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Original Research Article

Clinicomycological study of dermatophytosis in a tertiary care hospital of eastern Odisha

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Abstract

Dermatophytosis is an infection of the skin, hair or nails caused by a group of keratinophilic fungus called "Dermatophytes". In tropical countries superficial fungal infections are among the world's most common diseases. It has become a significant health problem affecting children, old age adolescents and adults. The present study was undertaken to find out the clinical pattern of dermatophytosis, to know the most prevalent dermatophyte species in our set up and to correlate its association with other clinical presentation. Samples from affected lesions of 143 clinically diagnosed dermatophyte patients were collected and examined by microscopy and culture. Identification of fungal isolates were done by study of colony characteristics, slide culture and LCB mount. Chi square test was used for statistical analysis wherever appropriate. Dermatophytosis was found to be commonest in agricultural workers. Commonest age group affected is between 31-45 years. Males outnumbered females in the ratio 2:1. Tinea Corporis was the commonest lesion (46.85%), followed by Tinea Unguium (27.27%) and Tinea Pedis (11.18%). Maximum dermatophytes were isolated from Tinea corporis cases. Direct microscopy revealed fungal elements in 45.45% cases of which 52.3% were positive in culture. *T. rubrum* was the commonest etiological agent (45.16%), followed by *T. mentagrophytes* (29.03%), *T. schoenleinii* (9.67%), *T. tonsurans* (9.67%) 7 *M. oudouinii* (5.88%). *T. rubrum* was found to be the most common isolate from multiple sites.

Keywords: Clinicomycological, dermatophytosis

Introduction

Dermatophytosis is an infection of the skin, hair or nails caused by a group of keratinophilic fungus called "Dermatophytes". The word "dermatophyte" literally means "skin plant" [1]. On the basis of clinical, morphologic & microscopic characteristics three anamorphic genera are known Epidermophyton, Microsporum & Trichophyton [2]. In tropical countries superficial fungal infections are among the world's most common diseases. It has become a significant health problem affecting children, old age adolescents and adults [3]. The clinical presentation though very typical is often confused with other skin disorders leading to misdiagnosis and mismanagement. A rapid, correct and efficient diagnosis is therefore important for proper and adequate treatment.

Aims and objectives

The present study was undertaken to find out the clinical pattern of dermatophytosis, to know the most prevalent dermatophyte species in our set up and to correlate its association with other clinical presentation.

Materials and Methods

The Study was undertaken from November 2015 to June 2016. Detail history of the patients were recorded including their age, sex, profession. Samples from affected lesions of 143 clinically diagnosed dermatophyte patients were collected and examined. Microscopic examination was done using 10% KOH (skin, hair) and 20% KOH (nail). Culture was done using two sets of antibiotic incorporated SDA media with/without Cycloheximide. DTM media was also used.

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The inoculated media were incubated at 25-30 °C for a maximum period of 4 weeks. Identification of fungal isolates were done by study of colony characteristics, slide culture and LCB mount.

Statistical Analysis

The data collected analyzed using SPSS (version 21.0) in a personal computer. The categorical variables were measured in counts. Chi square test was used wherever applicable. A P value of <0.05 was considered statistically significant.

Result

Table 1: Results obtained in the direct examination and culture.

Test	Number of cases		
	Culture(+ve)	Culture(-ve)	Total
KOH(+ve)	34	31	65
KOH(-ve)	04	74	78
TOTAL	38	105	143

Chi square=40.45; df=1; p=0.0000; $p < 0.001$

Table 2: Relative prevalence of different clinical types of dermatophytosis.

Clinical types	No. of cases	Percentage
Tinea Corporis	67	46.85
Tinea Unguim	39	27.27
Tinea Pedis	16	11.18
Tinea Cruris	07	4.9
Tinea Capitis	06	4.2
Tinea Barbae	04	2.8
Tinea Facie	02	1.4
Tinea Manuum	02	1.4
TOTAL	143	100

Table 3: Dermatophytes isolated from different clinical types.

Species-→/ Clinical types	<i>Trichophyton rubrum</i>	<i>Trichophyton mentagrophytes</i>	<i>Trichophyton Schoeleinii</i>	<i>Trichophyton tonsurans</i>	<i>Microsporum audouinii</i>	Total
T. corporis	4	3	1	1	1	10
T. unguim	1	1	-	-	-	2
T. pedis	2	2	1	-	-	5
T. cruris	3	2	-	1	-	6
T. capitis	2	1	1	-	1	5
T. barbae	1	-	-	1	-	2
T. faciei	1	-	-	-	-	1
T. manuum	-	-	-	-	-	0
Total (%)	14(45.16)	9(29.03)	3(9.67)	3(9.67)	2(5.88)	31

Table 4: Prevalence of Dermatophytosis in relation to age and sex

Age-Group (years)	Male	Female	Total
0-15	1	1	2
16-30	6	3	9
31-45	10	4	14
46-60	3	2	5
>60	1	0	1
TOTAL	21	10	31

Chi square 0.99; df= 4; $p = 0.9108$; $p > 0.05$

Table I shows, out of total 143cases, direct microscopy (KOH mount) revealed fungal elements in 31 (21.68%) cases, whereas 38(26.57%) were positive in culture. Hence, sensitivity of culture is more than direct microscopy. Out of 38 isolated fungal pathogens, 31(81.58%) were dermaotphytes, 2(5.26%) were yeasts and 5(13.16%) were non dermatophytic moulds (*Aspergillus Niger* →2, *Aspergillus flavus*→3).

Table II shows that Tinea Corporis was the commonest clinical type(46.85%) followed by Tinea Unguim (27.27%) and Tinea Pedis (11.18%).Tinea Corporis was the most prevalent clinical lesion in the study population.

Table III reflects the different dermatophyte species isolated. *T. rubrum* (45.16%) was the commonest pathogen followed by *T. mentagrophyte* (29.03%).

Table IV shows, out of the 31 dermatophytosis cases 21(67.74%) were males and 10(32.26%) were females. This difference is not statistically significant. There is higher prevalence in the age group of 31-45 years, closely followed by 16-30 years, in both groups males outnumber females. Among the diagnosed cases of dermatophytosis, 11(35.5%) were agricultural workers, followed by labourers 7(22.6%), students 6(19.4%), domestic workers 4(12.9%) and others 3(9.6%).

Discussion

In our study T Corporis (46.85%) was the commonest clinical type followed by Tinea Unguim (27.27%) and Tinea Pedis (11.18%).Similar reports came from another study in Italy, however Tinea Pedis followed by Tinea Unguim. (4) This study also differs from ours in equal prevalence in both sexes. This could be due to work culture of Indian ladies relative to Italy. In another study in school children of Ethiopia, T. Capitis was the highest [5]. Tinea Corporis is commoner in adult males [1] which is our dominant study population. In the age-group of 0-15 years there is equal prevalence in males and females in our study. Worldwide scale *T. rubrum* and *T. mentagrophytes* together account for 80-90% of all Dermatophytosis [6, 7, 8]. Which is similar to our study.

Summary and Conclusion

Dermatophytosis is common in agricultural workers. Commonest age group affected is between 31-45 years. Males outnumbered females in the ratio 2:1. *Tinea Corporis* was the commonest lesion (46.85%), followed by *Tinea Unguium* (27.27%) and *Tinea Pedis* (11.18%). Maximum dermatophytes were isolated from *Tinea corporis* cases. Direct microscopy revealed fungal elements in 45.45% cases of which 52.3% were positive in culture. *T. rubrum* was the commonest etiological agent (45.16%), followed by *T. mentagrophyte* (29.03%), *T. schoenleinii* (9.67%), *T. tonsurans* (9.67%) 7 *M. oudouinii* (5.88%). *T. rubrum* was found to be the most common isolate from multiple sites.

Conflict Of Interest

None

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