

# Tinea capitis due to *Trichophyton tonsurans* in a Maltese patient

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## Abstract

We report a case of tinea capitis caused by *Trichophyton tonsurans* in a 16-year-old male. This appears to be the first documented case of tinea capitis caused by this dermatophyte in a native Maltese patient.

## Key words

*Trichophyton tonsurans*, tinea capitis, Malta.

## Introduction

*T. tonsurans* is the commonest cause of tinea capitis in the Americas, Europe, Asia, and Australia and is responsible for more than 60% of cases.<sup>1-4</sup> It has replaced *Microsporum canis* and *Microsporum audouinii* as the main pathogen causing tinea capitis. In contrast, in Malta the commonest causes of tinea capitis are *M. canis* and *T. Mentagrophytes*; *T. tonsurans* has only rarely been reported.<sup>5</sup> The causative organisms of tinea capitis in Malta are not following the global trend despite extensive travel and population movements. The latest study in Malta dates back to 2003, and only two cases of *T. tonsurans* were reported at that time, both in non-Maltese patients.<sup>6</sup> To our knowledge, this case is the first report of such infection in a native Maltese patient.

## Case report

A healthy 16-year-old male was referred to the Dermatology Department at Sir Paul Boffa Hospital in February 2014 because of a 6 x 5 cm elliptical area of incomplete hair loss over his right temporo-occipital scalp. The duration of alopecia was unclear as the patient had only noticed the bald area after a recent very short haircut. He had been treated by his general practitioner with a steroid lotion for two weeks for a tentative diagnosis of alopecia areata, with no improvement. He lived with his parents and sister who had no evidence of similar lesions. He had no contact with animals and had not travelled abroad in the preceding two years.

Examination revealed an area of incomplete scalp hair loss with a fine grey scale. The remaining hairs were broken with loss of lustre. The patient also had a few erythematous annular scaly lesions on the chest and the medial aspects of both upper arms. All the lesions described were asymptomatic, with no significant pruritus. Tinea capitis was suspected and scalp scrapings and plucked hairs were collected and sent for mycological investigation. Wood's light examination showed no fluorescence. Terbinafine 250 mg daily was prescribed for four weeks.

Direct KOH microscopy showed fungal elements especially within hair shafts and cultures yielded *T.*

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## Case Report

*tonsurans*.

On re-examining the patient after 6 weeks, normal hair growth was evident on the entire scalp and all other lesions on the arms and chest had disappeared. Repeat mycological examination of plucked hairs from the previously affected areas was negative.

### Mycology

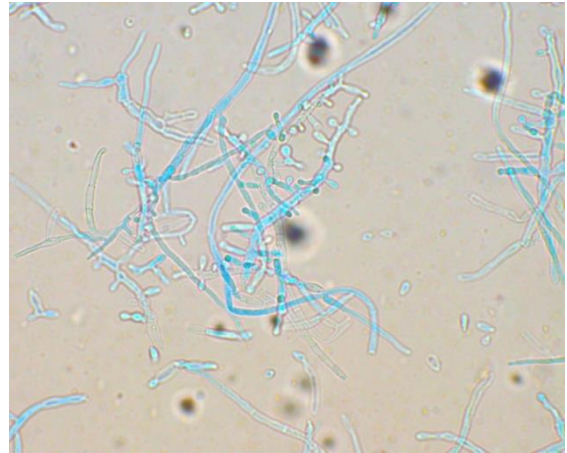
Direct microscopy of a 20% KOH and calcafluor white preparation of plucked hairs taken at presentation showed endothrix hair invasion with multiple arthroconidia visible within the hair shaft replacing the cortex. This pattern results from growth of dermatophyte hyphae down the hair follicle and invasion of the hair cortex. Cultures on Sabouraud Dextrose Agar with chloramphenicol and cycloheximide yielded a pale buff to yellow with suede-like to powdery surface and yellow to red-brown reverse appearance. The colonies were raised with some folds and sulci [Fig. 1]. Microscopic examination of samples from cultures showed broad irregular septate hyphae with a lot of branching. Microconidia of various sizes and shapes were seen branching at right angles to the hyphae. The microconidia varied from long clavate forms to broad pyriform shapes and stained poorly with lactophenol cotton blue. This is diagnostic of *T. Tonsurans* [Fig 2].

**Figure 1:** Colonial morphology of a subculture of *T. tonsurans*.

- a) Yellowish –white suede-like colonies with some surface folds.
- b) red-brown reverse appearance



**Figure 2:** Microscopy of *T. Tonsurans* (Lactophenol blue). Mass of branching septate hyphae with variable shape microconidia growing laterally.



### Discussion

*T. tonsurans* is an anthropophilic dermatophyte causing several clinical variants of tinea capitis. These include patchy alopecia, mild scaling of the scalp, grey-type tinea (fine grey scaling), black dot tinea (broken hairs within the hair follicles), pustulosis, crusting, and kerion (raised, often discharging, boggy lesions of the scalp). Our case had grey-type tinea. All these patterns have the potential to cause permanent alopecia if neglected.<sup>7</sup> Many of these clinical variants, other than kerion, produce very mild symptoms, possibly due to development of host tolerance to *T. Tonsurans*.<sup>8</sup> This can lead to underdiagnosis with subsequently delayed or inappropriate treatment (as happened with our patient when prescribed a steroid lotion). This highlights the importance of awareness of this dermatophyte as a cause of alopecia.

*T. tonsurans* is transmitted from one infected human to the other by direct contact or fomites. Outbreaks in Germany, Turkey and Japan have linked transmission of *T. tonsurans* to physical contact in wrestlers and judokas, thus termed tinea capitis gladiatorum.<sup>9-11</sup> Other modes of transmission are the sharing of hair implements such as combs and hair brushes, and household contact.<sup>11</sup> Other factors promoting *T. tonsurans* tinea capitis include tight braiding of hair and application of oily hair products which enhance contact of spores with the scalp. This explains a higher incidence in Afro-Caribbean populations.<sup>3</sup>

*T. tonsurans* is commoner in crowded environments. Asymptomatic carriage of *T. tonsurans* is a potential threat, and studies in which unaffected household contacts were screened with the hairbrush technique yielded between 12 - 40% positive cultures.<sup>2,3,14</sup>

We questioned our patient extensively to determine the origin of his infection. The only possible source we

identified was his regular attendance at a gym where he did bench presses. We postulate that contact of his unprotected scalp with the bench surface infected by a previous user may have been the mode of acquisition, with lesions on the arms and chest caused by autoinoculation. The absence of lesions on his back may be explained by protection provided by wearing a t-shirt. However we have not seen any other cases of infection with *T. tonsurans* from this gym.

The treatment of choice for *T. tonsurans* tinea capitis is terbinafine 3-6mg/kg/day for 2-4 weeks.<sup>13</sup> Our patient had a complete response to this regime with clinical and mycological cure. It has also been suggested that contacts should be treated with an antifungal shampoo to eradicate asymptomatic carriage.<sup>14</sup>

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