

RESEARCH LETTERS ▼

Tinea capitis: correlation of clinical presentations to agents identified in mycological culture*

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Dear Editor,

Tinea capitis (scalp tinea) is a fungal infection of the skin and scalp hairs by dermatophyte fungi. These keratinophilic fungi have an ecologic predilection regarding their adaptation to the

environment and can be divided into three large groups according to their habitat: geophilic, zoophilic and anthropophilic.¹ Geophilic fungi have *Microsporum gypseum* as their representative, and zoophilic fungi have *Microsporum canis* and *Trichophyton mentagrophytes* var. *mentagrophytes*.² These two fungal groups are considered “not adapted to human beings”. The “adapted” fungi are at the top of the fungal phylogenetic scale evolution: they are dermatophytes capable of being a parasite to humans, known as anthropophilic fungi. Examples of this group are *Epidermophyton floccosum*, *Trichophyton tonsurans*, *Trichophyton schoenleinii*, *Trichophyton mentagrophytes* var. *interdigitalis* and *Trichophyton rubrum*.^{1,2}

The clinical manifestations of tinea capitis can be divided into alopecic and inflammatory.¹ Alopecic tineas are represented by areas of alopecia, usually round-shaped and with variable itch, where hairs are fragmented, resulting in an aspect similar to tonsure – a close shave at the vertex of the scalp similar to some monks.

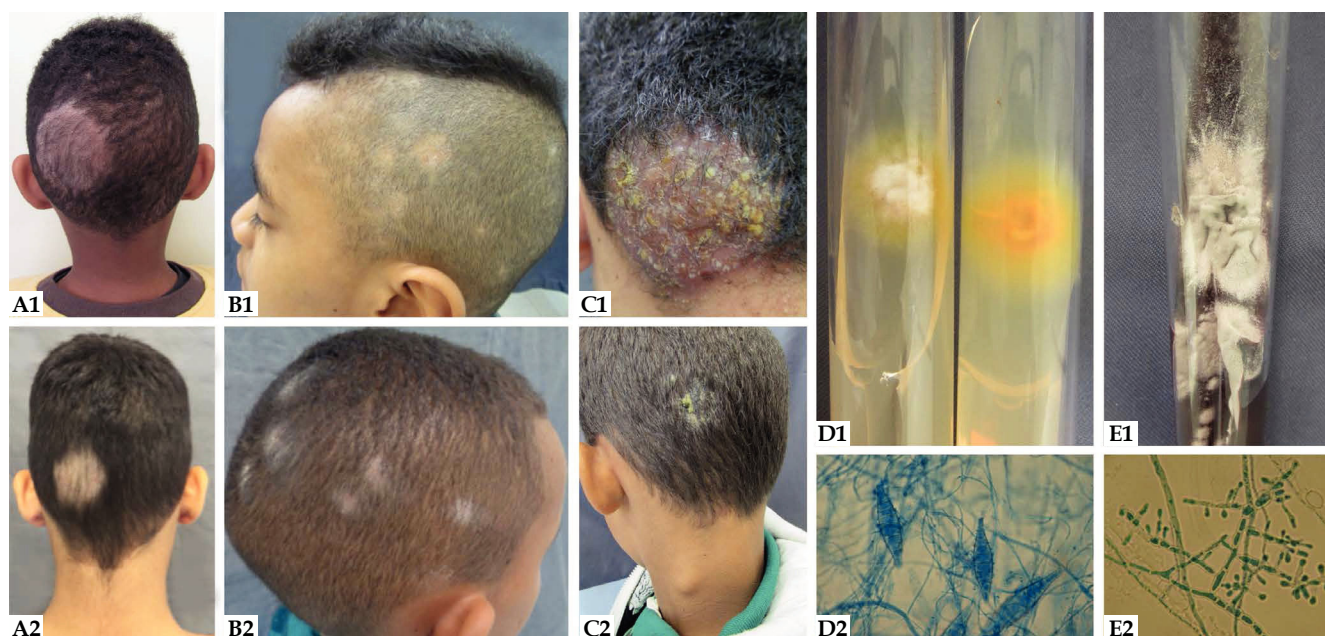


FIGURE 1: Tinea capitis clinical forms: alopecic microsporiasis (A1 and A2); alopecic trichophytosis (B1 and B2); and kerion Celsi (C1 and C2) – arrow indicating reactionary lymph node enlargement, typical of this presentation. Fungal culture of the main isolated agents: *Microsporum canis* macroculture showing white, cottony colonies with a bright-yellow reverse (D1) and microculture with hyaline septate hyphae and spindle-shaped macroconidia with more than 6 septa inside them (D2); *Trichophyton tonsurans* macroculture with powdery, brownish and cerebriform colonies (E1) and microculture with hyaline septate hyphae and interspersed microconidia (E2)

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TABLE 1: Correlation between the clinical presentation and the agents isolated in fungal cultures

| CLINICAL PRESENTATION | | <i>M. canis</i> | <i>M. gypseum</i> | <i>T. tonsurans</i> | <i>T. mentagrophytes</i> | TOTAL |
|-----------------------|----------------|-----------------|-------------------|---------------------|--------------------------|-------|
| Alopecic | Microsporiasis | 19 | 0 | 9 | 0 | 28 |
| | Trichophytosis | 9 | 0 | 11 | 0 | 20 |
| Inflammatory | Kerion celsi | 2 | 1 | 6 | 1 | 9 |
| TOTAL | | 30 | 1 | 26 | 1 | 57 |

They can be further divided into two patterns: microsporiasis, where the clinical lesions are few in number, can reach large diameters and are typically associated to the dermatophytes from the genus *Microsporum* sp, and the trichophytosis, where the alopecic lesions are multiple and small, many times difficult to identify, and classically related to agents from the genus *Trichophyton* sp (Figure 1).¹⁻³

Inflammatory *tinea capitis* can be further divided into suppurative (or *kerion Celsi*) and favus. In *kerion Celsi*, the clinical presentation is of a scaly plaque and intense local inflammatory process with edema, rubor and purulent discharge, evolving many times to cicatricial alopecia (Figure 1).^{1,2} The agents commonly isolated in these cases are non-adapted dermatophytes, what explains the intense inflammatory reaction by the host. Favus is characterized by masses resembling yellow, concave crusts (scutula or *godet*), with a central hair, with a rat urine smell. The etiologic agent most commonly associated to this presentation is *T. schoenleinii*.^{1,2}

We performed a retrospective study in the outpatient clinic of mycology at the service of Dermatology, São Paulo, and analyzed all cases suspicious for *tinea capitis* seen from January 2013 to June 2017 and correlated their clinical aspects to the agents isolated in the fungal culture. Ninety-four patients were seen during this time, and 37 were excluded because no agent was isolated in the culture, resulting in 57 cases analyzed. The findings are shown in table 1.

The results are in accordance to data published in other articles. The main agent isolated in the geographical area of this study was *M. canis* (52.63%), followed by *T. tonsurans* (45.61%), *M. gypseum* and *T. mentagrophytes*, with only one case each in the period of the study (1.75% each).^{3,4} The most common clinical presentation was the alopecic microsporiasis in 28 cases (49.12%), followed by the alopecic trichophytosis in 20 cases (35.08%), and by kerion Celsi in nine cases (15.78%). No cases of favus were seen, nor was *T. schoenleinii* isolated, confirming it is a rare presentation in our community.

Despite the fact that anthropophilic fungi are typically related to the trichophytosis pattern and the non-adapted fungi to the microsporiasis and kerion Celsi pattern,⁴ in this study we observed a 45% rate of trichophytosis cases by *M. canis*, besides 32.14% microsporiasis cases caused by *T. tonsurans*. These data can be interpreted based in the immunological response that each patient presents to the fungus, some with intense response even to anthropophilic fungi and others with a less intense response to non-adapted fungi.⁵ Another surprising finding that can support this argument was the 66% rate of kerion Celsi cases related to *T. tonsurans*, anthropophilic fungus that is rarely isolated in this presentation.

Statistical treatment of the data by Fisher's exact test showed the independence of the etiologic agents regarding the clinical forms

with a confidence level of 0.95. therefore, we can conclude that the clinical evaluation of the lesions shows 95% confidence, an invalid procedure to infer the etiological agent, what supports the indication for culture.

Tinea capitis treatment is more well defined according to the etiological agent isolated: terbinafine for *Trichophyton* sp fungi and griseofulvin for the genus *Microsporum* sp,^{1,3} even though griseofulvin can be indicated for *Trichophyton* sp cases, as long as the use of the medication is extended. The findings of this study show that the mycological analysis through isolation of the agent in fungal cultures is still necessary, since the clinical aspects of tinea capitis might not be related to the expected agents in a large number of cases.

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