

ANALYSIS OF 141 CASES OF DERMATOPHYTOSIS

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India is a fairly large country with a remarkably varied topography, situated within the tropical and subtropical belts; which are the regions incriminated with high incidence of mycotic infections. As a monsoon land, most parts of it are under the influence of sustained periods of combined heat and high humidity recurring annually. The geographical features of the country are therefore conducive to the acquisition and maintainance of mycotic infections. Mycotic diseases are common in India but the main bulk of the infection is constituted by superficial mycosis. Since a decade much work on dermatophytosis has been done and reported from different parts of India. The present work was undertaken with a view of finding out the incidence of prevalent species of dermatophytes in this part of the country.

MATERIAL AND METHODS

In the present study 141 cases of tinea infection, attending the skin O. P. D. of Sheth V. S. General Hospital, Ahmedabad, were collected. Data regarding the age and sex of the patient, duration of infection, family history etc were recorded. The patients were examined thoroughly and were classified according to the sites of involvement e g. T. corporis, T. cruris etc.

Mycological Study : The affected part was properly sterilised with spirit and scrapings were collected with a sterile scalpel on a sterile paper. In case of scalp infection hairs were epilated. The collected material was subjected to mycological examination both by direct smear with 10% KOH and culture methods—primary isolation on Sabouraud's dextrose agar with chloramphenicol.

Special tests were carried out to arrive at the final identification whenever necessary e g. culture on corn meal agar, casein thiamine agar etc.

RESULTS

Analysis of 141 cases of tinea infection revealed the following data :

1. 105 cases of dermatophytosis showed positive evidence of fungus either by direct microscopic examination or culture or both.
2. 23 cases were of tinea versicolor.
3. 5 cases were infected by *C. albicans*
4. 8 cases did not show fungus by microscopic and culture examination.

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TABLE I
Clinical analysis of 105 cases of Dermatophytosis

Age in Years	T. corporis	T. cruris	T. capitis.	T. unguim
0 - 10	-	-	2	-
11 - 20	23	7	-	-
21 - 30	21	5	-	-
31 - 40	12	4	1	2
41 - 50	9	-	-	2
51 - 60	11	-	-	2
61 and above	4	-	-	-
TOTAL	80	16	3	6

TABLE II
Sex Distribution

Sex	T. corporis.	T. cruris	T. capitis.	T. unguim	Total
Male	57	14	2	4	77
Female	23	2	1	2	28
TOTAL	80	16	3	6	105

As seen from the Table I, maximum incidence of dermatophytosis was in second and third decade and minimum incidence in the first decade. Males were more commonly affected than females (Table II) in the ratio of 3 : 1. The youngest patient was a one year old boy while the oldest patient was a female aged 68 years.

Out of 105 cases of dermatophytosis, 80 patients had T. corporis, 16 patients had T. cruris, 6 patients had T. unguim and 3 patients had T. capitis.

Table III shows the results of clinicomycological study in 105 cases of dermatophytosis. In the present study 8 cases did not show positive results on culture examination. In 90 cases both KOH and culture were positive while in 7 cases only the cultures were positive.

TABLE III
Results of KOH & Culture Examination

Clinical Type	No. of Cases.	KOH + ve Culture + ve.	KOH-ve Culture - ve	KOH-ve Culture + ve.
T. corporis	80	68	7	5
T. cruris	16	15	1	-
T. unguim	6	6	-	-
T. capitis	3	1	-	-
TOTAL	105	90	8	7

TABLE-IV
Incidence of Different Varieties of Dermatophytes

Species	No. of Cases	Percentage
T. rubrum	90	92.60
T. violaceum	4	4.25
T. tonsurans	2	2.10
E. floccosum	1	1.05
TOTAL	97	100.00

The commonest dermatophyte isolated was *T. rubrum* (92.6%).

TABLE V
Correlation between Clinical and Mycological Study.

Species	Total	T. corporis.	T. cruris	T. capitis.	T. unguim
T. rubrum	90	68	14	2	6
T. violaceum	4	3	—	1	—
T. tonsurans	2	2	—	—	—
E. floccosum	1	—	1	—	—

T. rubrum was the commonest dermatophyte isolated from *T. corporis*, *T. cruris* and *T. capitis* and it was the only dermatophyte in cases of *T. unguim*.

DISCUSSION

In the present study 141 cases of tinea were studied which revealed dermatophytosis as the commonest. Next was *T. versicolor* while candidiasis infected a few patients. The results are similar to those of Nagabhushanam (1969).

Analysis of dermatophytosis showed *T. corporis* to be the commonest (76.2%), *T. cruris* was the next common (15.2%). The results are in conformity with the reports published by Desai et al (1962), Kandhari et al (1964), Kalra et al (1964), Gupta et al (1959) and Vasu (1963). The incidence of *T. capitis* was also similar to that of other workers. In the present series it was 2.95%. High incidence of *T. corporis* and *T. cruris* was probably due to the symptom of severe itching which induced the patient to seek early medical advice. Other types of dermatophytosis usually remain asymptomatic and hence only in severe stage the patients are likely to attend the clinic. Low incidence of *T. capitis* might be associated with the habit of using vegetable oils for hair dressing.

As regards the age incidence, the maximum incidence is in the second decade (33.35%) though the incidence above the age of 20 years was 66.8%. Nagabhushanam (1969) has also reported similar results; 35.2% in the second decade and 53% above the age of 20, Kalra et al (1964) in their series have reported 79.98% incidence above the age of 20. Ghosh (1948) has reported maximum incidence in the second decade. Panda et al (1967) also reported highest incidence of dermatophytosis in younger persons. *T. corporis* was more common in higher age group than *T. cruris*. In the present series two of the three cases of *T. capitis* were below the age of 10 years. This is in confirmation with general observation that *T. capitis* is exclusively a disease of prepubertal age. Various reasons have been advanced to explain this age incidence. Presence

of thymus or its remnants during childhood and increased secretions by glands of scalp at the onset of puberty of low boiling saturated fatty acids with selective fungicidal and fungistatic action, are some of the views to explain the age incidence

Regarding the sex incidence, present series showed that males were much more commonly affected than females in the ratio of 2.85:1. Panja (1962) reported 3 : 1 ratio in his study of 70 cases of glabrous skin infection. The present study revealed 2.85 : 1 ratio, similar to that of Panja (1962).

In the present work of 141 cases 97 cases showed positive evidence of fungus either by KOH or culture or both. Isolation rate in the present study was 68.6%. Isolation rate of different workers is shown in the table below :

Name	Isolation rate
Desai et al. (1959)	70%
Kalra et al (1964)	32%
Mankodi et al (1967)	42%
Present series	68.6%

Analysis of 97 strains of dermatophytes showed *T. rubrum* to be the predominant type with the incidence of 92.6%. The other isolated species were *T. tonsurans* 2.1% and *E. floccosum* 1.05%. The comparison of the results of the present series with those of different workers from all over India is shown below.

Name of the worker	<i>T. rubrum.</i>	<i>T. violaceum</i>	<i>T. mentagrophye</i>	<i>E. floccosum</i>
Desai et al (1961) Bombay	84.45	8.81	2.32	2.32
Gosh (1948) Bengal	63.00	1.41	2.36	32.23
Gokhle et al (1962) Poona	72.38	2.24	17.16	2.24
Gugnani (1977) North India	84.80	0.70	7.60	3.20
Gupta et al (1959) U. P.	56.73	-	31.73	1.92
Kalra et al (1964) Delhi	80.61	3.52	9.91	3.08
Kurup et al (1961) Kerala	68.30	1.60	10.00	3.30
Mankodi et al (1967) Ahmedabad	84.88	4.34	-	4.34
Nagabhushnam (1969) Hyderabad	51.43	14.68	2.78	4.17
Panda et al (1967) Burma.	78.43	-	10.78	1.96
Vasu (1963) Warangal	63.83	4.81	16.86	8.30
Verma et al (1970) Baroda	88.90	-	8.30	2.80
Present Series	92.60	4.25	-	1.05

Reports from all over the India put *T. rubrum* as the commonest dermatophyte isolated. Prevalence of *T. mentagrophytes* is second in frequency in most of the series though Desai et al (1961), Mankodi et al (1967), Nagabhushnam (1959) and the present series show *T. violaceum* as more common type. Incidence of *E. floccosum* varied from 1 to 4 per cent in most of the series; very high incidence of *E. floccosum* in series of Ghosh (1949) from Calcutta cannot be explained on the climatic difference only, as Panda (1967) from Orissa, showed an incidence of 1.9 per cent only. *T. mentagrophyte* was not isolated in the present series.

Incidence of dermatophyte reported from various centres of the world showed quite different pattern. In U. S. A. *T. mentagrophyte* (74.4%) is the main cause of ringworm infection, *T. rubrum* (18.33%) is the next common. In U. K., *E. floccosum* (44.5%) is the main cause of ringworm infection and next in frequency was *T. rubrum* (19%). In Japan and Philippines *T. rubrum* is the commonest dermatophyte involved.

Clinicomycological Correlation Correlating clinical and mycological data, it appears that *T. rubrum* is mainly responsible for *T. corporis* (74.8%), and *T. cruris* (15.4%) infection. Most of the other workers have reported similar observations. Further in present work, *T. violaceum* was isolated from four cases of *T. corporis*. Nagabhushnam (1969) isolated 10. Both the cases caused by *T. tonsurans* were of *T. corporis*. Desai et al (1961) also reported six cases of *T. tonsurans* from fungus infection of the groin and waist. *E. floccosum* was the causative fungus in a case of *T. cruris*. *T. rubrum* was isolated from all the six cases of *T. unguium*. Benerjee et al (1968) has also reported *T. rubrum* as a causative fungus in all the 20 cases of *T. unguium*. Desai et al (1961) reported 7 cases of 8 due to *T. rubrum*. Gugnani et al (1967) also isolated *T. rubrum* in all the cases of *T. unguium* in their series. Kalra et al (1964) reported 2 cases of *T. unguium* caused by *M. gypseum*.

T. capitis was caused by *T. violaceum* in one case while the other two cases revealed *T. rubrum* as a causative fungus. Both the patients were blood relatives, mother and son. Mother had *T. corporis* also and the child had a lesion on the neck. Kalra et al (1964) reported four cases of *T. capitis* caused by *M. gypseum*.

SUMMARY

In the present study 141 cases of dermatophytosis were examined clinically and then subjected to mycological study. Total 97 cases of dermatophytosis showed evidence of fungus either by KOH or culture or both. 23 patients had *T. versicolor* due to *M. furfur* while 5 cases of vulvovaginitis and perianal dermatitis in children were due to *C. albicans*.

Clinical analysis of 97 cases of dermatophytosis showed *T. corporis* to be the commonest type, next in frequency was *T. cruris*. *T. unguium* constituted 6.34 per cent of the total cases. Age and sex incidence were recorded.

On mycological study of 105 cases, *T. rubrum* (90), *T. violaceum* (4), *T. tonsurans* (2) and *E. floccosum* (1) were the dermatophytes isolated.

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