

ANALYSIS OF 58 CASES OF TINEA CAPITIS IN TEHRAN RAZI HOSPITAL

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Abstract - *Tinea capitis* is the commonest dermatophytosis in children with diverse clinical presentations. The causative fungi of *Tinea capitis* vary with geographic area and time.

This study was aimed to identify the etiologic agents and to determine the related factors of *Tinea capitis* in Tehran, Iran. From clinically suspected cases of *Tinea capitis*, microscopy and culture were performed.

Of 58 patients, 96% were children below 12 years of age with the male/female ratio of 2.1. The common clinical manifestation was gray patch, followed by kerion, favus (scutula), black dot and seborrheic dermatitis-like lesion. *Trichophyton violaceum* was the most common etiologic agent, responsible for 53.4% of infection, followed by *T. schoenleinii* (24.1%), *Microsporum canis* (5.5%), *T. mentagrophytes* (3.4%), *T. tonsurans* (1.7%) and *M. gypseum* (1.7%).

T. violaceum was the predominant pathogen causing *Tinea capitis* in this region and gave rise to a varied clinical picture.

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Key Words: *Tinea capitis*, fungi, clinical manifestation

INTRODUCTION

Tinea capitis is the most common dermatophytosis of children, especially in warm climate. The clinical manifestations of the disease vary from an asymptomatic carrier state to marked inflammatory forms such as kerion (1,2). Various dermatophytes belonging to the genera *trichophyton* and *microsporum* cause *Tinea capitis* (2,3). The predominant organism may change with time and geographic area due to many factors including immigrations, for example in 1940, the commonest cause of *Tinea capitis* in U.S.A was *M. audouini* whereas since 1950s *T. tonsurans* and *M. canis* are the predominant agents (4-7).

The causative agent in Italy is *M. canis* and in U.K *T. tonsurans* (8-10).

Like other dermatophytosis, *Tinea capitis* is prevalent in Iran. Different studies have been conducted on the causative fungi in the past years.

This study aimed to identify the predominant pathogens and to determine a clinico-etiological

correlation.

Patients and methods

This was a prospective, cross sectional study carried out at the department of dermatology, Razi Hospital, Tehran, from April 1998 to March 1999. All the clinically suspected cases of *Tinea capitis* attending the outpatient clinic of our hospital were enrolled in the study. The patients had not taken any topical or systemic antifungal drug for at least 10 days and had not washed their hairs for 3 days before taking the smear and only smear positive cases were considered valuable. After the lesions were cleaned with 70% alcohol, sample of skin scraping and hair was performed on a slide with 10% potassium hydroxide solution. Cases with positive microscopy were selected for culture. Sabouraud's dextrose agar containing chloramphenicol and cycloheximide was used as culture media.

The cultures were incubated for 1-4 weeks at 25-30° C and the colonies were studied for both macroscopic and microscopic textures.

The history and clinical examination in each case were recorded in specially devised Performa. The duration of the complaint, positive family history, contact with animals, the site and the number of the patches of scaling and hair loss were recorded and the clinical presentation was categorized as gray patch, black dots, seborrheic dermatitis-like kerion and favus according to the following criteria: gray patch-a scaly mildly erythematous patch with broken lustreless hair; black dot-a patch of alopecia with prominent black dots; seborrheic dermatitis-like- diffuse scaling with or without erythema but no apparent hair loss; kerion-nodules, boggy swelling, discharging sinuses, alopecia; favus (scutula) -typical honey- colored, cup shaped, follicular crusts and alopecia.

Wood's light examination was performed for any fluorescence.

RESULTS

From 58 valuable patients, 39 (67.2%) were male and 19 (32.8%) female (male: female= 2:1). Their ages

ranged from 1 to 75 years. The youngest patient was a 1 year old boy and the eldest was a 75 years old woman.

The majority of patients (90%) were in the age group 5-10 years. The different clinical varieties have been shown in table 1. Gray patch was the most common mode of presentation (seen in 26 patients, 44.8%) and seborrheic dermatitis-like presentation was only seen in two cases. In 33 cases the number of lesions was 1-2 and in others was more than two and maximum 12 lesions. A family involvement of *Tinea capitis* in siblings was present in 12 cases (20.7%). In 6 cases (10.3%) there were other associated forms of *Tinea*; 1 case *T. corporis*, 3 cases *T. facialis* (*T. corporis*), 1 case *T. unguium* and surprisingly one 7-year old girl with *Tinea capitis*, *T. corporis*, *T. mannum* and *T. unguium* simultaneously and the culture from all sites were *T. schoenleinii*. In 6 patients a family member had *Tinea corporis*.

Trichophyton violaceum was the most frequent isolated fungus (53.4%). Table 2 shows the isolated fungus.

Table 3 depicts the correlation between the various clinical types of *Tinea capitis* and the causative agents.

Table 3. Clinico-etiologic correlation

Fungus	GP	BD	SDL	K	F	Total
<i>T. Violaceum</i>	16	6	2	7	-	31
<i>T. Schoenleinii</i>	-	-	-	4	10	14
<i>M. Canis</i>	9	-	-	-	-	9
<i>T. Mentagrophytes</i>	-	-	-	2	-	2
<i>T. Tonsurans</i>	1	-	-	-	-	1
<i>M. Gypseum</i>	-	-	-	1	-	1
Total	26	6	2	14	10	58

GP: Gray patch BD: Black dot SDL: Seborrheic dermatitis like
 K: Kerion F: Favus (*Scutula*)

DISCUSSION

Some factors determined the clinical presentation of *Tinea capitis* such as the pattern of hair invasion by the pathogenic fungus, its source, and the host immunologic status. Ectothrix types of *Tinea capitis* commonly present as gray patch whereas endothrix types cause black dots. The latter may persist beyond the anagen phase in to the telogen phase and sometimes presents as seborrheic dermatitis-like diffuse scaling (1,2). If the causative fungi have zoophilic or geophilic origin, the host launches a variable degree of inflammatory response which clinically manifests as folliculitis or kerion.

Favus is generally caused by *T. schoenleinii* but occasionally by other dermatophytes such as *T. violaceum* or *M. gypseum*. The pathogens also show a

Wood's light examination was positive in 20 cases.

Table 1. Clinical presentations of *Tinea capitis*

Type	No. of patients	(%)
Gray patch	26	44.8
Kerion	14	24.1
Favus	10	17.2
Black dot	6	10.3
Seborrheic dermatitis like	2	3.4
Total	58	100

Table 2. Causative agents of *Tinea capitis*

Fungus	No.	(%)
<i>T. Violaceum</i>	31	53.4
<i>T. Schoenleinii</i>	14	24.1
<i>M. Canis</i>	9	15.5
<i>T. Mentagrophytes</i>	2	3.4
<i>T. Tonsurans</i>	1	1.7
<i>M. Gypseum</i>	1	1.7
Total	58	100

peculiar geographic distribution, which may change with time (3,11).

The demographic data of our study confirm that the disease primarily affects the juvenile age group and the greatest frequency of *Tinea capitis* in boys in our study is in agreement with other comparable studies (12,13,14). Short hairs probably help in easy implantation of spores (15,16). Our study also highlights the fact that the clinical appearance of *Tinea capitis* is extremely variable. Although black dots are the usual clinical presentations of endothrix invasion, but in our study the most common presentation was gray patch. This is in agreement with some studies (7,8); however other studies report black dot to be the most frequent type (17,18).

Most of our gray patches (16 cases) grew *T. violaceum*. Kerion, the most inflammatory type of *Tinea capitis*, was seen in 14 cases (24.1%). In 4 cases clinically diagnosed as Kerion, *T. schoenleinii* grew in culture, whereas this agent usually causes scutula.

T. violaceum was the etiologic cause of 7 cases of kerion. Scutula, perhaps the most dreaded form of *Tinea capitis*, was observed in 10 cases (17.2%). In all cases *T. schoenleinii* was isolated. Previous studies in many provinces of Iran indicate that this form is one of the most common forms of *Tinea capitis* (19-23), whereas in other studies this form was not so prevalent (12,13,24). Also in the study in Lahore Pakistan in 1998, no cases of favus (scutula) were found (3).

Black dot type of *Tinea capitis* was seen in 6 cases (10.3%) and all were due to *T. violaceum*. Some studies show that over 80-90% of cases of *Tinea capitis* were non-inflammatory types including gray patch and black dot (12,13). The seborrheic dermatitis-like presentation without significant hair loss was only seen in two patients. These are in agreement with other studies (7,8).

T. violaceum was the predominant pathogen in the present study. This is in agreement with some previous studies (12,21,25), but there is other data that indicates *T. verrucosum* (23) and *T. schoenleinii* (20,26,27) as the most frequent causes of *Tinea capitis* in some parts of Iran. Some studies in recent years reveal that *M. canis* is the predominant cause of *Tinea capitis* especially after Iraq's war in some parts of Iran, (12,28). In one recent study in Qom in the central part of Iran, *M. canis*, *T. schoenleinii* and *T. verrucosum* were equally the most common causes of *Tinea capitis* (29). *T. violaceum* has been the most common pathogen in Egypt (8), Jordan (30), South Africa (31), South Taiwan (9) and the Netherlands (32).

In our study, no case of *T. verrucosum* (the zoophytic type) was found which may be related to the improvement of life style and lower contact with infected animals.

As *T. violaceum* and *T. schoenleinii* were isolated from 77.5% of all cases, this demonstrated that the disease was usually caused by anthropophilic dermatophytes.

In all cases which *M. canis* was isolated, a history of having an animal pet (usually a cat or dog in the house) was obtained.

A positive family history of 20.7% of cases emphasizes the contagious nature of the infection. Other studies also showed this familial infection (8,12), and in one study four girls had *T. capitis* and pediculosis capitis simultaneously (12).

The clinico-etiological correlation revealed that a single pathogen, *T. violaceum*, gives rise to both non-inflammatory and inflammatory types of *Tinea capitis*. This agent classically causes black dots, but can present as gray patches, kerion, or seborrheic dermatitis lesions.

Hence the clinical presentation does not correctly indicate the causative fungi or vice versa; it appears that besides the host response and the type of offending

fungus, other unknown factors may determine the clinical outcome. These findings are in agreement with previous data (1,2,7,8)

This study concludes that manifestations of *Tinea capitis* are highly variable, non-inflammatory lesions are more commonly seen than inflammatory lesions, and the causative dermatophytes in *Tinea capitis* vary from place to place and time to time.

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