

# Superficial Fungal infections

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## Abstract

**Background:** This work aimed to isolate and identify fungi from different superficial fungal infection since these infections are widely distributed among low socioeconomic level people.

**Patients and Methods:** All clinical specimens from skin, hair, scalp and feet were diagnosed as dermatophytes or other fungi according to well-known established mycological methods for isolation and identification of certain fungi.

**Results:** This study was undertaken at AL-Yarmook Teaching Hospital during the period January 2008-December 2009 in which 55 clinically diagnosed as fungal infection were the source of clinical specimens. Out of 55 cases it has been found that 45 specimens (81.8%) were positive for fungi from which 21 (46.6%) were dermatophytes, 16 (35.5%) pityriases versicolor, 8(18.2%) candida albicans.

**Conclusion:** It is concluded that dermatophytes are the major cause of mycotic superficial infections and that skin is the predominant area of the body which is invaded by fungi.

**Keywords:** Dermatophytes, superficial fungi

*Date Submitted: 2.3.2010*

*Date Accepted: 15.7.2010*

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## INTRODUCTION

Dermatophytosis are fungal infection caused by dermatophytes which are a group of fungi that invade dead keratin from which it can obtain nutrients.<sup>[1]</sup>

Dermatophytosis is still one of the major skin diseases prevalent all over the world which varies in prevalence in different countries.<sup>[2]</sup> Dermatophytes are group of three types of fungi i.e anthropophilic (human), zoophilic (animal) and geophilic (soil). Dermatophytosis are three genera, Trichophyton (skin, nail and hair infection) Epidermophyton (grows on the outer layer of the skin) it causes tinea infection and Microsporum (causes ringworm).<sup>[3,4]</sup>

Examples of a very common dermatophyte infection are athletes' foot (tinea pedis), tinea cruris (groin area).<sup>[5,6]</sup>

Another example are Trichophyton rubrum and Tichophyton torsions which are transmitted from person to person while Microsporum canis is transmitted from cats and dogs to human.<sup>[7]</sup> Dermatophyte infections occur significantly more common in male than female and scalp ringworm is much less after puberty.<sup>[8]</sup>

Dandruff (pityriasis capitis) caused by pityriasis ovale.<sup>[9]</sup> Superficial fungal infection are among the most common skin diseases affecting billions of immunocompromised persons and can be caused by dermatophytes, yeast, mold and non-dermatophytes.<sup>[10]</sup>

## Patients and Methods

### Patients

Fifty-five patients with clinically diagnosed cases of fungal infections of the skin, hair and nail were the source of the fungal specimens in this study.

Collection of specimens scraping from skin, nail and specimens of infected hair were collected carefully.

**Processing of specimens:**

Direct microscopic examination was undertaken in 10% KOH wet mount for the specimen of skin scraping, while 40% KOH was employed for hair and nail specimens. The KOH positive cases were subjected to culture study, skin, nail or hair scrapings are sent in a sterile container for inoculation on sabouraud dextrose agar, the culture usually takes 7 to 14 days to be declared positive, it must be held 21 days to be declared negative. The mycological identification was observed on microscopic examination of culture isolates.

The macroscopic examination of dermatophytes was characterized by the duration of growth, surface morphology and pigment production on the reverse. The microscopic examination of fungal growth was observed with lactophenol cotton blue stain. Nature of mycelium and Candida formation (macro and microconidial) help to differentiate various genera and species. Budding yeast of Candida spp. were identified microscopically. Candida species were identified as albicans and non Candida group by production of chlamydospores on corn meal agar.

**RESULTS**

This work showed that out of 55 patients it was possible to obtain 45 (81.8%) fungal isolates.

Table - 1 shows the distribution of the fungal isolates in which 21 fungi diagnosed as dermatophytes (46.6%) while pityriasis versicolor are 16 fungal isolates (35.5%) and Candida albicans are 8 (17.7%) from table 2 it is seen that dermatophytes were the case of 21 clinical tinea infection distributed according to the site from which it has been isolates as 16 candidate as tinea corporis, (skin) 2 cases of tinea pedis, (feet) case of tinea unguium (nail) and 2 candidate as tinea capitis (scalp) it is also seen from table 2 that 16 superficial skin infection were caused by pityriasis versicolor.

Candidiasis was also observed to involve 2 from skin, 2 from hair and 4 from feet since these sites are mostly moist areas.

Analyzing the results of dermatophytes in table 3 it has been found the Trichophyton spp. comprises 12 (57.2%), Microsporum spp. were 5 (23.8%) and Epidermophyton spp. were 4 (19%) and the skin is infected by fungi since 75.5% of the infection are on the skin and scalp is the least (4.4%) to be infected.

**Table 1.** Distribution of fungi causing superficial infections.

Fungi	No.	%
Dermatophytes	21	46.6
Pityriasis versicolor	16	35.5
Candida spp.	8	17.7
Total	45	100

**Tables 2.** Distribution of fungi infection according to body sites.

Fungi	Skin	Scalp	Nail	Feet	Total
Dermatophytes	16	2	1	2	21
Pityriasis versicolor	16	-	-	-	16
Candida spp.	2	-	2	4	8

**Table 3.** Differentiation of dermatophytes up to species level.

Dermatophytes	No. of isolates	%
Trichophyton spp.	12	57.2
Microsporum spp.	5	23.8
Epidermophyton spp.	4	19
Total	21	

**DISCUSSION**

In this work it has been found that 81.8% of the total cases (55) under study was positive for fungal infection. Dermatophytes were found to be (46.6%) of the total fungal isolates. This moderate incidence could be due to either the patients are unable to come to this hospital or they preface homemade remedies. The incidence of superficial fungal infection seems to be higher than those reported by others.<sup>[11]</sup>

It is observed in this study that 75.5% of superficial fungal infections are those involving the skin a results which is confirmed by other workers who found similar results.<sup>[12,13]</sup> This could be due either the skin's mechanism protection failed because of trauma, irritation or maceration or there is occlusion of the skin with nonporous materials which can interfere with the skin's barrier function by increasing local temperature and hydration.<sup>[14]</sup> Dermatophytes found on skin (Tinea corporis) represented 35.5% which is almost similar to other reports.<sup>[15]</sup>

Tinea capitis (scalp) and Tinea pedis (feet) showed the lowest incidence a result which disagree with other workers<sup>[16]</sup> who found higher incidence of dermatophytes especially those affecting the feet.

It is seen from table 3 that Trichophyton spp represented the highest incidence (57.2%) among other spp. of dermatophytes an observation which is in full agreement with other<sup>[5]</sup> who claimed that Epidermophyton spp. are among the most common pathogen in skin infections.

Non dermatophytes in this work causing superficial skin infections showed that pityriasis versicolor represented (35.5%) a result which disagree with others<sup>[5]</sup> who claimed that less frequently, superficial skin infections are caused by pityriasis versicolor, (Malassezia furfur) and Candida spp. It is true that Candida spp. showed the lowest incidence among the nondematophytes causing superficial skin infections in this work. It is concluded that dermatophytes are the major cause of mycotic superficial infection and that skin is the predominant area of the body which is invaded by fungi.

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