



Evaluation and Investigation of the Prevalence of Superficial Mycosis among Primary Schools Pupils in Al-Dewaniyah Governorate, Iraq

Haider A. Alshawi¹, Sara K. Al-Zubaidi^{2*}, Murtada M. Al-Khafaji³

¹ Community Health Technologies Department, Al-Dewaniyah Technical Institute, Al-Furat Al-Awsat Technical University, 51009 Al-Dewaniyah, Iraq.

² Medical Lab. Technology Department, Al-Zahrawi University College, 56001 Karbala, Iraq.

³ Nursing Technologies Department, Al-Dewaniyah Technical Institute, Al-Furat Al-Awsat Technical University, 51009 Al-Dewaniyah, Iraq.

*Corresponding Author: Sara K. Al-Zubaidi

Abstract

Background: The Superficial mycosis infections are the widespread types of mycosis among children primary schools. **Objective:** To detection and evaluation the extent and prevalence of superficial mycosis infection among primary school pupils in Al-Dewaniyah province. **Subjects and methods:** The survey included the selection of the pupils were randomly selected based on those with tinea (ringworm) lesions sample of 103 pupils (males 81, females 22) respectively from ten primary schools (six male and four female schools), they clinically diagnosis dermatophytoses, in the Diwaniyah Teaching Hospital, Dermatology unit, during a period from the beginning of December 2018 till the final February 2019. The specimens were collected in sterile plastic Petri dishes or sterile plastic envelopes and consisted of skin scales, hairs, or clippings from fingernails and toenails. The samples of fingernails and toenails were cut or to get mycelial elements. **Results:** The results of identity and incidence of the dermatophytes and non-dermatophytes isolated were revealed that dermatophytic isolation " Tinea" was 36/103(34%) among patients and this percentage was distributed to various clinical cases of ringworm "tinea", Mean age of patients enrolled in the present study was 20.11+10.99 years with a range of 7 to 13 years, According to gender patients were classified into 25 male s (69%) and 11 females (31 %). dermatophytes infections Is a problem in the health system of many developing countries and influences all ages chiefly primary pupils. **Conclusion:** The current study prevalence of superficial mycosis among pupils of primary school was significant risk factors assessed such as poor personal hygiene, overcrowding. Consequently, proper health education, personal and environmental sanitation, provision of infrastructure, primary health care and regular clinical studies are recommended for these primary school pupils.

Keywords: *Dermatophytes, Primary school pupils, Mycelia, Superficial mycosis.*

Introduction

The greatest extent, spreading children superficial mycosis are mucocutaneous candidiasis, pityriasis versicolor, and other types tinea corporis, tinea pedis, and tinea capitis [1, 2]. In clinical terms, cases include tinea capitis, tinea corporis, tinea barbae, tinea cruris, tinea manum, ringworm (Tinea unguium), and the ringworm of the face (Tinea faciei) [3-6]. Dermatophytoses remain the infection, which are mainly affects the corneal skin layer, which is the best sites and the environment suitable for its growth as nails, hair and skin.

These conditions are triggered by a group of strictly associated filamentous fungi fit into the genera: *Epidermophyton*, *Microsporum* and *Trichophyton*. They are commonly known as dermatophytes which degrade the keratin with the help of keratinases and attack the outer skin layers of the corneal skin tissues, which infections attributable to pathogens which usually cutaneous and is restricted to the nonliving, cornify layers of the skin [7]. Though, in some cases that appear chronic, skin fungi may attack deep skin tissue, causing severe infections [4, 8, 9].

Children, especially in the stages of primary school are susceptible to superficial fungal skin infections may be mainly due to wrong habits represented by personal hygiene and healthy food [10-12]. Accordingly, contact among children is more frequent between the ages of 4 and 16 years than in extremely childhood, those age groups which almost risk of danger to contracting to infectious diseases [8, 10].

Materials and Methods

Patients and Sample Collection

One hundred three patients (males, 81 and females, 22) with age range (7-14) years old were clinically diagnosed as cases of dermatophytoses after review of the Diwanayah Teaching Hospital, Dermatology unit, during a period from the beginning of December 2018 till the final February 2019. In the beginning, the data of the students infected with the fungal infections were taken in the presence of their parents according to a questionnaire form. Then, Duplicate specimens from each lesion (tinea) were collected by using standard procedures then transferred to lab .For processing, examination and culturing [3, 6, 7, 13].

Mycological Examination

Samples were collected from infection areas of hair, nails and skin which was treated by Potassium hydroxide (KOH) mounts, Skin scrapings and hair fragments were sited on a surface of clean slide swamped with drops of 10%KOH heated mildly (30 °C) for about 5-10 minutes, after that the slide was let to be cooled and put the cover slip and examined under the low (10x) and high (40x)

magnitude microscopically lens and Placed on a plate and then offered to a simple heat and gently to speed up the reaction, Cultivation of fungi standard medium for isolated of pathogenic fungus of sample is Sabouraud's dextrose agar containing cycloheximide 0.5g/L to prevent the growth of unwanted fungus and chloramphenicol 0.05g / L to prevent the growth of bacteria for samples.

In addition, another modified Sabouraud's dextrose agar containing ammonium hydroxide concentrations were used to the isolated of dermatophytets and non-dermatophytes fungi from different samples. Plates were inoculated with skin scraping by sterile scalpel and hair fragments by sterile forceps [14, 15]. Cultures were incubated at 28±1 °C. Cultures were firstly examined after 4-7 days, and then twice weekly about range (3– 4) weeks and incubate for about two weeks until the growth of fungi in the dish or considered as non-growth. The characteristic features of fungus are typically produced within 10-20 days. Most fungi lose their characteristic cultural and microscopic properties when they are kept for a long time in culture [3, 16].

Results

The present study included the examination of 103 patients for clinical diagnosis of dermatophytosis according to lesion type and its site on the skin .The results revealed that dermatophytic isolation "tinea" was 36/103 (34%) among patients and this percentage were distributed to various clinical cases of ringworm "tinea" , which is clearly shown in the Table (1).

Table 1: The distribution of dermatophytes infections (n=103)

Infections	No.	%
Tinea capitis	18	50%
Tinea corporis	15	41%
Tinea pedis	3	8%
Total	36	100%

Mean age of patients enrolled in the present study was 20.11±10.99 years with a range of 7 to 13 years. The distribution of patients according to 7 years intervals was as follows: patients less than 7 years of age constituted 7 out of 36 (10.44%), patients with an age

interval of 7-8 years accounted for 11 out of 36 (30.56%), patients with an age range of 11-12 years accounted for 9 out of 36 (25%) and there was a single patient whose age was more than 13 years (2.78%) as shown in Table (2).

Table2: Distribution of patients according to 7 years intervals

Age groups(years)	No.	%
<7	7	19.44
7-8	11	30.56
9-10	8	22.22
11-12	9	25.00
13-14	1	2.78
Total	36	100.00
Mean age (range)	20.11+10.99 (1-42) years	

According to gender patients were classified into 25 male s (69%) and 11 females (31 %). The proportion of male patients was significantly higher than that of female according to one proportion Z-test ($P=0.020$). Fungal species that have been isolated from

patients are shown in table (3) and included 3 cases of *Candida albicans*, 11 cases of *Trichophytum rubrum*, 13 cases of *Microsporium canis*, 7 cases of *Epidermophyton floccosum* of and 2cases of *Aspergillus niger*.

Table 3: Fungal species isolated from primary school pupils (dermatophytes and non-dermatophytes)

Fungal species	No.	%
Microsporium canis	13	36.11
Trichophytum rubrum	11	30.55
Epidermophyton floccosum	7	19.44
Candida albicans	3	8.33
Aspergillus niger	2	5.55
Total	36	100%

The distributed according the species of fungal that causes infections which are clearly indicated by the Table (4).

Table 4: Distribution according to type of fungal species and gender of patients

Fungal species	Males		Females		Total		P-value
	No.	%	No.	%	No.	%	
Candida albicans	1	24.00	2	27.27	3	8.33	>0.05
Trichophytum rubrum	10	32.00	1	9.09	11	30	>0.05
Microsporium canis	9	28.00	4	18.18	13	36.11	>0.05
Aspergillus niger	4	16.00	5	45.45	9	25.00	>0.05

Discussions

In spite of the progress of care and follow-up treatments in children, especially in the first stages of the primary school stage, the infections of skin fungi are a prominent feature compared to other types of infection, especially in schools that are overcrowded by preparing students [3, 6, 17]. Dermatophytes fungal infections are the most common fungal diseases affecting humans, and about 20-25% of the world's population are infected with skin fungi [16, 18]. The results revealed that there are three clinical types.

The prevalence is Tinea capitis (50%) followed by the lowest prevalence of Tinea pedis(41%) and Tinea pedis(8%). These results are in like with other local studies [19, 20]. That found this tinea capitis and tinea corporis was probably to the greatest extent prevalent clinically types existing in Iraq, and the slight differences in the results of the percent study. It seems that may due to the distribution of patients was varied and

depends on the selection of patients. This study revealed that the mean age and distribution of patients according to gender showed that patients with an age interval of 7-8 years accounted for 11 out of 36 (30.56%) is the higher value and this results agree with the study that most of the infections were seen in the younger age group(7-10years) which was similar to study done by Adefemi and his colleageous in 2011 and similar study conducted [12, 21-23]. The results revealed that according to gender patients were classified into 25 males (69%) and 11 females (31 %).

The proportion of male patients was significantly higher than that of female This study revealed that the males 25 male s (69%)were affected more than females11 females (31 %) similar findings were noticed in a study done in Nepal [15]. The lower incidence of dermatophytosis in females may be due to the not reporting of the female patients to the hospitals due to prevailing social stigma. Which was achieved as a result

of the study with many studies that showed that females more exposure and injury to fungi due to many factors represented by personal hygiene and customs and social traditions led as a series of consequences that made them a source of chronic infection [16, 19, 24].

Conclusion

The consequent Fungal diseases of childhood differ from those in adults with respect to type, distribution, and incidence. at that place there were numerous researches in this

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