

Original Research Article

Tinea Capitis in Patients Attending Zliten Teaching Hospital (North West of Libya)

ABSTRACT

Aims: To determine the frequency of occurrence of Tinea capitis (T. capitis) in determined population, which were patients, sought medical advice at dermatology OPD of Zliten Teaching Hospital in limited period of time. And to determine the occurrence frequency of different clinical types of T. capitis as well as to find out the causative etiological species.

Study Design: This A prospective cross-sectional study was conducted to analyse the data of patients affected with T. capitis to find out the most affected age, sex. Furthermore, to discover the distribution of different clinical types and the etiology of T.capitis.

Place and Duration of Study: The study was carried out in Zliten Teaching Hospital in Zliten (North West of Libya) for a period of 19 Months, between October 2014 and April 2016.

Methodology: All patients with suspected T. Capitis from different ages and sex were enrolled in this study. Scrapings from infected scalps were examined under high power of microscope using 20% KOH mount and cultured for fungal elements. Culture results were determined according phenotypic characteristic of fungal colonies and examined with use of Lactophenol cotton blue (LPCB) preparation of fungal growth. SPSS 20 was used to analyse the data.

Results: The preschool children were 36 child with T.capitis (60%) were the most susceptible age group to develop T. capitis and no sex predilection was detected. The gray patch type was most frequently seen clinical type, in half of total number of all patients with T.capitis (represent 50%), followed by black dots and seborrheic type. The *Microsporum canis* (M. canis) was the most frequent dermatophytes isolated in 16 patients (26.7%) followed by *Trichophyton rubrum* (T. rubrum), which was cultured from 7 patients (11.7%).

Conclusion: Preschool Children were the main affected age group, and M. canis was the most frequent etiologic agent causing T. capitis in Zliten area.

Keywords: Tinea capitis, dermatophyte fungal infection, Preschool Children, Microsporum sp., Trichophyton sp, North west of Libya.

1. INTRODUCTION

T. capitis , also named ringworm infection of scalp, refers to a dermatophyte infection of hair follicles and shafts of the scalp. It is principally a disease of childhood, commonly affect school-age children and is rare in adults [1,2].

The main causative fungi are dermatophytes, which are named according to their genus Microsporum, Trichophyton, and Epidermophyton , and their species and they can be distinguished from each other through culture on Sabouraud Media according to their

special macroscopic and microscopic characteristics [1]. There are many species of dermatophytes, only about 12 of them commonly cause human infection and *T. capitis* is caused by 6 species of dermatophytes [3]. The principal fungi responsible for *T. capitis* vary in different parts of the world and most of cases being detected in Africa, Asia, and Southern and Eastern Europe [4].

In the UK, until recent years, most cases of *T. capitis* were caused by *M. canis* which usually acquired from cats. In the USA the usual causative organism is *Trichophyton tonsurans* (*T. tonsurans*) whereas in India and Eastern Europe, *Trichophyton violaceum* (*T. violaceum*) is found to be the most common species [4].

In Libya, there are few studies about *T. capitis* to determine aetiological agents and more susceptible age and sex groups, as well as to know more about prevalent clinical types. In Zliten area (north west of Libya) the determinants of *T. capitis* in relation to age, sex, and causes of *T. capitis* were not known, this study is conducted to know more about clinic-epidemiological features of *T. capitis* and to know the responsible aetiological species.

2. METHODS AND SUBJECTS

2.1 Place and population of study

All patients who had visited our outpatient dermatology department of Zliten Teaching Hospital, because of different complaints, are considered as the Study population and were 7011 patients.

2.2 Objectives

This study is conducted to determine etiology of *T. capitis* as well as to know the prevalent clinical types and more susceptible age group and gender.

2.3 Methods

A prospective, cross-sectional study was carried out in the time from October 2014 to April 2016.

Inclusion criteria : All new cases clinically diagnosed to have *T. capitis* were included in study. .

Exclusion criteria: Cases of *T. capitis* on treatment .

Sixty cases were diagnosed clinically to have *T. capitis*, and the data regarding age, sex, clinical types, and results of KOH were recorded in special form for each patient. Following cleaning of the affected areas with 70% alcohol, scrapings were done using a scalpel blade no. 21.

A portion of scraped materials was placed on a clean glass slide and a drop of 20% potassium hydroxide (KOH) solution was placed over it. A cover slip was put over the material and then the prepared slide was examined under microscope for the presence of spores and hyphae. The rest of the material was inoculated into a labeled petri dishes containing Sabouraud's dextrose agar supplemented with chloramphenicol .Then the petri dishes were incubated at 26C° and were observed twice weekly for growth of Fungi. They were discarded as negative if there were no growth after 3-4 weeks. In positive cases the growth were subcultured on to sabourauds dextrose agar petri dishes without antibiotics. Then growths were examined for gross morphological and microscopic characteristics.

2.4 Statistical Analysis

The data of patients were analysed using SPSS 20

3. Results

Out of 7011 cases attending dermatology OPD, 60 cases were clinically diagnosed as T. capitis, which accounted for a proportional rate of 0.9%. Those 60 cases were confirmed to have T. capitis by microscopic examination and culture of scrapings of hairs and scales obtained from infected sites.

The mean age of the affected patients was 7.7 years with Male to Female ratio 1:1. Most frequently affected age groups were children less than 13 years of age. The youngest patient was one year old and oldest patient was 49 years old patient.

The most affected ages were children less than 7 years, which were 36 child, represented (60%) of affected patients with T. capitis from different ages. The majority of patients, which were 54 patients (90%) were less than 13 years old (Fig. 1).

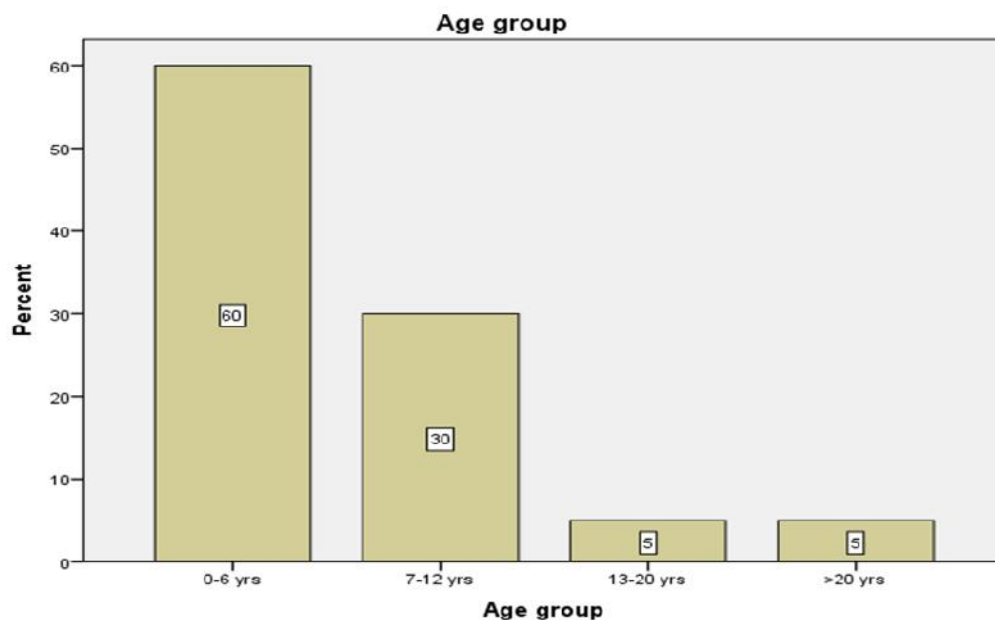


Fig. 1. Distribution of T. capitis in different age groups.

Clinical types were documented in 49 patient (81.7%), half of total cases (30 patients) were with grey patch type of T. capitis, while, black dot type were recorded in 10 patients (16.7%), seborrheic type in 7 patients (11.7%), and Kerion only in 2 patients (3.3%) (Table 1),

(Fig. 2), (Fig. 3).



Fig. 2. Tinea capitis in scalp of child with black dots clinical type.



Fig. 3. Boggy swelling of scalp with hair loss in child with kerion.

Table 1. Distribution of clinical types.

Clinical types	Frequency	Percent
Gray patch	30	50 %
Black dots	10	16.7%
Seborrheic	7	11.7%
Kerion	2	3.3%
Not documented	11	18.6%

The relationship between aetiological agent and clinical type showed in (table 2)

Table 2. The relationship between the aetiological fungus and clinical type. (P value = 0.03%).

Aetiological Fungus	Clinical type (No. of cases)				
	Grey patch	Black dots	Seborrheic	Kerion	Not documented

M. canis	10	2	2	0	2
T. tonsurans	1	0	0	0	0
T. soudanense	1	0	0	0	0
T. rubrum	4	1	2	0	0
T. sulphureum	1	0	0	0	0
M. gypseum	0	1	0	0	0
T. verrucosum	2	0	0	0	0
T. audouinii	1	0	0	0	0
Non-dermatophyte moulds	3	3	1	1	0
No growth	7	3	1	1	4
Culture was not done	0	0	1	0	5

Scraping of scaly material and hairs were taken from all patients, fungal elements were confirmed in 35 out of 60 (represented 58%). For majority of patients, who were suspected clinically to have T. capitis, culture on Sabouraud's dextrose agar medium with antibiotic was done. Culture for Fungi were positive in 38 patients(70.4%). More than half of cultured results showed that 30 patients(55.5%) had Dermatophyte fungal infections. The predominant isolated etiologic agent was M. canis, which was cultured from 16 patients (29.6%) out of 54 (Which is the total Number of cultured specimens). *Trichophyton. rubrum* (T.rubrum) was cultured from 7 patients(13%). (Fig. 4,5,6,7)

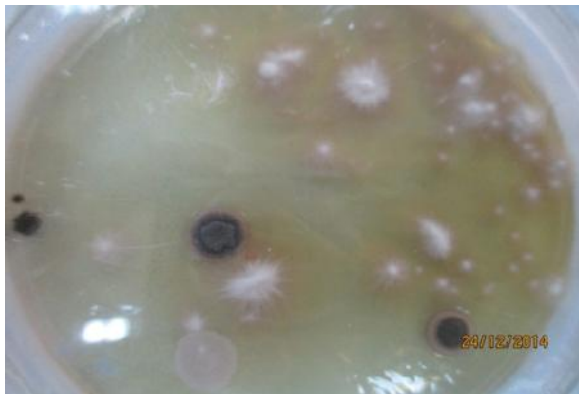


Fig. 4. Fungal culture media showing radiating whitish colonies of M. canis (anterior aspect).



Fig. 5. Colonies of *M. canis* (reverse side), showing golden yellow colour with central orange brown pigmentation.

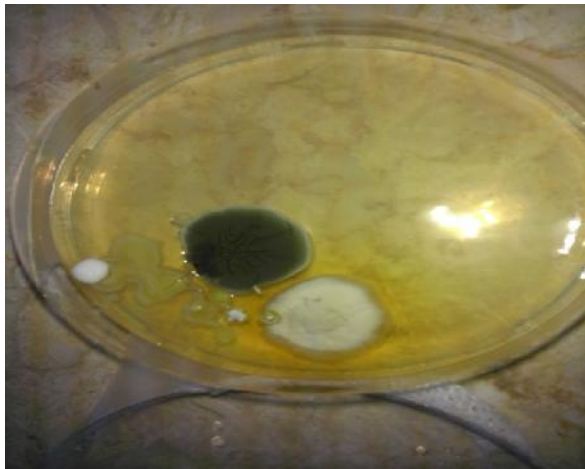


Fig. 6. colonies of *T. rubrum* with whitish cottony colour from anterior side.



Fig. 7. Reverse side of *T. rubrum* showing yellowish periphery and reddish brownish discoloration of center.

The less frequently isolated Dermatophytes were *T. verrucosum*, *T. tonsurans*, *T. soudanense*, *M. audouinii*, and *M. gypseum*. Non-Dermatophyte Moulds were cultured from 8 patients (14.8%). The isolated Moulds were *Mucor* species, *Penicillium* species, *Aspergillus flavus*, *Aspergillus niger*, and *Scopulariopsis brevicaulis*. (Figure 8)

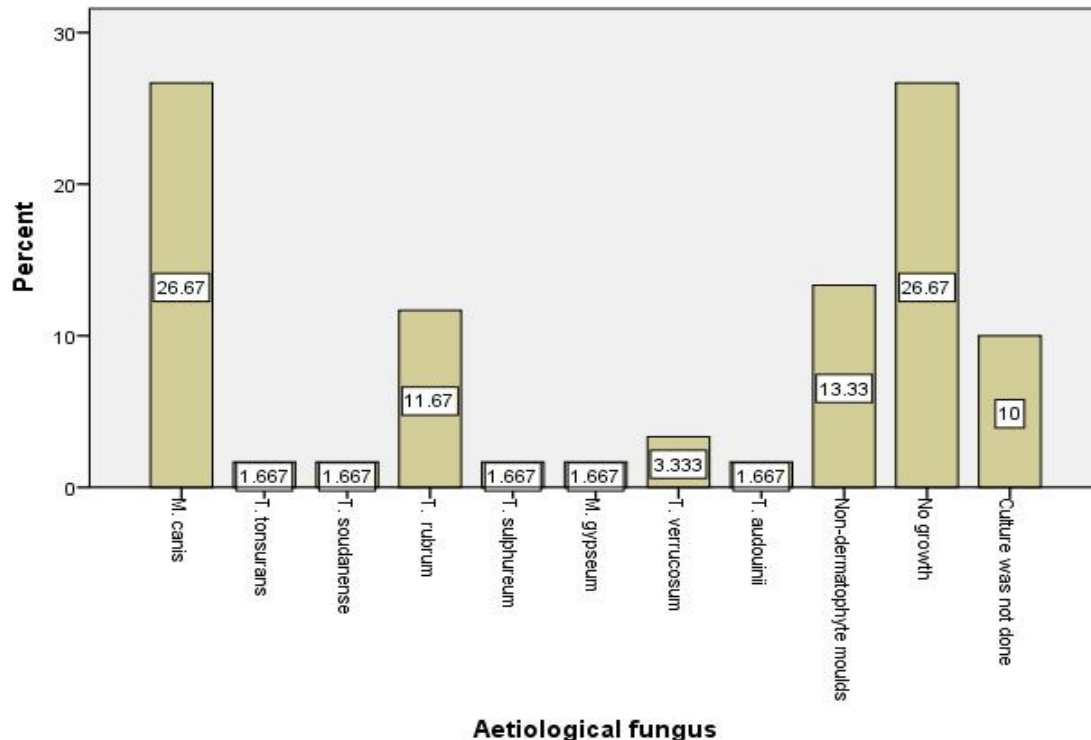


Fig. 8 .Distribution of 54 patients by isolated species.

DISCUSSION:

Tinea capitis is a common superficial fungal infection worldwide, particularly among pre-pubertal children in age group of 5-15 years [5]. In Benghazi (Libya), *T. capitis* was found to represent 45% of all superficial fungal infections, and most of affected patients are children less than 10 years of age. The main isolated organism in Benghazi and Tripoli (Libya) was *T. violaceum* [6,7]. Our study showed that the majority of patients (90%) were children less 13 years old ,and this consistent with results of Benghazi study as well as with results of study performed in Sfax hospital in Tunisia [6,8]. An almost equal number of males and females were affected in our study, and this finding concurred with previous study by Singal et al from North India [9]. However, the prevalence of tinea capitis in Egypt and Kuwait were more among males than females [10,11].

In this study, the non-inflammatory types of *T. capitis* were more common (78%) reported than inflammatory variants (3%) , and the gray patch was the most frequently recorded type. On the other hand, Kerion was the least frequently one. This observation is concurred with that in Bengahazi study [6]. However, the Favus type was not reported in our study, and that is why *T. Schoenleinii* was not isolated .

Usually the culturing of fungi in special media gives valuable data regarding the causative species involved in the disease and earlier reports have shown a positive isolation rate of 56-92% [12]. However; regarding our results the culture of specimens yielded positive result in 70.4% of the cases and fungal elements were confirmed microscopically in 58% of cases. The predominant species isolated by us was *M.canis* (responsible in almost 29.6% of all the culture-positive cases). *M. canis* was the most frequently isolated pathogenic dermatophyte same as found in Saudi Arabia, the United Arab Emirates and Qatar [13,14,15]. while in Tripoli (Libya), Benghazi, and Egypt, the most frequent etiologic agent was *Trichophyton violaceum* [6,7,16].

T. rubrum was the second frequently isolated pathogen (13%), in contrast, *T. rubrum* was rarely isolated in Tripoli (Libya) 2001 and in Saudi Arabia 1993 [7,13].

T. Violaceum was not isolated from our *T. capitis* patients, despite it was most frequent pathogen in Tripoli and Benghazi [6,7]. This can be explained by our small sample size.

Moulds represented 14.8% of isolated fungi, which were isolated from about 10% of cultured fungi in one study in Egypt, which raise the question about capability of these organisms on causing *T. capitis* [17], or may be to use of Sabouraud dextrose agar without cyclohexamide which is needed to suppress growth of moulds.

In Conclusion, in this study, the gray patch was the most frequently recorded type of *T. capitis*, and *M. canis* was the most common species isolated. Further studies involving a larger number of patients and more sensitive fungal isolation methods are required to have more information on this issue in our locality.

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