

A Study of Dermatophytosis in Patients Attending Skin & STD Outpatient Department at A Tertiary Care Government General Hospital And other Clinics in And Around Guntur

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Abstract: The present study sets out to highlight the prevalence of etiological agents in superficial mycosis such as dermatophytes with relation to age, sex, socioeconomic classes and occupation. Samples taken from 121 clinically suspected cases were examined for *Trichophyton* species, *Microsporum* and *Epidermophyton* species. The most common age groups affected were in the age group of 21 to 30 years with the male to female ratio of 1.78 : 1. *Tinea corporis* was the most common presentation seen in manual workers 39.6%. The most frequently isolated fungus was *Trichophyton rubrum* 53.2%.

Keywords: Dermatophytosis, Superficial Mycosis

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I. Introduction

Superficial fungal infections are the most common skin diseases affecting millions of people throughout the world.⁵ The dermatophytosis constitute a group of superficial fungal infections of the keratinized tissues. The causative agents of dermatophytosis, dermatophytes are by far the most significant fungi because of the widespread involvement of population at large and their prevalence all over the world. The estimated life time risk of acquiring a dermatophyte infection is between 10 and 20 percent. Dermatophytes are a group of closely related fungi that have the capacity to invade the superficial layers of the epidermis, particularly the stratum corneum and high keratin concentration containing appendages, the hair and nails of humans and other animals to produce an infection, dermatophytosis, commonly referred to as ringworm. Infections are generally restricted to the skin and they do not penetrate the deeper tissue or organs of immunocompetent hosts.

Depending on their habitat, dermatophytes are described as **Anthropophilic** (human), **zoophilic** (animal) and **geophilic** (soil). Anthropophilic dermatophytes are the most common sources of tinea infections. At present there are 40 recognised species in the dermatophyte genera. Of these, about 25 species belonging to the genera *Epidermophyton*, *Microsporum* and *Trichophyton* are presently known to infect man. The classical presentation of tinea infection is a circumscribed lesion with central clearing surrounded by an advancing, red, scaly elevated border. Inflammation assists in colonization and may result in vesicles on the border of the affected area. The distribution, frequency, and etiological agents of dermatophytosis vary according to the geographic region, the climatic variations, the socioeconomic level of population, the time of study, the presence of domestic animals and the age of the individual.

These infections are mostly prevalent in tropical and subtropical countries like India. High rate of humidity, overpopulation, poverty and poor hygienic conditions are ideally suited for the acquisition and maintenance of these infections. Dermatophytes are assuming greater significance in developed and developing countries, particularly due to the advent of immunosuppressive drugs and immunosuppressive diseases. Although dermatophytosis does not cause mortality, it does cause morbidity and poses a major public health problem and also is of cosmetic importance. The clinical presentation, though very typical of ringworm infection, is very often confused with other skin disorders particularly due to rampant application of broad spectrum steroid containing skin ointments and creams leading to further misdiagnosis and mismanagement. Accurate assessment of the prevalence of dermatophytosis and identification of the etiologic agent is desirable to estimate the size of the problem and to plan for prevention of transmission and spread of such infections with adequate measures.

The present study was undertaken to isolate and identify the etiological agents of dermatophytosis in clinically diagnosed cases in patient attending Skin and STD outpatient department at Government General hospital and other clinics in and around Guntur. The present study consists of 125 clinically diagnosed cases of dermatophytosis from the Department of Dermatology, Government General Hospital, Guntur and other clinics in and around Guntur. Skin scrapings, nail clippings and hair stubs from these 125 selected cases were collected

over a period of one year (July 2011 to June 2012) and the same were processed in the Department of Microbiology, Guntur Medical College, Guntur.

A detailed history of selected cases was taken in relation to name, age, sex, address, occupation, duration of illness, and involvement of more than one site. The study group included clinically diagnosed cases presenting with annular lesion with activity at the edges and central clearing on the skin on any part of the body, scaling patches on the scalp with or without hair loss, thickened discolored broken and dystrophic nails. Patients under antifungal treatment were excluded from the study group. After the detailed study, clinical examination was made in good light which included site of lesion, number of lesions, types, presence of inflammatory margin, etc
Method of Collection of Samples: The site of lesion from a clinically diagnosed case was cleaned thoroughly with 70% alcohol and allowed to dry. The edges of the lesion were selected for scraping, as the edge is the active part of the lesion. Scrapings were taken with the help of a scalpel blade with the blunt edge facing the lesion. The scrapings were collected onto a sterile piece of paper, folded appropriately for transport. Nail clippings were collected after cleaning the nails with 70% alcohol and allowed to dry. The deepest part of the nail was clipped with a nail clipper. Nail clippings along with nail debris were collected onto a sterile paper. The affected hairs were epilated in scalp lesions with the help of forceps and collected onto a sterile piece of paper.

Direct Microscopic Examination

Culture and Microscopic Examination. A portion of each sample was mounted in a drop of an aqueous solution of **10% (w/v) potassium hydroxide (KOH)** on a clean microscopic slide. After 5 minutes of mounting, the preparation was examined under low ($\times 10$) and high ($\times 40$) power magnification for the presence of fungal elements. Nail clippings were placed in a drop of **20% potassium hydroxide** for mounting and microscopic examination was done after few hours for identification of fungal elements. Hair stubs along with its shaft and follicular debris were placed in a drop of 10% KOH and examined under low power and then in high power for the identification of arthroconidia and also for the arrangement of ectothrix and endothrix.

II. culture on sda

The remaining portion of each clinical sample was cultured irrespective of the negative or positive direct microscopic examination results onto plates of Sabouraud's dextrose agar containing gentamycin with and without cycloheximide (Oxoid, Basingstoke, England) which were prepared according to the manufacturer's instruction. All inoculated bottles were then incubated at inverted position for 4–6 weeks at 25–30°C aerobically. Culture plates were examined twice a week for any fungal growth. Colonies suspected of dermatophytes were subcultured into **dermatophyte test medium DTM** (for the production of spores.) Cultures of dermatophytes were identified by examining macroscopic and microscopic characteristics of their colony. Texture, rate of growth, topography, and pigmentation of the front obverse and the reverse side of the culture were employed for the macroscopic identification. Microscopic identification of mold isolates was performed by placing pieces of a colony from SDA and/or DTM to clean microscopic slide and staining with lactophenol cotton blue. LPCB After placing a cover slip, each preparation was observed microscopically. Urea agar (Oxoid, Basingstoke, England) was used in the differentiation of *Trichophyton tonsurans*, *Trichophyton violaceum*, and *Trichophyton rubrum*.

Slide Culture: was done to identify **MACROCONIDIA AND MICROCONIDIA** Final identification of dermatophyte species was confirmed based on the detailed study of cultural characteristics, macroconidia and microconidia, rate of growth, type of growth, microscopic findings in lactophenol cotton blue preparation, slide culture and urease production on urea agar. All ethical considerations and obligations were duly addressed and the study was conducted after the approval of the ethical committee of Internal Department Review board and obtaining written consent from study subjects.

III. Results

A total of 125 clinically diagnosed cases of dermatophytosis from the department of Dermatology, Government General Hospital, Guntur and other clinics in and around Guntur were studied. Out of these, skin scrapings were 99 (79.2%), nail clippings 18 (14.4%) and hair stubs 8 (6.4%).

Table I

SAMPLES	NUMBER	PERCENTAGE %
SKIN SCRAPINGS	99	79.2 %
NAILO CLIPPINGS	18	14.4 %
HAIR STUBS	8	6.4 %
TOTAL SAMPLES	125	100 %

Table II

The age group of patients in the study ranged from 0-70 years. The most common age group affected was 21-30 years (32%) followed by 11-20 years (24%) and 31-40 years (16%)

AGE	NUMBER	PERCENTAGE
0-10	9	7.2 %
11-20	30	24 %
21-30	40	32 %
31-40	20	16 %
41-50	11	8.8 %
51-60	9	7.2 %
61-70	6	4.8 %
TOTAL	125	100 %

Table III

MALES	FEMALES	TOTAL	M:F RATIO
80 (64 %)	45 (36%)	125(100%)	1.78 : 1

Out of 125 patients, males were more commonly affected (64%) than females (36%). Male to female ratio was 1.78:1. Majority of the patients were from low income group (65.6%) followed by middle income group (25.6%) and in high income group (8.8%) it was least common. Table IV

TABLE – IV

DISTRIBUTION ACCORDING TO SOCIO-ECONOMIC STATUS

SOCIO-ECONOMIC STATUS	NUMBER	PERCENTAGE (%)
Low income group	82	65.6%
Middle income group	32	25.6%
High income group	11	8.8%
TOTAL	125	100%

TABLE – V

AGE AND SEX-WISE DISTRIBUTION IN RELATION TO CLINICAL TYPES

S.No.	CLINICAL TYPES	Age group (in years)							SEX		TOTAL	%
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	Male	Female		
1.	T corporis	3	15	17	12	5	4	4	36	22	58	46.4%
2.	T eruris	-	3	7	3	2	3	1	10	9	19	15.2%
3.	T unguium	-	4	8	4	-	1	1	12	6	18	14.4%
4.	T capitis	6	1	1	-	-	-	-	5	3	8	6.4%
5.	T pedis	-	-	-	-	1	1	-	2	-	2	1.6%
6.	T faciei /barbae	-	2	3	1	-	-	-	4	2	6	4.8%
7.	T manuum	-	-	2	-	1	-	-	2	1	3	2.4%
8.	T.corporis +T.eruris	-	5	4	-	2	-	-	9	2	11	8.8%
TOTAL		9	30	40	20	11	9	6	80	45	125	100%

Tinea corporis was more common in males (62.06%) and in the age group of 21-30 years. Tinea cruris was more common in males (52.6%) and in the age group of 21-30 years.

Tinea unguium was more common in males (66.67%) and in the age group 21-30years Tinea capitis was more common in males (62.5%) and in the age group Of 0-10years Tinea faciei/barbae was more commonly seen in males (66.67%) and in the age group 21-30years. Tinea pedis was seen in the age groups of 41-50 years and 51-60 years while Tinea mannum was more commonly seen in males in the age group 21-30 years. Mixed infection of T corporis with T cruris was more commonly seen in males (81.8%)and in the age group 11to 20years .[Table V]

Tinea unguium was equally seen in professionals, manual workers and students (27.78%) each followed by housewives (11.11%).TineaCapitis was more commonly seen in school Tinea corporis was most commonly seen in manual workers(39.6%) followed by students(25.86%) and housewives (20.7%). Tinea cruris was most commonly seen in manual workers (36.8%) followed by professionals(31.6%).

Tinea unguium was equally seen in professionals,manual workers and students (27.78%) each followed by housewives (11.11%).TineaCapitis was more commonly seen in school commonly seenin manual workers (36.36%) followed by professionals (27.27%).[table

TABLE – VI
STUDY OF CLINICAL TYPES AND ITS RELATION TO OCCUPATION

CLINICAL TYPES	OCCUPATION					TOTAL
	MANUAL WORKERS	HOUSEWIVES	STUDENTS	PROFESSIONAL	MISCELLANEOUS	
T corporis	23	12	15	5	3	58
T cruris	7	3	3	6	-	19
T unguium	5	2	5	5	1	18
T capitis	-	1	5	-	2	8
T pedis	-	-	-	2	-	2
T faciei /barbae	1	2	1	1	1	6
T mannum	1	-	-	2	-	3
T corporis + T cruris	4	2	1	3	1	11
TOTAL	41	22	30	24	8	125

TABLE - VII
IDENTIFICATION OF DERMATOPHYTES BY MICROSCOPY AND CULTURE AMONG CLINICAL TYPES

S.No.	CLINICAL TYPE	Total KOH Positive	Total Culture Positive	KOH Positive Culture Positive	KOH Positive Culture Negative	KOH Negative Culture Positive	KOH Negative Culture Negative
1.	T corporis	38	35	34	4	1	19
2.	T cruris	12	8	6	6	2	5
3.	T unguium	10	6	6	4	-	8
4.	T capitis	5	5	5	-	-	3
5.	T pedis	1	1	1	-	-	1
6.	T mannum	2	1	1	1	-	1
7.	T faciei/barbae	4	2	1	3	1	1
8.	Mixed type	6	6	6	-	-	5
TOTAL		78 (62.4%)	64 (51.2%)	60 (48%)	18 (14.4%)	4 (3.2%)	43 (34.4%)

Out of 125 samples, direct microscopy was positive in 78 samples(62.4%) and culture was positive in 64 (51.2%)samples. 60 samples(48%)were both KOH positive and culture positive.18 samples(14.4%)were KOH

positive but culture negative while 4 samples(3.2%)were KOH negative but culture positive.43 samples(34.4%)were both K T rubrum was the commonest pathogenic species isolated 34(53.2%) followed by T mentagrophytes 15(23.4%),T tonsurans 5(7.8%).There were 4 isolates(6.3%) of T verrucosum and 2 isolates (3.1%) of 60

Trichophyton schoenleinii. M gypseum and M audouinii were isolated in 2 samples each(3.1%).[TableVIII]

T rubrum was the commonest pathogenic species isolated 34(53.2%) followed by T mentagrophytes 15(23.4%),T tonsurans 5(7.8%).There were 4 isolates(6.3%) of T verrucosum and 2 isolates (3.1%) of 60 Trichophyton schoenleinii. M gypseum and M audouinii were isolated in 2 samples each(3.1%).[TableVIII] negative

TABLE – VIII

INCIDENCE OF DERMATOPHYTES SPECIES-WISE

DERMATOPHYTE SPECIES	NUMBER	PERCENTAGE
Trichophyton rubrum	34	53.2%
Trichophyton mentagrophytes	15	23.4%
Trichophyton tonsurans	5	7.8%
Trichophyton schoenleinii	2	3.1%
Trichophyton verrucosum	4	6.3%
Microsporum audouinii	2	3.1%
Microsporum gypseum	2	3.1%
Total	64	100%

TABLE – IX

DERMATOPHYTES ISOLATED FROM DIFFERENT CLINICAL TYPES

CLINICAL TYPES	TOTAL NO. OF SAMPLES	T.rubrum	T.mentagrophytes	T.tonsurans	T.verrucosum	T.schoenleinii	M audouinii	M gypseum	TOTAL ISOLATED
T corporis	58	20 (57.1%)	10 (28.6%)	4 (11.50%)		1 (2.8%)			35
T cruris	19	6 (75%)	2 (25%)						8
T unguium	18	2 (33.33%)			2 (33.33%)	1 (16.67%)	1 (16.67%)		6
T capitis	8				2 (40%)		1 (20%)	2 (40%)	5
T pedis	2	1 (100%)							1
T faciei /barbae	6		1 (50%)	1 (50%)					2
T mannum	3	1 (100%)							1
T corporis+ T.cruris	11	4 (66.67%)	2 (33.33%)						6
TOTAL	125 (100%)	34 (53.2%)	15 (23.4%)	5 (7.8%)	4 (6.3%)	2 (3.1%)	2 (3.1%)	2 (3.1%)	64

Among 58 samples collected from Tinea corporis,the number of dermatophytes isolated were 35(60.34%). T rubrum was isolated in 20 samples(57.1%)followed by T mentagrophytes in 10 (28.6%) and T

tonsurans in 4 (11.5%). The number of dermatophytes isolated from Tinea cruris were 8 (42.1%), of which *T. rubrum* constitutes 6 (75%) and *T. mentagrophytes* 2 (25%). Among 5 isolates (62.5%) in Tinea capitis, *T. verrucosum* and *Microsporum gypseum* constitute 2 (40%) and 1 (20%) *M. audouinii*. The number of dermatophytes isolated from Tinea unguium were 6 (33.33%) of which *Trichophyton verrucosum* and *T. rubrum* constitute 2 isolates (33.33%) each and 1 isolate (16.67%) each of *M. audouinii* and *T. schoenleinii*. Among 6 isolates (54.55%) in Tinea corporis with cruris 4 (66.67%) were *T. rubrum* and 2 (33.33%) *T. mentagrophytes*. [Table IX]

IV. Discussion

In the present study, 125 clinically diagnosed cases of dermatophytosis attending Skin and STD outpatient department of Government General Hospital, Guntur and other clinics in and around Guntur were studied. Of them 99 were skin scrapings, 18 nail clippings and 8 hair stubs. All the samples were subjected to mycological study. The present study shows that dermatophytosis was more common in the age group of 21-30 years (32%) followed by 11-20 years (24%) and 31-40 years (16%) which is comparable with other studies. This may be explained by the fact that this population group was highly active and takes part in maximum outdoor activities like agriculture and manual activities. [Table ii]

In the present study, males (64%) were more commonly affected than females (36%). Male to female ratio was 1.78:1 which is comparable with other studies done by Nita Patwardhan et al (1991). The higher incidence in males may be due to greater physical activity, increased sweating and due to the type of footwear they use. [Table iii] Maximum number of cases were predominantly seen in the summer season which correlates with the studies of Siddappa K et al, Shah AK et al, Mehta JP et al. In the present study, tinea corporis was the commonest clinical type encountered (46.4%) followed by tinea cruris (15.2%) and tinea unguium (14.4%). The commonest age group affected was 21-30 years (29.31%).

Tinea cruris was the second commonest clinical type (15.2%) and commonest age group affected was 21-30 years (36.8%). Males (52.6%) were more commonly affected than females (47.4%) which is comparable with studies done by Das Gupta et al and others. Exercise, crowded places, low degree of personal hygiene, sitting at a desk and long time driving may be the major causes.

Tinea unguium was the third commonest clinical type (14.4%) and the commonest age group affected was 21-30 years (44.4%) which is comparable with the studies of Sujata V et al (2006) and Luna Adhikari et al (2009).

The increased incidence in the younger population could be because they are more often exposed to occupation related trauma and are more cosmetic conscious compared to the older age group. Walking bare foot, wearing ill fitting shoes, nail biting (onychophagia), working with chemicals further predispose Indian patients to tinea unguium infections. Males (66.67%) were more commonly affected than females (33.33%), which is comparable with other studies done by Mishra M et al (1998), Sen S S et al (2005), Veer P et al (2007). This could be due to frequent nail damage from sports and leisure activities and use of closed footwear by men.

Tinea capitis (6.4%) was more commonly seen in the age group below 10 years (75%). Higher occurrence of tinea capitis in less than 10 years of age may be due to lack of fungistatic secretion by scalp in childhood and close contact with each other while adult sebum has fungistatic action.

Frequent shaving of scalp, contamination from place of barbing, sharing of caps and poor personal hygiene was found to be a contributory factor.

Male children (62.5%) were more commonly affected which is comparable with other studies done by Kumar AG et al (58%), Siddappa K et al (77.8%) and Kumar AG et al (78%). Higher incidence in boys might be due to shorter hair allowing easy access for circulating spores. The lower incidence in females could be due to regular application of vegetable oils over the scalp which has fungistatic properties. But Chander Grover et al (2010) has reported a higher incidence of tinea capitis in females. Tinea faciei/barbae was seen in 4.8% of cases which is comparable with other studies by Sanchita Karmakar et al (6%), Keyvan et al (4%) and Tandon S et al (2.1%). Tinea manuum was seen in 2.4% of cases which is comparable with the studies of Ellabib MS et al (2.6%) and Chimelli PAS et al (1.9%). Tinea pedis constitutes 1.6% of total cases. The lower incidence of tinea pedis in the present study might be due to lack of health awareness, illiteracy, poverty and also due to the absence of troublesome symptoms. Tinea corporis with tinea cruris was present in 8.8% of cases which is. The present study shows that infection was most common in the low income group (65.6%) followed by middle income group (25.6%) and high

income group (8.8%) which is similar to the observation of S Ranganathan et al who reported that 69.2% of the infected people were from low income group and 23.2% from middle income group. This may be due to poor hygienic practices, overcrowding, sharing clothes without washing them properly and also due to poor nutrition. Dermatophytosis was most commonly seen in manual workers 41 (32.8%) followed by students 30 (24%), professionals 24 (19.2%), housewives 22 (17.6%) and miscellaneous 8 (6.4%) which is comparable with the observations of Ranganathan S et al. Increased incidence in manual workers may be due to increased

sweating in outdoor activities ,constant contact with plants and soil and unhygienic conditions associated with poverty .

Out of 125 clinically diagnosed cases of dermatophytosis,78 samples(62.4%) were positive for fungi by direct microscopy and 64 (51.2%) were positive by culture.60 (48%)were positive by both direct microscopy and culture,18 (14.4%) were positive by direct microscopy but negative by culture,4 (3.2%)were negative by direct microscopy but culture positive and 43 (34.4%)were negative by both direct microscopy and culture.KOH positivity in the present study (62.4%)is comparable with study done by Singh S et al (60.38%) and culture positivity (51.2%) correlates with study of SS Sen et al(51 Trichophyton rubrum 34(53.2%) was the commonest etiological agent isolated in majority of clinical types in the present study followed by Trichophyton mentagrophytes15(23.4%),T tonsurans5(7.8%),T verrucosum (t schoenleinii 2 (3.1%) and m audouinii 2 (3.1%) .Ranganathan S et al reported T rubrum (52.2%) as the commonest isolate followed by T mentagrophytes (29.35%) which is in accordance with thepresent study. B V Peerapur et al (2004) reported Trichophyton rubrum (43.7%)as the commonest isolate followed by Trichophyton mentagrophytes (28.1%) and NeetuJain et al (2008) reported T rubrum(45.71%) as the commonest isolate followed by T mentagrophytes (14.29%).Also Madhavi S et al,SS Sen et al,Sumana V et al, Chimelli PAV et al also reported T rubrum as the predominant isolate.Out of 5 isolates from T capitis, two were Microsporum gypseum, two Trichophyton verrucosum and one M audouinii. The isolation rate of Microsporum gypseum (3.1%) is in accordance with the study of Smita Sarma et al (3.27%). The isolation of M gypseum could be accounted to the patient's interaction with soil and domestic animals.55,76 The isolation rate of Trichophyton verrucosum (6.3%) correlates with the study of Shahindokht Bassiri et al(6.6%) and Nita Patwardhan et al(6.25%). T schoenleinii constitutes 3.1% of the isolates which is in accordance with Neetu Jain et al(4.29%) and BV Peerapur et al(4.68%) Epidermophyton floccosum was not isolated in our study.Madhavi S et al, SSAdefemi et al also did not report the isolation of E floccosum.[Table XIII] 79

V. Summary

One hundred and twenty five clinically diagnosed cases of dermatophytosis from Skin and STD out patient department of GovernmentGeneral Hospital ,Guntur and other clinics in and around Guntur were studied. Tinea corporis 58(46.4%)was the commonest clinical type followed by Tinea cruris 19(15.2%),tinea unguium 18(14.4%),tinea capitis 8 (6.4%), tinea corporis with tinea cruris 11(8.8%),tinea faciei/barbae 6(4.8%),tinea mannum 3 (2.4%) and tinea pedis 2(1.6%).Commonest age group affected was 21-30years.Male to female ratio was 1.78:1. Majority of cases belonged to low socio-economic status 82(65.6%).Infection was more common in manual workers 41(32.8%) followed by students 30(24%), professionals 24(19.2%), housewives 22(17.6%) and miscellaneous 8 (6.4%). Fungi were demonstrated in 78(62.4%) samples by direct microscopy and 64(51.2%) by culture. Of the dermatophytes isolated,T rubrum 34(53.2%) was the commonest isolate followed by T mentagrophytes 15(23.4%),T tonsurans 5(7.8%),T verrucosum 4 (6.3%),T schoenleinii2(3.1%),M gypseum 2(3.1%) and M audouinii 2(3.1%).T rubrum was the commonest etiological agent isolated in majority ofthe clinical types.M gypseum,M audouinii and T verrucosum were isolated in cases of T capitis.T rubrum,T verrucosum,T schoenleinii and M audouinii were isolated in tinea unguium

VI. Conclusion

Dermatophyte infections are very common in our country where hot and humid climate in association with poor hygienic conditions and over population play an important role in the growth of these fungi. Trichophyton species form the commonest etiological agents of dermatophyte infections in India. T rubrum is the commonest isolate in tinea corporis and tinea cruris. People belonging to low socioeconomic status with poor personal hygiene are more prone to these infections. A study of dermatophytosis in a population is important as it may reflect the climatic conditions, customs, hygiene and socioeconomic status of the people It is clear from the present study that isolation and identification of dermatophytes is important for an early diagnosis to prevent transmission of the infection and for prompt treatment. Awareness of the importance of general health and better hygienic practices may be the possible preventive measures

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FIGURE 1: TINEA CAPITIS OVER OCCIPITAL REGION



FIGURE 2 : TINEA CRURIS OVER GROIN AREA



FIGURE 3 : TINEA CORPORIS OVER WAIST REGION



FIGURE 4: ANNULAR CIRCUMSCRIBED LESIONS OF RINGWORM

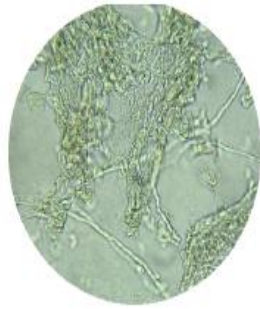


FIGURE 7 -KOH Preparation of skin scrapings showing fungal elements

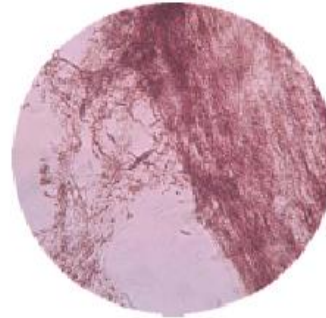


FIGURE 8- Ectothrix infection of hair

Trichophyton rubrum



FIGURE 9- Culture on SDA (obverse and reverse)

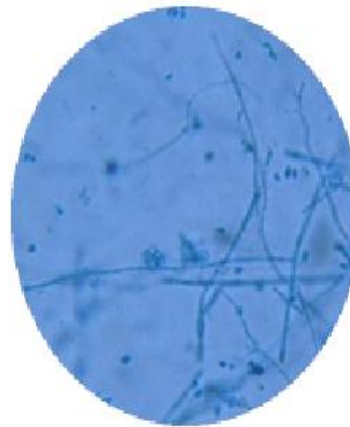


FIGURE 10 - LPCB mount

Trichophyton mentagrophytes



FIGURE 11- Culture on SDA (obverse and reverse)

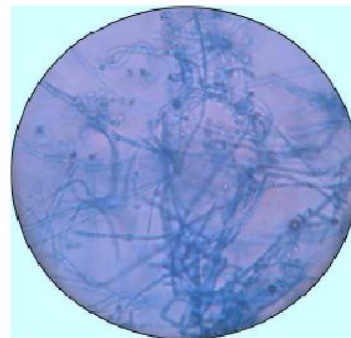


FIGURE 12- LPCB mount

Trichophyton tonsurans



FIGURE 13 - Culture on SDA (obverse and reverse)

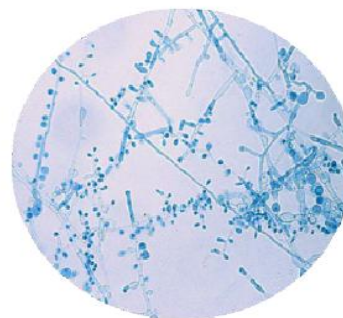


FIGURE 14 - LPCB mount

Microsporium gypseum



FIGURE 15 - Culture on SDA (obverse and reverse)



FIGURE 16 - LPCB mount

Microsporium audouinii



FIGURE 17 - Culture on SDA (obverse and reverse)

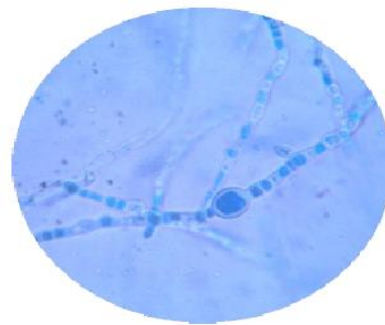


FIGURE 18 - LPCB mount

Trichophyton verrucosum



FIGURE 21 - Culture on SDA (obverse and reverse)

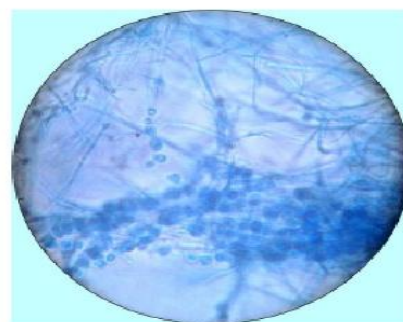


FIGURE 22 - LPCB mount



FIGURE 23 - Slide culture of Trichophyton mentagrophytes.



*Dr.P.Venkata Ramana. "A Study of Dermatophytosis in Patients Attending Skin & STD Outpatient Department at A Tertiary Care Government General Hospital And other Clinics in And Around Guntur." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.8 (2017): 12-21