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Research Paper

# A Study of Superficial Mycosis in Tertiary Care Hospital

Medical Science

**KEYWORDS :** Superficial mycoses, Dermatophytes, Trichophyton rubrum, Tinea corporis

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## ABSTRACT

*Aims & objectives: Superficial mycoses are commonly encountered fungal diseases prevalent in most parts of the world. It is a fungal disease infecting hair, skin & nails. In most of the cases, it does not produce any symptoms but in some cases it has cosmetic & systemic complications. The present study was carried out to know the prevalence of various superficial fungal pathogens in our institute.*

*Materials & Methods: In our study, a total of 200 samples from skin department were processed & all were examined by conventional direct KOH preparation & fungal culture methods. Identification of the species was done by Lactophenol Cotton Blue mount from colony smear. Results: in present study, males are infected more than females with a ratio of 2.17:1. Tinea corporis was the commonest clinical type (48%). The positivity rate of KOH preparation is 72% & of culture is 59.5%. Trichophyton rubrum is the commonest fungal isolate (52.10%) followed by Trichophyton mentagrophytes.*

*Conclusion: Male have higher fungal infection rate than females. Trichophyton rubrum is the common isolate in our geographical area. KOH preparation has higher positivity rate than cultue.*

## INTRODUCTION

Superficial mycoses refer to the diseases of the skin and its appendages caused by fungi. This group includes Dermatophytosis, Pityriasisversicolorand Candidiasis[1.] They possess the affinity for parasitizing keratin rich tissues like skin, hair & nails and produce dermal inflammatory response and intense itching in addition to a cosmetically poor appearance[1.]The causative fungi colonize only cornified layer of epidermis or suprafollicular portions of hair & do not penetrate into deeper anatomical sites[2.] The dermatophytes are "among the commonest infectious agents of man".A dermatophytosis is a mycotic infection of the hair, skin or nails[3.]On the basis of clinical, morphologic & microscopic characteristics three anamorphic genera are recognized as Dermatophytes: Epidermophyton, Microsporum & Trichophyton[3.] The epidemiology of most of the clinically significant dermatophytosis has substantially changed over the last few years. Now, Trichophytonrubrum is predominantly prevalent species throughout the world[3.]Though several reports on dermatophytosis are available from different parts of the country, there are only few reports on non dermatophytic fungi & yeast like fungi as causes of superficial mycoses along with dermatophytosis[4.] Though there are many studies available from across India and world, there is very little data of superficial mycoses from our region. The present study was carried out to find out the clinical & mycological pattern of dermatophytosis & non dermatophytic fungi in tertiary care hospital, vadodara, Gujarat, West, India.

## MATERIALS & METHODS

A retrospective study was done from May 2010 to November 2011 over a period of 18 months and total of 200 specimens were processed from clinically suspected cases of superficial mycoses attending outpatient department of Dermatology and Venereology of our hospital. Detailed history of the patients regarding age, sex, site of lesion, occupation, and associated illness was taken and patients were examined clinically for the type & site of the lesion and classified accordingly. Before collection of the sample, patient was explained about the procedure & informed consent was taken. The sample collection site was cleaned with cotton soaked in normal saline. The Clinical specimens (like skin scrapping, infected hair taken by plucking, clipped nails) were collected in a small piece of sterile aluminium foil. Immediately after collection, 10 % KOH mount examination was done and samples were inoculated on saboraud's dextrose agar (SDA) with & without antibiotics. Nail clippings were dipped in 40% KOH solution overnight for study on the next morning .If KOH finding suggested of meatball and spaghetti appearance, then sample was inoculated on SDA with sterile olive oil overlay. Two bottles of SDA were incubated at different temperature, one at 25°C & another at 37°C for a period of 1 month before giving negative result. If any growth was found on culture; then the isolate was identified by colonial morphology, pigment production and direct examination of smear from the colony by tease mount & cellophane tape mount using lactophenol cotton blue preparation.

## RESULTS

In this study, out of total 200 patients, 137 were male (68.5%) & 63 were female (31.5%). In general, it was noted that most common clinical presentation was T. corporis (96/200) with overall incidence of 48% followed by onycomycosis (30/200) 15%, T. versicolor(23/200) 11.5%. T. cruris (17/200) occupied the fourth position 8.5%. Among different age groups, maximum cases 152/200(76%) were seen in the adult age group.

In all age groups, T. corporis is the commonest manifestation, except school age group (6-11 years) where T. capitis is the commonest(6/10 or 60%). Tinea versicolor shows commonest incidence in Adult followed by Adolescent group. Tinea versicolor, Tinea pedis & onychomycosis infections were not noted in Preschool and School age group in our setup. Distribution of clinical types with age and sex is shown in table no1.

**Table1: Distribution Of Clinical Types According To Age & Sex**

| Clinical Types | Age group | | | | | | Sex | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pre school (0-5) | School (6-11) | Adolescent (12-18) | Adult (19-59) | Elderly (>60) | Total | Male | Female | Total |
| T.corporis | 04 | 02 | 20 | 66 | 04 | 96 | 66 | 30 | 96 |
| Onycomycosis | 00 | 00 | 00 | 30 | 00 | 30 | 22 | 08 | 30 |
| P.versicolor | 00 | 00 | 02 | 21 | 00 | 23 | 15 | 08 | 23 |

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|---|---|---|---|---|---|---|---|---|---|
| T.cruris | 00 | 00 | 01 | 16 | 00 | 17 | 10 | 07 | 17 |
| T.pedis | 00 | 00 | 04 | 07 | 01 | 12 | 09 | 03 | 12 |
| T.capitis | 00 | 06 | 03 | 01 | 00 | 10 | 07 | 03 | 10 |
| T.mannum | 00 | 00 | 01 | 09 | 00 | 10 | 06 | 04 | 10 |
| T.facie | 00 | 00 | 00 | 02 | 00 | 02 | 02 | 00 | 02 |
| Total(%) | 04 (2) | 08 (4) | 31 (15.5) | 152 (76) | 05 (2.5) | 200 | 137 (68.5) | 63 (31.5) | 200 |

In our study, total positivity rate for fungal infection was 76% (152/200) by KOH examination and/or Culture examination. Most of the clinically diagnosed cases were KOH positive. Out of total 200 samples, KOH was positive in 144 cases (72%). Among this, culture was positive in only 111 cases showing low positivity rate of culture. In general, out of total 200 samples, culture was positive in 119 cases (59.5%). Among this, 08 cases were diagnosed negative in KOH preparation from direct specimens but showed fungal growth.Only 111 cases (55.5%) were positive in KOH preparation & culture both. KOH and culture examination results are shown in table no. 2.

**Table 2: Results Of Culture & KOH Preparation**

| Test | KOH +ve | | KOH -ve | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Culture +ve | 111 | 55.5 | 08 | 4 | 119 | 59.5 |
| Culture -ve | 33 | 16.5 | 48 | 24 | 81 | 40.5 |
| Total | 144 | 72 | 56 | 28 | 200 | 100 |

As is evident by table 3, in present study the most common isolate is T. rubrum (52.1%) mainly isolated from T. corporis & T.cruris cases..The second common isolate is T. mentagrophytes (26.05%) which is also isolated most commonly from T.corporis followed by T. cruris & Onychomycosis. Two isolates of T. violaceum were obtained, from T.capitis & T.corporis.Candida was main isolate in cases of onychomycosis(12/19). Only one species of T. tonsurans from T.cruris was isolated.Out of four Microsporumspp., two were isolated from T. corporis& two from T. capitis.Twelve isolates of Candidaspp. were grown from all clinical types except from T.cruris & T.facie..None of the dermatophytes could be cultured from T.versicolor.

**Table 3: Clinico-Mycological Co-Relation of Dermatophytosis**

| Clinical type | T.rubrum | T.mentagro phyte | T.vio laceum | T.tonsurans | Microsporum ypseum | Candida | Total |
|---|---|---|---|---|---|---|---|
| T.corporis | 44 | 18 | 01 | 00 | 02 | 01 | 66 |
| Onycho mycosis | 04 | 03 | 00 | 00 | 00 | 12 | 19 |
| T.cruris | 08 | 04 | 00 | 01 | 00 | 00 | 13 |
| T.pedis | 03 | 03 | 00 | 00 | 00 | 02 | 08 |
| T.capitis | 01 | 01 | 01 | 00 | 02 | 02 | 07 |
| T.mannum | 02 | 01 | 00 | 00 | 00 | 02 | 05 |
| T.faciei | 00 | 01 | 00 | 00 | 00 | 00 | 01 |
| TOTAL (%) | 62 (52.10) | 31 (26.05) | 02 (1.68) | 01 (0.84) | 04 (3.36) | 19 (15.97) | 119 (100) |

**DISCUSSION**

Superficial mycoses form a large group of patients attending the Dermatology OPD of our tertiary care hospital in Vadodara, Gujarat. Hospital caters to the patients from most parts of Gujarat as well as border areas of M.P and Rajasthan. The temperature in this area is very high most of the time. The higher temperature as well as body sweating facilitates fungal growth.5, 6, 7 .Observations of this study are compared with studies of other authors in table no.4. In present study, males are more affected than females; with male to female ratio are 2.17:1.Other studies, done by ArunaAggarwal (1.8:1)4, Nawal(1.8:1)7, Grover WCS (4.26:1)1, Parul (1.79:1)6, V bindu(2.06:1)8 have similar observation. In our study, adult age group (76%) is most commonly affected followed by adolescent age group. It is explained by the higher incidence of physical activity & sweating in them. This finding is well correlated with studies done by Aruna Aggarwal, Nawal, Grover WCS, Parul, M Misra respectively 4,7,1,6,5.

The commonest clinical type seen in our study is T. corporis (48%) which is also corroborated well with other studies i.e.Amritsar36.1%4, Surat 64%6, Ahmedabad 40.8%7, Calicut 6%8. However study done in military recruits in North east India by Grover et al involving soldiers as a major group, showed T.pedis as the commonest manifestation1 which could be well correlated to the profession of army personnel as they have to wear closed shoes for longer hours of the day. In sharp contrast is the study by M Mishra, where T. versicolor was major group5 . In our study, most common clinical manifestation among school age group patients is T. capitis (60%) showing that T. capitis is the disease of pre pubertal age group. This finding corroborates well with the various other studies i.e. ArunaAggarwal4 (57.14%), Parul (45.45%) 6, Nawal (78.5%) 7, V bindu8. Post pubertal changes in hormones resulting in acidic sebaceous gland secretions are responsible for decrease in the incidence with age. In the present study, Tinea versicolor infection was not found in Pre- school and School age group because of lipophilic nature of fungus as is also reported by Nawal et al.6 Onychomycosis was not observed in present study in the children which is on the lines of other studies by R.Kaur, Nawal & Parul (0%).9,7,6 . This could be explained due to less exposure to fungus because of less time spent in the environment containing pathogens, faster nail growth, smaller nail surface for invasion & lower prevalence of T. pedis. Among various methods, the KOH preparation has shown good sensitivity in comparison with culture. In our study, KOH positivity rate is 72% & culture positivity rate is 59.5% The study is in lines with the other studies done across various parts of India , they had also shown KOH positivity rate as 59.20%4, 53.3%1, 62.12%6, 72.4%7, 64%8, 49%10 & culture positivity rate as. 50.4%4, 79.1%1, 29.29%6, 62.8%7, 45.3%8, 51%10, There are 8 cases in which KOH is negative but culture is positive (4%).Similar finding is also noted by other investigators 1.6%4, 28.5%1, 2.53%6, 7.7%7, 11.3%8, 4%10. This can be explained by drying out procedure1. The commonest isolated fungal species in present study is T. rubrum (52.10%) followed by T. mentagrophytes (27.05%).T. rubrum was also the commonest species in the studies done by Aruna Aggarwal (62.3%) 4, Parul (54%) 6, Nawal (67%) 7, V bindu (66.2%) 8, S sen (68.63%) 10, M Misra (76%) 5. However Grover et al had reported T. tonsurans (20.5%) as the commonest isolate. It could be explained on the basis of different climatic conditions and geographic distribution1. From onychomycoses, T. rubrum is the commonly isolated species. It is due to better adaptation, more virulence and easy colonization on hard keratin. Other researchers have also reported the same6,11,12. T.violaceum is the most commonly isolated species from T. capitis On the similar lines is the finding on Kannan et al 13. The higher incidence of superficial mycoses is seen in month of September due to rainy season & humid atmosphere which is also correlating well with other studies 4.

**Conclusion:**

The present study of 200 cases at our tertiary care hospital,Vadodara shows that males are predominantly affected with preponderance of cases in the monsoon months. KOH examination is shown to be more sensitive than culture. Majority of the cases were from T. corporis and most common etiological agent is T.rubrum. Although the findings of this study matches with many studies done across India, it differs significantly with some studies suggesting the role of geographical variation in clinical and mycological pattern.

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