

Original Research Article

TineaCapitis in Patients AttendingZliten Teaching Hospital (North West of Libya)

ABSTRACT

Aims: To determine the frequency of occurrence of tinea capitis in determined population, which were patients, sought medical advice at outpatient dermatology clinic of Zliten Teaching Hospital in period of time from October 2014 to April 2016, and to determine the frequency of different clinical types of tinea capitis as well as to find out the causative etiological species.

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

Place and Duration of Study: The study was carried out in outpatient dermatology clinic of 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 tinea capitis from different ages were enrolled in this study. Scrapings from infected scalps were examined under high power of microscope using 20% potassium hydroxide mount and cultured for fungal elements. Statistical Microsoft SPSS 20 was used to analyse the data.

Results: The preschool children were the most susceptible age group to develop tinea capitis, which were 36 child (represented 60% of total), while no sex predilection was detected. The grey patch type was the most frequent clinical type seen in 36 (representing 60%) of all patients, followed by black dot and seborrheic type respectively. The *Microsporum canis* was the most frequent isolated dermatophyte from 16 patients (representing 53.3% of cultures with growth of Dermatophytes) followed by *Trichophyton rubrum*, which was cultured from 7 patients (23.3%).

Conclusion: Preschool Children were 36 child (60%) and were the most susceptible age group to develop tinea capitis and no sex predilection was detected. The grey patch was the most frequently seen clinical type. *Microsporum canis* was the most frequent etiologic agent causing tinea capitis in Zliten area.

Keywords: Tinea capitis, Dermatophyte fungal infection, Preschool children, *Microsporum sp.*, *Trichophyton sp.*, North West of Libya.

1. INTRODUCTION

Tinea capitis is 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 affects school-age children and is rarely to appear in adults [1,2].

From total number which is cultures with growth of Dermatophytes, please look at Fig.8

The dermatophytes are named according to their genera; *Microsporum*, *Trichophyton*, and *Epidermophyton*, which have many species and they can be distinguished from each other, through culture on Sabouraud's media, according to their special macroscopic and microscopic characteristics [1]. The most involved dermatophyte species in human skin infections are five of *Microsporum* genus, 12 species in the genus *Trichophyton* and only one *epidermophyton* species. Furthermore, most dermatophytes are capable to cause tinea capitis, but certain species e.g. *M. audouinii*, *T. Schoenleinii* and *T. violaceum* have special affinity to invade hair and cause tinea capitis. On the other hand, *E. floccosum* and *T. concentricum* are unable to cause tinea capitis [3,4]. The principal fungi responsible for tinea capitis vary in different parts of the world. Worldwide, most of the patients with tinea capitis were being detected in Africa, Asia, and Southern and Eastern Europe [5].

In the UK, until recent years, most cases of tinea capitis were caused by *Microsporum canis* (*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 [5].

In Libya, there are few studies about tinea capitis to determine etiological 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 tinea capitis in relation to age, sex, and etiological causes of tinea capitis are not known. This study is conducted to know more about clinico-epidemiological features of tinea capitis and to know the responsible etiological 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, were considered Study population and were 7011 patients.

2.2 Objectives

This study is conducted to determine etiology of tinea 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. : All clinically diagnosed patients, to have tinea capitis, at different ages were included in the study, whereas Cases of tinea capitis on treatment were excluded. Sixty cases were diagnosed to have tinea capitis, and the data regarding age, sex, clinical types, and results of KOH were recorded in special form for each patient. The patients were classified according clinical type of tinea capitis into inflammatory (kerion) or non-inflammatory (grey patch or black dot). Following cleaning of the affected areas with 70% alcohol, scrapings were taken using a scalpel blade no. 21. A portion of scraped materials was placed on a clean glass slide and drops 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

Old reference (No. 3) is : [2] Comment removed and instead new reference which now Ref. 3 and 4 are included.

petri dishes were incubated at 26C° and were observed twice weekly for growth of fungi. They were discarded as negative if there was no growth after 4 weeks. Then growths were examined for gross morphological and microscopic characteristics, which were examined with use of lactophenol cotton blue preparation.

2.4 Statistical Analysis

The data of patients were organized and analysed using Statistical Microsoft SPSS system. Descriptive statistics was performed through running frequencies, percentage, means and crosstabulations. Chi-square test with 95% confidence intervals (CIs) was used to compare etiology and clinical type of tinea capitis.

3. Results

Sixty cases were clinically diagnosed as tinea capitis, which accounted for a proportional rate of 0.9%. Those 60 cases were confirmed to have tinea 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 group were children less than 13 years of age, and were 54 cases (representing 90% of total). The youngest patient was one year old and oldest patient was 49 years old. The most affected ages were children less than 7 years, which were 36 (representing 60% of all patients). (Fig. 1).

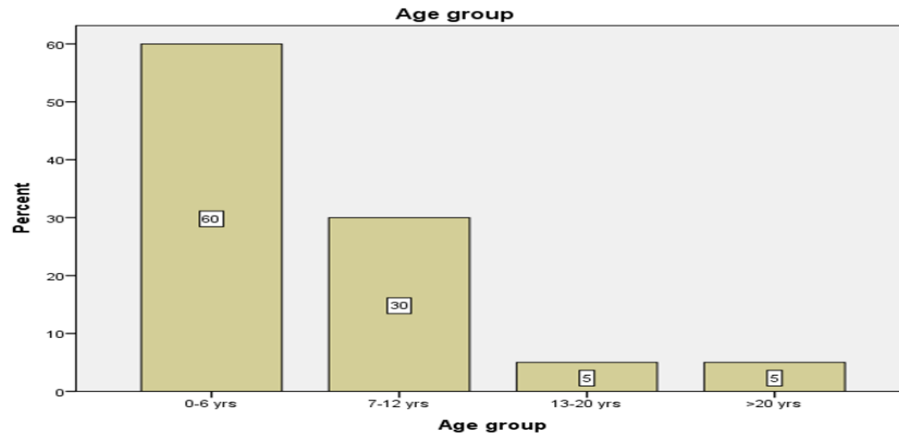


Fig. 1. Distribution of tinea capitis in different age groups.

Clinical types were distributed as following, 36 cases (representing 60%) had grey patch type, while, black dot type were recorded in 15 patients (25%), and seborrheic type in 7 patients (11.7%), and Kerion only in 2 patients (3.3%). (Fig. 2), (Fig. 3).



Fig. 2. Black dot type of tinea capitis.



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

Table 1. The relationship between the etiological fungus and clinical type.

etiological Fungus	Clinical type (No. of cases)				Total Number
	Grey patch	Black dot	Seborrheic	Kerion	
<i>M. canis</i>	11	3	2	0	16
<i>T. tonsurans</i>	1	0	0	0	1
<i>T. soudanense</i>	1	0	0	0	1
<i>T. rubrum</i>	4	1	2	0	7
<i>T. sulphureum</i>	1	0	0	0	1
<i>M. gypseum</i>	0	1	0	0	1
<i>T. verrucosum</i>	2	0	0	0	2
<i>M. audouinii</i>	1	0	0	0	1
No growth	12	8	2	2	24
Culture was not done	3	2	1	0	6
Total Number	36	15	7	2	60

*p value= 0.03%

Scraping of scaly material and hairs were taken from all patients, fungal elements were found to be positive through microscopic examination and potassium hydroxide mount 20% in 36 patients (representing 60%). For majority of patients, who were suspected clinically to have tinea capitis, culture on Sabouraud's dextrose agar medium with antibiotic was done. Culture for fungi showed growth of dermatophytes in 30 patients (50%). The predominant

Corrected with removal :[المنتقد] Comment of moulds and considering it as contamination

isolated etiologic agent was *M. canis*, which was cultured from 16 patients (representing 53.3% of total cultures with grown dermatophytes). *T. rubrum* was cultured from 7 patients (23.3%). (Fig. 4,5,6,7). The less frequently isolated dermatophytes were *T. verrucosum*, *T. tonsurans*, *T. soudanense*, *M. audouinii*, and *M. gypseum*. (Fig. 8)

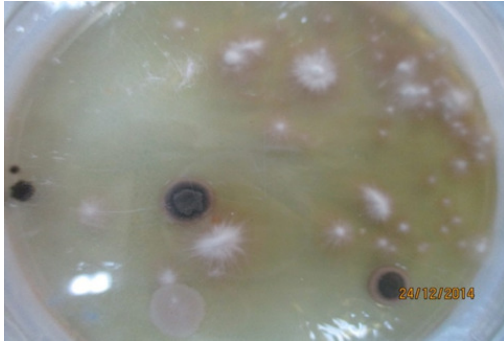


Fig. 4. Radiating whitish colonies of *M. canis* (anterior surface).

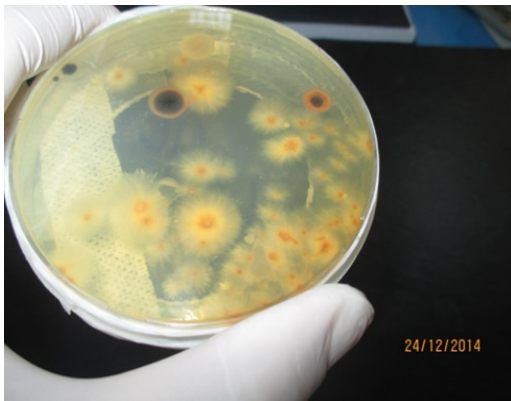


Fig. 5. *M. canis* colonies (reverse side), showing golden yellow colour with central orange brown pigmentation.

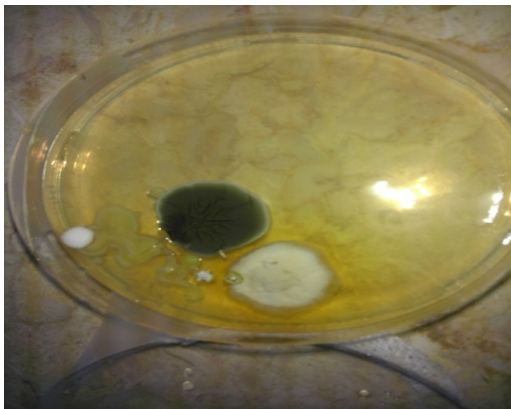


Fig. 6. Colonies of *T. rubrum* with whitish cottony colour (anterior side).

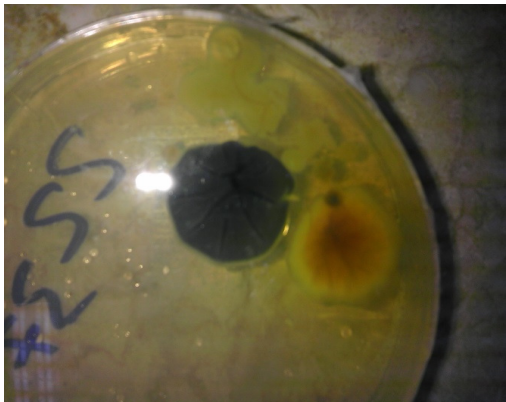


Fig. 7. *T. rubrum* colony showing yellowish periphery and reddish brownish discoloration of center (Reverse side).

Photos for microscopic :[المتقدم4] Comment examination of KOH were not available to be take, that such facility are not available in our hospital

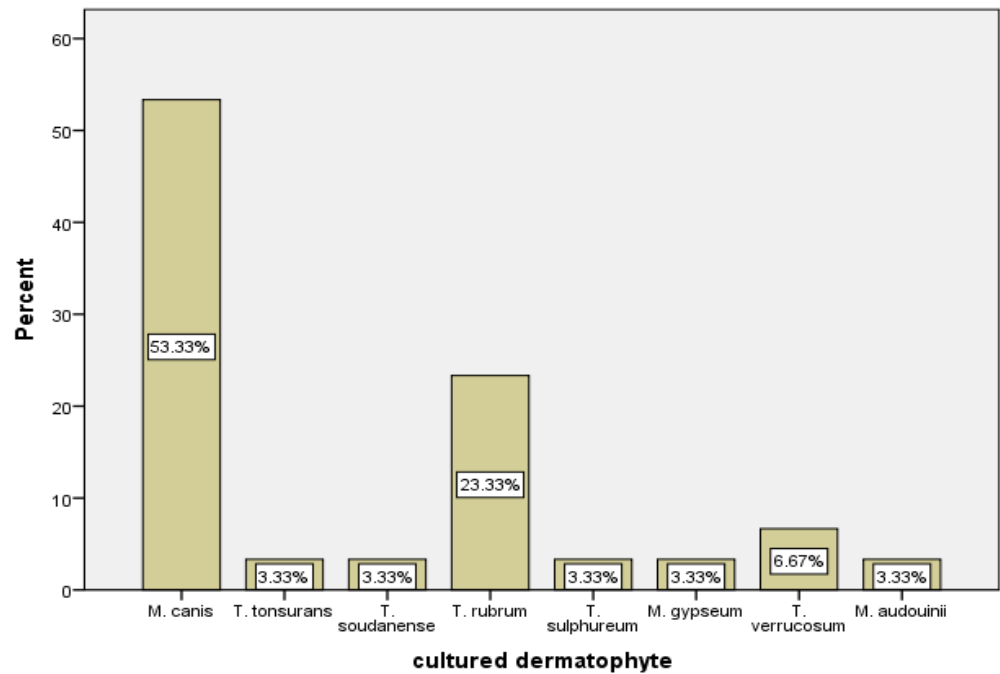


Fig. 8 .Distribution of isolated species.

DISCUSSION:

Tinea capitis is a common superficial fungal infection worldwide, particularly among pre-pubertal children in age group of 5-15 years [6]. In Benghazi (Libya), tinea capitis was found to represent 45% of all superficial fungal infections, and most of the affected patients were children less than 10 years of age. The main isolated organism in Benghazi and Tripoli (Libya) was *T. violaceum* [7,8]. Our study showed that the majority of patients were children less than 13 years old, and this is consistent with results of Benghazi study as well as with results of study performed in Sfax hospital in Tunisia [7,9]. 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 [10]. However, the prevalence of tinea capitis in Egypt and Kuwait were more among males than females [11,12].

In this study, the non-inflammatory types of tinea capitis were more commonly reported than inflammatory variant (Kerion). The grey patch was the most frequently recorded type. These observations are concurred with that in Benghazi study [7]. The favus type was not reported in our study, that *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% [13]. However; regarding our results the culture of specimens yielded positive result in only 50% of the cases and fungal elements were confirmed microscopically in 60% of cases. In our study, *M. canis* was the most frequently isolated pathogenic dermatophyte same as found in Saudi Arabia, the United Arab Emirates and Qatar [14,15,16], while in Tripoli (Libya), Benghazi (Libya), and Egypt, the most frequent etiologic agent was *T. violaceum* [7,8,17]. *T. rubrum* was the second frequently isolated pathogen (13%), in contrast, *T. rubrum* was rarely isolated in Tripoli (Libya) and in Saudi Arabia [8,14].

T. violaceum was not isolated from our tinea capitis patients, despite it was most frequent pathogen in Tripoli and Benghazi [7,8]. This can be explained by our small sample size.

In conclusion, in this study, the grey patch was the most frequently recorded type of tinea 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.

ETHICAL APPROVAL

The study protocol was reviewed and approved by Ethical Committee of Zliten Teaching Hospital.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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