



***Trichophyton violaceum* is the dominant cause of tinea capitis in children in Tripoli, Libya: Results of a two year survey**

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Abstract

The causative agents of tinea capitis in Libyan nationals attending the out patient Dermatology Clinic of the Tripoli Medical Centre over the period December 1997 to December 1999 were investigated. Samples (hair and scalp scrapings) were taken from 940 patients who presented with suspected tinea capitis. The etiological agents were identified in 584 cases. *Trichophyton violaceum* was found to be the most prevalent organism isolated being responsible for 64.4% (376/584) of culture positive cases, followed by *Microsporum canis* at 24.7% (144/584) and *T. mentagrophytes* at 5.5% (32/584). The majority of infections (380/584) occurred in females and in children with ages less than 12 years (554/584).

Key words: Tinea, *Trichophyton* spp., *Microsporum* sp., Dermatophytes

Abbreviations: TMC, Tripoli Medical Centre

Introduction

Tinea capitis, a disease predominantly of children, occurs throughout the world. Several authors have reported the prevalence and incidence of dermatophytes in ringworm scalp infections in different parts of world [1, 2]. However, there are few retrospective and prospective studies to ascertain the etiologic agents of tinea capitis among Libyan children [3, 4]. Although scalp ringworm infections are uncommon in most economically developed temperate countries, they are still considered by some authors to be the most common of all cutaneous mycoses in children [5–7]. The superficial mycoses due to dermatophytes are among the most common forms of fungal disease seen among patients attending the outpatient Dermatology Clinic at Tripoli Medical Centre (TMC). This was most notable in children with tinea capitis or tinea corporis. Tinea pedis and tinea unguium were more frequently seen among adults (unpublished data).

The aim of this study was to ascertain the most prevalent dermatophytes responsible for tinea capitis in Tripoli over a period of two years.

Materials and methods

Patient group

From December 1997 to December 1999 inclusively, specimens of hair and scalp scraping were obtained from 940 patients with suspected tinea capitis who attended the Dermatology Clinic at TMC. All patients were from the immediate geographical area, including both the adjoining district and city centre. Patients were aged between 2 and 15 years with an average age of 12 years. Tripoli is the capital of Libya situated on the southern coast of the Mediterranean sea with short cold winters and long hot summers. The average summer temperature ranges from 30 to 40 °C and humidity is up to 50% during summer months.

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Sample preparation and fungal identification

Microscopic examination of samples from the hair and scalp scraping was performed following treatment with an aqueous solution of 20% (w/v) potassium hydroxide (KOH). A portion of the sample was placed on a slide and 50 μ l of KOH were added. After 5 min, the wet preparation was examined for the presence of conidia and fungal hyphae. All samples were cultured on Sabouraud chloramphenicol cycloheximide agar (BioMerieux, Marcy-l'Etoile, France), which was made according to the manufacturer's instructions. The plates were inoculated with finely divided pieces from the samples and incubated at 25 °C for up to 4 weeks. They were examined twice weekly for evidence of growth. Fungal isolates were subcultured onto Sabouraud and potato dextrose agar plates (Oxoid, Basingstoke, UK). The isolates were examined macroscopically and microscopically in lactophenol cotton blue. The dermatophyte species were identified by their gross and microscopic morphologies and by *in vitro* tests, if required, based on the criteria cited by Rebell and Taplin [8] and Frey *et al.* [9].

Results and discussion

Samples (hair and scalp scrapings) were obtained from 940 patients presenting with suspected tinea capitis. Diagnosis was confirmed by microscopic examination in 602 cases (64.0%), and the causative agents were cultured in 584 cases (380 females and 204 males) (62.1% of sample population). Infections occurred more frequently in females (65.1%: 380/584) than males (34.9%: 204/584) and 95.0% of the cases were diagnosed in children below 12 years of age. From the total isolates identified *Trichophyton violaceum* was isolated in 376 cases (64.4%), *Microsporum canis* in 144 cases (24.7%) and *T. mentagrophytes* in 32 cases (5.5%). The frequency of other dermatophyte species isolated from this patient group is presented in Table 1.

The 602 cases presented in this study do not reflect the total number of patients with tinea capitis seen at the Tripoli Medical Centre during the period of this study. In many instance patients were treated after clinical assessment only. However, the data do give a good indication of the relative frequency of each etiological agent responsible for this condition. The incidence of tinea capitis was higher among girls (65.1%) than boys (34.9%), which may in part, be

Table 1. Dermatophytes isolated from 584 culture positive patients with tinea capitis

Species	Total
<i>Trichophyton violaceum</i>	376 (64.4%)
<i>Microsporum canis</i>	144 (24.7%)
<i>T. mentagrophytes</i>	32 (5.5%)
<i>T. tonsurans</i>	10 (1.7%)
<i>T. schoenleinii</i>	10 (1.7%)
<i>T. soudanense</i>	8 (1.3%)
<i>T. rubrum</i>	4 (0.7%)
Total isolates	584

attributable to the long hair worn by girls. It is also worth noting that most of the children with proven tinea capitis came from low socio-economic classes and the suburban areas of Tripoli. Most children in whom *M. canis* was isolated confirmed the presence of cats or other pets in their homes.

Trichophyton violaceum was by far the most common organism isolated in this study (64.4% of culture positive cases). It is probably more prevalent in the community than our study indicates since this fungus is responsible for an increasing number of cases of tinea corporis (Ellabib *et al.*, unpublished data). *T. violaceum* is indigenous to North Africa and is the causative agent of tinea capitis where it accounts for 52% of cases in Egypt [10] and 77% of cases in Tunisia [11]. These countries are geographically adjacent to Libya being situated to the east and west of the country respectively. The data presented in this paper together with previous studies [10, 11] indicate that *T. violaceum* is the dominant cause of tinea capitis in North Africa and that the incidence of infection caused by this fungus is of the same order of magnitude in these three adjoining countries.

The data from this study have shown that the agents responsible for tinea capitis among Libyan nationals in the region of Tripoli are the antropophilic *T. violaceum* and the zoophilic species *M. canis*. *T. mentagrophytes* is the third most important agent of tinea capitis in this region.

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