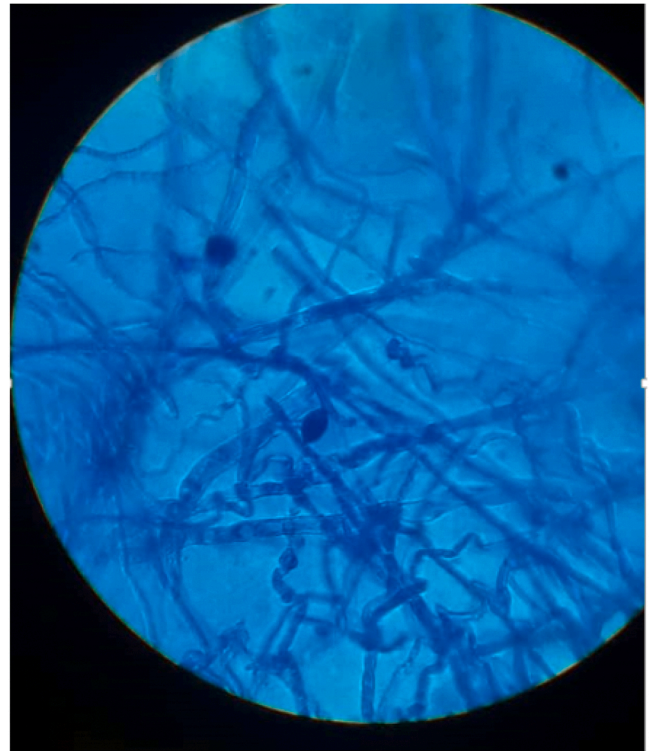


Fig. 3. Microscopic appearance of colonies.

in the platelet rate at $475,000/\text{mm}^3$.

Treatments

A treatment based on griseofulvine 250 mg per os due to two daily intakes and a total treatment based on Ciclopiroxolamine in a 1 % cutaneous solution in spray morning and evening was prescribed to the patient.

A very strong improvement was observed after 10 days of treatment and clinical remission after one month of treatment (Fig. 4A and B).

Consent

Written informed consent was obtained from the patient's legal guardian for publication of this case report and accompanying pictures. A copy of the written consent is available for review by the editor of this newspaper on demand.

Discussion

TCC mainly affect children before puberty, they are fungal infections caused by different species of dermatophytes.

Contagious, TCC constitute a real public health problem in many developing countries [5,6].

In 2019, the prevalence of ringworm in schools in Mauritania was estimated at 12.2 % in the rural area and 9.5 % in the urban area [2].

Some species of dermatophytes can cause ectothrix infections in which the spores coat the surface of the hair shaft and others endothrix infections giving arthrospores inside the hair shaft.

Microsporium canis and *Microsporium audouinii* cause ectothrix infections while *Trichophyton soudanense* and *Trichophyton tonsurans* cause endothrix infection.

Trichophyton schoenleinii, for its part, causes favic infections which can lead to permanent alopecia by the formation of a crust along the stem with the production of pus.

In kérión, we found pus due to pustular and inflammatory folliculitis

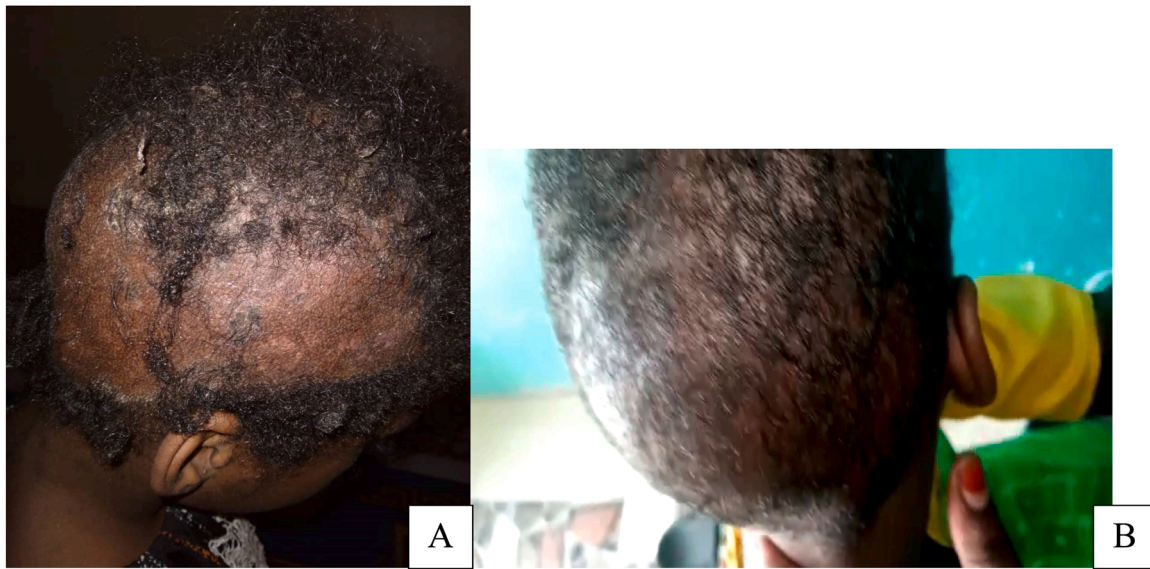


Fig. 4. Clinical aspect after 10 days of treatment (A) and after one month of treatment (B).

involving part of the scalp, most often caused by *Trichophyton verrucosum* and *Trichophyton mentagrophytes* [7].

Kérion in Tunisia accounted for 7.81 % of cases in 2017 [8], 3.85 % in Algeria in 2016 [9], 4 % in Gabon in 2009 [10] and 5.3 % of cases in Senegal [11].

In Mauritania, a study conducted in 2019 showed a low rate of ringworm inflammation 0.22 % in schools due to *Microsporum canis* [2].

Kerions generally cause localized [1] lesions but in our case, we have very infrequent particulate sectional alopecia lesions, the first case of which was reported in China by Jaspers et al. [12]. This kérion was caused by the *Trichophyton mentagrophytes*.

In general, kérion are caused by Zoophilic dermatophytes such as *T. mentagrophytes*, *T. verrucosum* or *M. canis* [13,14] but rarely by *M. audouinii*. which is most often the remains of more discreet moths although cases were reported in Japan in 1960 by Ikutomi et al [15], in Portugal in 2013 by Fernandes et al. [16] and in Senegal by Deh et al. in 2021 [7].

Microsporum audouinii is very often found in ringworms of the scalp in black Africa where Coulibaly et al. [17] report prevalences varying between 9 % and 38 % of TCC in African countries, it is also reported in Europe in rare case, for example Brasch et al. [18], Brito-Santos et al. [19].

The presence of an inflammatory ringworm due to *Microsporum audouinii* can often be secondary to poor medical management of a microsporidic ringworm.

Aste et al. [20] have studied several cases of kérion this one, they report that two thirds of the cases found had a medical treatment, most often with an antifungal only. The same is true of the case reported by Deh et al. in Senegal [7] who had received treatment based on griseofulvine only.

Conclusion

Kérion celci are not often reported in the literature and often if this is the case, they most often concern zoophilic species.

In our case, we report a Kérion celci due to an anthropophilic dermatophyte, which is still frequent.

The management of an anthropophilic ringworm of the trichophytic type may be the cause of the appearance of a kérion, hence the interest of a mycological diagnosis and an appropriate treatment.

CRediT authorship contribution statement

Ousmane Sy provided the mycological analysis in the laboratory, Pr BallMamadou provided medical care, Pr Ousmane Ba confirmed the mycological analysis. All the authors participated in the drafting of the manuscript

Ethical approval

This work has been approved by an ethics committee.

Consent

Written informed consent was obtained from the patient's legal guardian for publication of this case report and accompanying pictures. A copy of the written consent is available for review by the editor of this newspaper on demand.

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Conflict of interest

The authors declare no conflict of interest.

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