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Epidemiological, Clinical and Mycological Profile of Tinea Capitis

HAMOUDA Ouanassa[1*] and KALLA Nabila[2]

[1,2]*Department of Medicine, Batna 2 University – Algeria.*

***Corresponding author**

HAMOUDA Ouanassa,

Department of Medicine, Batna 2 University – Algeria

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Introduction: *Tineum of the scalp is a fungal infection caused by dermatophytes, keratinophilic fungi. It is common in preschool and school-aged children. Mycological examination confirms the fungal origin of these infections.*

Objective: *The aim of our work is to study the epidemiological, clinical, and mycological aspects of tinea of the scalp, including a review of the literature and a comparison with our results.*

Results: *A study of tinea capitis at the Parasitology Laboratory of the University Hospital of Batna, Algeria, over a 10-year period (2015-2024). Overall, we recorded a prevalence rate of 93%, with a slight male predominance (71%). The highest rate of tinea capitis was observed in patients aged 5 to 10 years (46.92%).*

Of the 758 mycological samples, 7.12% (54 samples) were negative on both direct examination and culture, and 9.35% (65 samples) were positive on direct examination only. 522 samples were positive on both direct examination and culture (74.16%).

117 samples were positive only in culture (16.61%).

Microsporum canis was the most frequently isolated species (88%).

Our results show that microsporum tinea capitis is the most frequent, with a rate of 72.62%, while low proportions are recorded for trichophytic tinea capitis.

Conclusion: *Tinea capitis is a benign infection that mainly affects children, with a tendency toward spontaneous clinical resolution. Puberty.*

We observed that the diagnosis of tinea cruris (TC) depends on several parameters: age, sex, clinical signs, and mycological examination.

Similarities between our results and those in the literature showed that tinea cruris predominates in preschool and school-aged children, males are more affected, and the majority of cases present with scaly, alopecic patches.

Zoophilic tinea cruris caused by M. canis remains the most widespread epidemiological form in the Batna region.

According to our work, eradication of this disease requires improved awareness of hygiene and health education among the population. Therefore, prevention through hygiene and prophylactic measures is necessary to combat and eradicate this infectious disease.

Keywords: Tinea capitis, Microsporum canis, Microsporum tinea capitis, Trichophytic tinea capitis.

Introduction

Tineum of the scalp is a fungal infection caused by dermatophytes, keratinophilic fungi. It is common in preschool and school-aged children. Mycological examination confirms the fungal origin of these infections [1].

Tineum of the scalp (TCC) is the most well-known clinical presentation among fungal infections and the most frequently encountered in Algeria and the Maghreb. The prevalence of tinea has significantly decreased in developed countries thanks to improvements in hygiene and socioeconomic status; however, it remains high and poses a serious public health problem in developing countries [2].

The aim of our work is to study the epidemiological, clinical, and mycological aspects of tinea of the scalp, including a review of the literature and a comparison with our results.

Methods

Type, location, and period of the study

This was a retrospective descriptive study conducted in the parasitology laboratory at the University Hospital of Batna,

Algeria, over a ten-year period from January 1, 2015, to December 31, 2024.

Study Population

This study included patients presented to the parasitology department for mycological sampling due to clinical suspicion of tinea capitis (ringworm of the scalp).

Inclusion Criteria

All patients with a confirmed diagnosis of tinea capitis by direct examination and/or culture, regardless of age or sex, were included in our study.

Exclusion Criteria

Patients with incomplete or blank information sheets, or whose diagnosis was suspected outside the study period, were excluded from our study.

Data Collection

We collected epidemiological, clinical, and mycological data for patients with confirmed tinea capitis from archived patient records containing various parameters: demographic, clinical, mycological, and risk factors.

Data Analysis

The data were processed using SPSS version 29 (Statistical Package for the Social Sciences) to generate graphs and tables.

Ethical Considerations

Anonymity and confidentiality of patient information were strictly maintained.

Results

Overall data on scalp tinea observed during the study period

During the study period, 758 patients were referred to the parasitology department. Of these, 704 patients presented with tinea proven by direct examination and/or culture, corresponding to a prevalence rate of 93%.

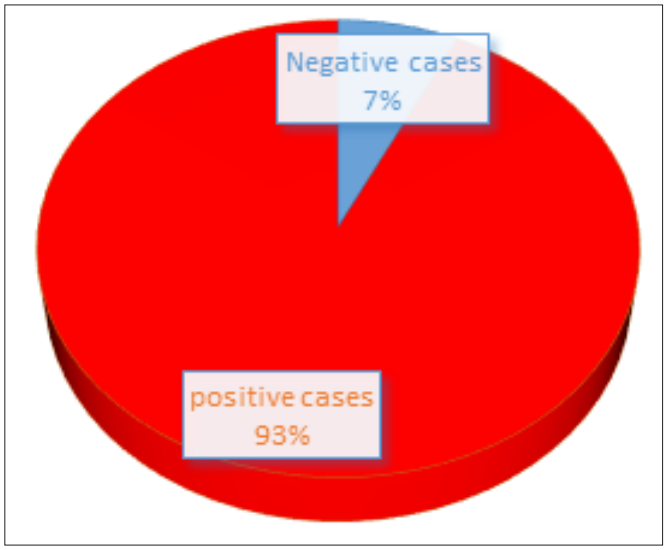

Figure 1: Overall tinea capitis infection rate during the study period

Distribution of Onychomycosis Cases by Year

Some variability is observed in the annual distribution of positive cases, with a peak in 2024 (66 cases), while a marked decrease was recorded in 2015. (Figure 2).

The average annual frequency of onychomycosis was 37 cases/year.

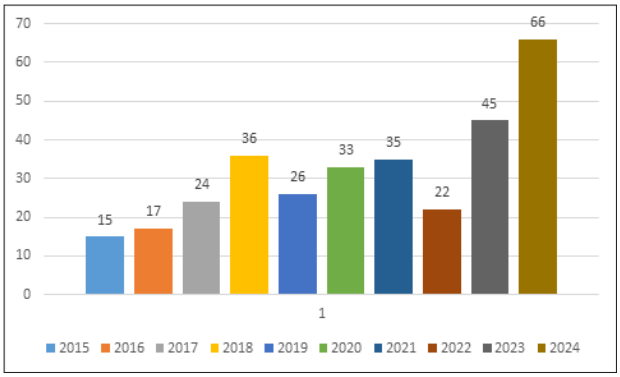

Figure 2: Distribution of tinea capitis cases by year.

Characteristics of the Study Population

We observed a predominance of males (71%) compared to females (29%). The male-to-female ratio was 2.4.

The average age of the patients was 18 years, with a range from 1 to 35 years.

The highest rate of tinea capitis was observed in patients aged 5 to 10 years (46.92%). (Figure 3)

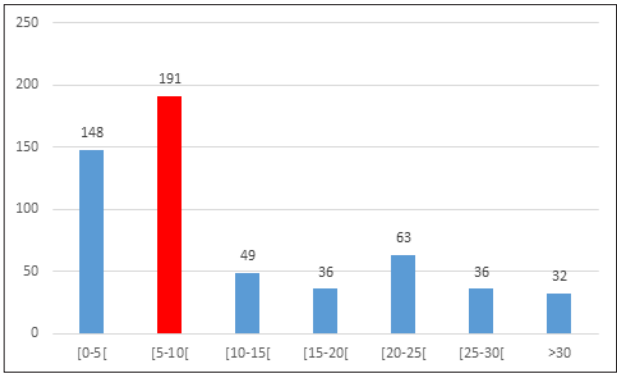

Figure 3: Distribution of patients with tinea capitis according to age.

Mycological Data

Of the 758 mycological samples, 7.12% (54 samples) were negative on both direct examination and culture, and 9.35% (65 samples) were positive on direct examination only. 522 samples were positive on both direct examination and culture (74.16%).

117 samples were positive only in culture (16.61%) (Figure 5).

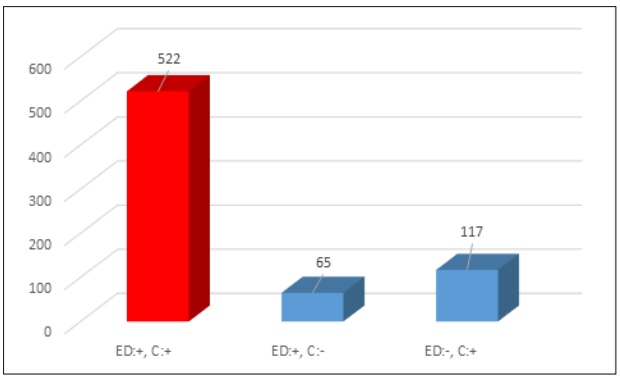

Figure 5: Data from direct examinations and mycological cultures.

Microsporum canis was the most frequently isolated species (88%) (Figure 6).

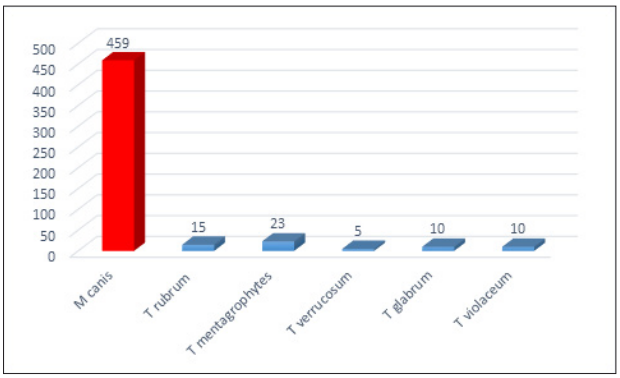

Figure 6: Distribution of onychomycosis according to fungal groups.

Table 1: Distribution of ringworm according to the type of parasitism

	microsporum tinea capitis,	trichophytic tinea capitis.	Total
Effectifs	61	23	84
Percentage	72,62%	27,38%	100%

Discussion

Tineum tinea capitis (TCC) is the most well-known clinical presentation of fungal infections and the most frequently encountered in Algeria and the Maghreb.

A study of tinea capitis at the Parasitology Laboratory of the University Hospital of Batna, Algeria, over a 10-year period (2015-2024) revealed an average frequency of 37 cases per year. Analysis of the results according to sex shows a male predominance with a sex ratio of 2.4. Our result is consistent with that found by Mtibaa et al. in a study conducted on TCC in the Tunis region (2012-2020) [3], however, our results disagree with the study by Belhadj et al. (2007), which reports a female predominance [4]. This male predominance, reported in numerous studies, can be explained by play habits and boys' more frequent and closer contact with domestic animals, which are often asymptomatic carriers.

Our study shows that the 5-10 age group was the most affected. Our results are consistent with those of Mebazaa et al. and Mtibaa et al., who demonstrated that school-aged and preschool children are the most affected [3,5].

Tineum tinea capitis remains rare after puberty; this could be explained by the role of sebum, which has a fungistatic effect against dermatophyte infection. The majority of patients (88%) present with scaly alopecia patches, a finding demonstrated in several studies (Gharbi et al., 2017), and (Mtibaa et al., 2021), which found that the most common presentation is scaly alopecia patches. Other clinical presentations are less frequent [3,6].

The identification of our strains was based on direct examination and macroscopic and microscopic appearance of cultures.

Of the 758 mycological samples, 7.12% (54 samples) were negative on both direct examination and culture, 9.35% (65 samples) were positive on direct examination only, and 522 samples (74.16%) were positive on both direct examination and culture. 117 samples were positive in culture only (16.61%).

In our series, 117 patients had a positive culture on Sabouraud medium. Our results are consistent with the work of (Mtibaa et al., 2021) where the culture positivity rate was very high (98%) [3].

Our results show that microsporum tinea capitis is the most frequent, with a rate of 72.62%, while low proportions are recorded for trichophytic tinea capitis. The high frequency of microsporum tinea capitis is reflected in a predominance of M. canis compared to other isolated dermatophytes. Our results are similar to those of (Benmezdade et al., 2012) where microsporic tinea capitis is the most frequent [7].

In our study series, the isolation of cultures is dominated by *M. canis* (88%). While *T. mentagrophytes, T. violaceum, T. glabrum, T. rubrum, and T. verrucosum* have minimal frequencies. These results are consistent with the data from several studies such as that of (Mtibaa et al., 2021). In contrast to our results, (Gharbi et al., 2017) found that *T. violaceum* was the most frequently isolated species (54.8%) [6].

The predominance of M. canis may be due to the presence of domestic animals such as cats or dogs.

Conclusion

Tinea capitis is a benign infection that mainly affects children, with a tendency toward spontaneous clinical resolution. Puberty.

We observed that the diagnosis of tinea cruris (TC) depends on several parameters: age, sex, clinical signs, and mycological examination.

Similarities between our results and those in the literature showed that tinea cruris predominates in preschool and school-

aged children, males are more affected, and the majority of cases present with scaly, alopecic patches.
Zoophilic tinea cruris caused by M. canis remains the most widespread epidemiological form in the Batna region.

According to our work, eradication of this disease requires improved awareness of hygiene and health education among the population. Therefore, prevention through hygiene and prophylactic measures is necessary to combat and eradicate this infectious disease.

Conflicts of Interest

None

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