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Original Research Article

Tinea Capitis: Experience of the Parasitology Mycology Department at the Avicenna Military Hospital in Marrakesh: 4 year Review (2016—2019)

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Abstract

Introduction and objectives: Tinea capitis are benign cosmopolitan mycoses caused by dermatophytes. They are frequent in developing countries including Morocco. The objective of this work is to study the epidemiological and clinical profile of this pathology at the Avicenna military hospital in Marrakesh. ***Patients and methods:*** This is a retrospective study over a period of 4 years (1st January 2016 to 31st August 2019) on 193 suspected ringworm of the scalp consulting the Parasitology Mycology department at the Avicenna military hospital in Marrakesh. All patients underwent direct hair examination, supplemented by culture. ***Results:*** The direct examination and the culture made it possible to conclude with a tinea capitis in 112 patients, i.e. an overall prevalence of 58%. The average age of our patients was 7.2 years, with a predominance of men (male / female sex ratio: 3.48). %). The notion of contact with animals was found in 38% of cases. The culture, positive in 78.58% of cases, allowed the isolation and identification of 8 species of dermatophytes: *Microsporum (M) canis* was the predominant species (71.59%), followed by *Trichophyton (T) violaceum* (11, 36%), *T. mentagrophytes* (10.22%), *T.rubrum* (2.27%), *T. verrucosum*, *T. tonsurans*, *M. audouinii* and *T. schoenleinii* with a percentage of 1.14% each. We confirm by our study that ringworms are the prerogative of school-aged children. Zoophilic dermatophytes are becoming more and more frequent. This change could be related to a modification of the behavior of the population which adopts more domestic animals. ***Conclusion*:** Tinea capitis are a public health problem in Morocco. Mycological examination is essential to make the diagnosis and identify the agents responsible for tinea capitis, thus allowing better therapeutic management.

Keywords: scalp ringworm, diagnosis, direct examination, culture, Microsporum canis, and Trichophyton rubrum.

INTRODUCTION

Tinea capitis are benign cosmopolitan mycoses caused by dermatophytes, keratinophilic filamentous fungi and keratinolytics [1].

The clinical diagnosis of tinea capitis is not always easy. Mycological examination is essential to confirm the fungal origin of the lesion [2, 3].

These ringworms are common in Morocco and constitute a public health problem, particularly among children of school and preschool age.

The objective of this work is to study the epidemiological and etiological aspects of TINEA CAPITIS diagnosed in the mycological parasitology laboratory of the Avicenna military hospital in Marrakesh.

PATIENTS AND METHODS

Type and study population

This is a retrospective study over a period of 4 years (1st January 2016 to 31st August 2019). The collection of clinical and mycological data was made from the registers of the parasitology-mycology laboratory of the Avicenna military hospital in Marrakesh. Our study population consisted of all civilian and military patients from the Marrakesh region and consulting for various scalp lesions such as: scaly, alopecic, suppurative, inflammatory or dry patches, with or without associated lesions: lesions of the face, neck, arms. . .

Mycological study

The samples were taken in the laboratory. In the event of antifungal treatment in progress, the patient was asked to interrupt it for at least 10 days for local topicals and one month for oral treatment before taking the sample. A systematic exam in the light of Wood was carried out beforehand to seek the presence or not of a green fluorescence. The scales were removed by scraping with a vaccinostyle and the hair was pulled out using tweezers, and then collected in sterile Petri dishes. For suppurative ringworms, the pus was removed with a swab, while the favic hairs were taken at their base, scraping the bottom of the favic cup with a curette if possible. For each sample, a direct examination with 30% potash was carried out to determine the type of pilar parasitism. The culture was carried out on agar media of Sabouraud chloramphenicol supplemented with cycloheximide (actidione*). The cultures were incubated at 28 ° C and examined daily to follow the evolution of the shoot. A result was considered negative after 4 weeks incubation. The identification of the isolated dermatophytes was based on the duration of growth, the macroscopic appearance on the front and back of the colonies, the possible development of pigments and on the microscopic appearance after staining with lactophenol blue, with the observation of fruiting bodies and / or ornaments. The mycological diagnosis was considered positive when direct examination and / or culture were positive.

RESULTS

On the epidemiological level

During the study period, 193 suspicions of scalp ringworm were included. The diagnosis of tinea capitis was confirmed for 112 patients, or 58% of all scalp samples. The annual incidence was an average of 28 cases / year (Figure 1). Boys were more affected by tinea capitis than girls with a sex ratio of 3.48 (Figure 2).

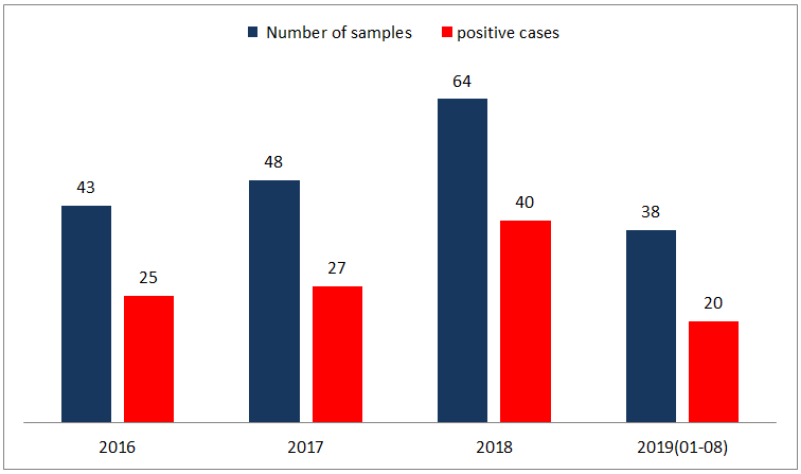

Fig-1: Evolution of the frequency of tinea capitis of the scalp

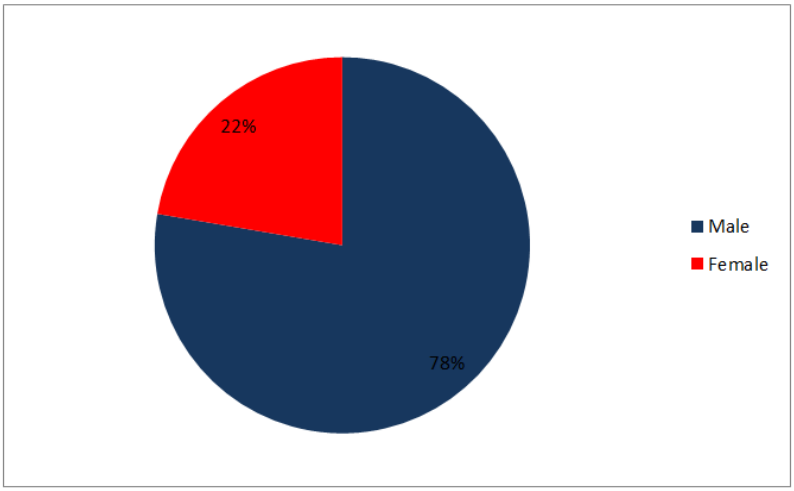

Fig-2: Distribution by sex

The average age of our patients was 7.2 years. The most affected age group was five to ten years (79% of cases).

Among our patients, 38% had a notion of contact with animals in most were cats and dogs.

Affection of a family member was found in 17% of cases.

On the mycological level

The Wood examination was positive in 26% of cases. The ringworms observed in our study were predominantly microsporic ringworms (69.23%), followed by trichophytic ringworms (16.66%) and inflammatory ringworms (12.82%). Only one case of favic ringworm was diagnosed. The direct examination was positive in 102 cases or 91.07%. Culture did not grow in 21.42%. Endothrix-type hair parasitism was the most common (70.40%), followed by ectothrix-type (28.57%). Favic parasitism was found in a single patient. The culture, positive in 88 cases (78.58%), allowed the isolation and identification of 8 species of dermatophytes. *Microsporum canis* was the predominant species (71.59%), followed by *Trichophyton violaceum* (11.36%). The distribution of isolated dermatophytes is shown in Table 1.

Table-1: Distribution of dermatophyte species responsible for scalp ringworm

	2016	2017	2018	2019
Microsporum canis	6	14	30	13
Trichophyton violaceum	2	3	0	5
Trichophyton mentagrophytes	5	3	0	1
Trichophyton rubrum	0	0	2	0
Trichophyton verrucosum	1	0	0	0
Trichophyton tonsurans	0	0	1	0
Microsporum audouinii	1	0	0	0
Trichophyton schoenleinii	1	0	0	0

DISCUSSION

Tinea capitis constitute a significant motif for consultation in current medical practice. Although benign, they constitute a public health problem, especially in third world countries, notably Morocco [2, 4, 5].

These ringworms mainly affect children of school and preschool age. In our study, the most affected age group was five to ten years; this finding is in agreement with several studies carried out in the world [1, 5, 6, 7, 8, 9].

Moreover, they are not frequent in adults [10, 11]. In our series, 3% of cases were adults. This rarity in adults could be explained by the fungistatic properties of triglycerides in sebum and sex hormones against dermatophytic infection [10, 12, 13].

In our series, there is a male predominance with a sex ratio of 4.48. This difference can be attributed to the higher contact of boys with animals, especially cats and stray dogs [1, 14, 15]. This observation is also found in other works [16-19].

The causative agents of ringworms vary from a region to another, they reflect the endemic profile of ringworms in a given region.

Microsporic ringworm was the most frequently diagnosed in our series, with a rate of 69.23%, *M. canis* ranked first. These ties in with several Maghrebi studies, which have shown that the frequency of *M. canis* has exceeded that of *T. violaceum* during the last decade [3, 5, 20, 21]. This zoophilic fungus was practically unknown in our country until 1956 [22]. It is currently experiencing a marked increase [23]. This remarkable upsurge in *M. canis* is related to socioeconomic development and the change in habits of the Moroccan population. Indeed, cats, which are the main reservoir of *M. canis*, coexist more often with Moroccan families.

Trichophytic ringworms come second with a percentage of 16.66%, the main causative agent of which is *T. violaceum*. The predominance of *T. violaceum* is found in numerous studies [24, 25, 26]. *T. violaceum* is an anthropophilic species, family contamination is frequent and samples must be taken systematically from all members of the family. This regression of trichophytic ringworms at the expense of microsporic ringworms can be explained by school screening and improved socio-economic and hygienic conditions.

Inflammatory ringworms come in third place, accounting for 12.82% of cases. Two agents *T. mentagrophyte* and *T. verucosum* were isolated from 10 patients in our series. These results are also consistent with several studies [2, 27].

Finally, the favic ringworms, caused by *Trichophyton schoenleinii*, were frequent in our country in 1950, their rate decreased to become exceptional nowadays, thanks to the improvement of the hygienic conditions. This species has only been identified in one case in our series. This finding has been reported by several studies [2, 3, 5, 28].

Trichophyton schoenleinii remains exceptionally isolated in children from disadvantaged families originating from rural areas.

CONCLUSION

Tinea capitis are a public health problem in Morocco, mainly affecting children. *M. canis* and *T. violaceum* dominate the dermatophytic flora. The often misleading appearance of these ringworms should lead any practitioner to request a mycological examination in case of chronic lesions of the scalp. The laboratory makes it possible to make a definite diagnosis and to identify the causative agents, an essential step in knowing the origin of the infection and effectively fighting against the spread of this mycosis.

Declaration of competing interests

The authors report no relationships that could be construed as a conflict of interest.

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