

Tinea Capitis in Al-Ahmadi Province of Kuwait: A Survey of Elementary School Children

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Abstract

Background: Tinea capitis is predominantly a disease of preadolescent children. Although worldwide in distribution, an increase in its prevalence in Kuwait has recently been reported, particularly in children. Tinea capitis frequently spreads among family members and classmates. The aim of this study was to determine the prevalence of tinea capitis among elementary school children of Al-Ahmadi province in Southern Kuwait.

Method: This study was conducted between September 2006 and June 2007. All suspected cases of tinea capitis from 15 visited elementary schools were referred to the dermatology department at Al-Adan Hospital where a full history and examination was performed and the affected areas were scrapped. All obtained specimens were divided into two halves. The 1st half was mounted in a 20% potassium hydroxide solution and examined under light microscope. The 2nd half was cultured in Sabouraud's Dextrose Agar (SDA) 4% and incubated at 25-27°C for 4 weeks.

Results: A total of 903 children from 15 elementary schools were included in this study out of which 191 children proved to have tinea capitis. *Microsporum canis* had the highest percentage (61.7%), while *Trichophyton rubrum* had the lowest (3.1%).

Conclusion: Tinea capitis is a common fungal infection of the scalp in children. The grey patch type is the most common clinical type. A multi center study is needed to confirm the predominance of the isolated dermatophyte and to determine the modifiable and preventable risk factors. (*Iran J Dermatol* 2010;13: 6-8)

Keywords: dermatophyte, tinea capitis, scalp, hair

Introduction

Tinea capitis is predominantly a disease of preadolescent children¹. Although worldwide in distribution, an increase in its prevalence in Kuwait has recently been reported, particularly in children². Tinea capitis frequently spreads among family members and classmates^{3,4}. A variety of clinical presentations are recognized as being either inflammatory or non-inflammatory. This includes diffuse scaly scalp, grey patch, black dot, kerion and favus types. Tinea capitis should be considered in the diagnosis of any child over the age of 3 months with a scaly scalp until ruled out by negative mycology⁵.

The aim of this study was to determine the prevalence of tinea capitis among elementary school children of Al-Ahmadi province in Southern Kuwait.

Patients and Methods

This study was conducted between September 2006 and June 2007. Fifteen elementary schools in Al-Ahmadi province of Kuwait were visited and all students were examined clinically. All suspected cases of tinea capitis were referred to the dermatology department at Al-Adan Hospital where a full history and examination was performed including age, sex, history of contact with animals, and family history of positive cases of dermatophyte infections. The affected areas were scrapped with a blunt scalpel to harvest the affected hair, broken off hair stubs and scalp scales. All specimens were divided into two halves. The 1st half was mounted in a 20% potassium hydroxide solution and examined under light microscope. The 2nd half was cultured in

Table 1. Distribution of the clinical types of tinea capitis.

Clinical type	N=191	%
Grey patch	131	68.5%
Scaly type	32	16.7%
Black dot type	19	9.9%
Kerion	9	4.9%

Table 2. Correlation between direct KOH and culture results with the clinical cases.

Clinical type	N=191	%
Positive KOH	133	69.64%
Negative KOH	58	30.36%
Positive culture	176	92.14%
Negative culture	15	7.86%

Table 3. Different types of isolated microorganisms.

Organism	N=191	%
Microsporum canis	118	61.7%
Trichophyton violaceum	33	17.2%
Trichophyton tonsurans	23	12.3%
Trichophyton mentagrophytes	11	5.7%
Trichophyton rubrum	6	3.1%

Sabouraud's Dextrose Agar (SDA) 4% and incubated at 25-27°C for 4 weeks.

Results

Of a total of 903 children from 15 elementary schools who were included in this study, 191 children proved to have tinea capitis. Of these proved cases, 107 were male (56%) and 84 were female (43.9%). Children up to the age of 6 years were maximum in number (52.3%) followed by those in the age group of 6-10 years (35%) whereas the lowest percentage was found in the age group of 10-13 years (14.7 %).

The lesions were classified clinically into four types. Grey patches were the most common (68.5%) followed by scaly patches (16.7%), black dot type (9.9%) and the kerion (4.9%) (table1). Direct microscopic examination yielded positive results in 69.64% of the patients whereas culture confirmed the presence of the organism in 92.14% of the cases (table 2). Culture revealed five different organisms. *Microsporum canis* had the highest prevalence (61.7%), while *Trichophyton rubrum* was the lowest (3.1%) (table3).

Discussion

Tinea capitis is a dermatophytic fungal infection of the scalp hair follicles and the surrounding skin. In non-urban communities, sporadic infections acquired from puppies and kittens are due to *microsporum canis*. Kuwait is a small country with no rural or urban division and can be considered as urban. In Al-Ahmadi province, a significant number of people

keep animals as livestock and pets. The reported prevalence of tinea capitis among school children in various studies varies from 21% - 87%^{1, 6,7}. In our study, out of 903 clinically suspected students, only 191 students proved to be positive for dermatophyte infection mycologically. Most of the infected children were below 6 years of age (52.3%) followed by those in the age group of 6-10 years (35%) and the age group of 10-13 years (14.7%). This percentage is much less than reported figures in other studies⁸⁻¹⁰.

Contrary to our study, the high incidence in studies conducted in Egypt, Saudi Arabia and Iran is due to poor hygienic conditions and sharing of the same room by many children. In addition, the high percentage of contact with animals in these countries also contributes to infection. Meanwhile, in our study, the low incidence may be attributed to appropriate hygienic conditions, lower population density in Kuwait and low incidence of contact with animals as compared to other studies. The disease is slightly more common in males (56.1%) than females (43.9%) which is in agreement with other studies^{9,10}.

In our study, the lesions were clinically classified into four different types. Grey patch type was the most common (68.5%) which was slightly more prevalent than the rate reported by Nawaf et al². Other clinical types had a low incidence in comparison with the rates report by Abdullah et al⁹. Five different types of dermatophytes were isolated by culture in our study. *M. canis* had the highest percentage (61.7%) followed by *T.*

violaceum (17.2%). Contrary to our study, the incidence of *M. canis* was 27% and *T. violaceum* was 41% in a study by Nawaf et al,². On the other hand, infection with *M. canis* ranges from 34% to 69% in different studies from other parts of the world. Similar to our study, both *M. canis* and *T. violaceum* have been reported to be the predominant types of infecting pathogens in other studies⁸⁻¹⁰. Among the remaining organisms, *T. tonsurans*, which was reported as the main causative pathogen in tinea capitis in a study by Williams et al,³ was found to be the cause of tinea capitis in 12.3%. Also, we found that *T. mentagrophytes* had a prevalence of 5.7%. The lowest prevalence was seen for *T. rubrum* (3.1%) similar to a study conducted by Bechelli et al⁶.

Tinea capitis is a common fungal infection of the scalp in children. The grey patch type is the most common clinical type. *Microsporum canis* was found to be the predominant causative organism followed by *T. violaceum*. A multi center study is needed to confirm the predominance of the isolated dermatophyte and to determine the modifiable and preventable risk factors.

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