

CLINICAL AND MYCOLOGICAL STUDY OF SUPERFICIAL FUNGAL INFECTIONS AT GOVERNMENT GENERAL HOSPITAL: GUNTUR AND THEIR RESPONSE TO TREATMENT WITH HAMYCIN, DERMOSTATIN AND DERMAMYCIN.

By

C. SOBHANADRI,* D. TIRUMALA RAO,** K. SARAT BABU,***

Introduction. The Dermatophytoses are caused by a closely related group of fungi, the Dermatophytes which produce only superficial infections of skin and its appendages and do not invade the deeper tissues or the internal organs. Although the diseases are worldwide in distribution, they are, however more frequently seen under tropical climates. Though the prevalence of Dermatophytoses in India has long been recognised, the available records on the subject are not many. A systematic study of the diseases has been undertaken, only recently. Various groups of workers have worked out the incidence of Epidermophytosis. A. K. Banerjee, Ahalyarao and A. N. Chakravarthy and Bhat M. L. A., from Bombay (1961) Vasu from Warangal (1966) Klokke Durairaj, from South India (1967) and Nagabhushanam P., D. Tirumala Rao and Raghunath Patnaik from Hyderabad (1968).

In these skin clinics in various parts of India, Dermatophytosis accounts for 8-10% of the total attendance. The incidence of Dermatophytes is much higher in South India than in the other parts of the Country (Klokke and Durairaj 1967; Vasu, 1966).

We, at Government General Hospital, Guntur, have recorded an incidence of 15-17% in the last four years (1966-1969), and the incidence in 1969 particularly was very high-17.5% (Table-1).

TABLE I

Total No. of cases attending skin O.P., Department during 1969.	36,530.
Total No. of Dermatophytoses during 1969.	6,507.
Percentage:	17.5%

This high incidence may be due to the environmental factors like humidity and temperature. The other peculiarity is, in South India *Tinea Corporis* and *Tinea Cruris* are the commonest types, whereas *Tinea capitis* is a rarity. Since the incidence of Dermatophytoses is high, we could undertake this study through the liberal grants from Hindustan Antibiotics Ltd., Pimpri, in addition to the drugs Hamycin and Dermostatin.

*Professor of Dermatology, Guntur Medical College, & Dermatologist, Govt. General Hospital, GUNTUR.

**Professor of Microbiology, Guntur Medical College, GUNTUR.

***Research Student, Department of Dermatology, Govt. General Hospital, GUNTUR.

The object of the present study is three-fold, namely :—

1. To determine the incriminating fungi in the various types of ringworm affection seen in these parts of the country.
2. To assess the relationship of direct microscopic examination in KOH mounts vis a vis cultural examination and;
3. To evaluate the efficacy of topical application of Hamycin, Dermos-tatin, Dermamycin in superficial fungal infections.

The study was confined to a limited series of 240 cases. Table II shows incidence of superficial fungal infections as per age and clinical type.

TABLE II

Clinical types.	0.10 Yrs.	11-20 Yrs.	21-50 Yrs.	Above 50 Yrs.	Total
Tinea corporis	5	42	49	8	104
Tinea Cruris	—	60	62	7	129
Tinea pedis	—	3	1	—	4
Tinea Versicolor	—	1	1	—	2
Tinea Barbae	—	1	—	—	1
Grand Total	5	107	113	15	240

Materials and Methods. Untreated and suspected cases of ringworm infection were subjected to mycological examination. After proper sterilization of the lesions with 75% alcohol, the scrapings were collected on a slide and examined in KOH for hyphae and arthrospores. Irrespective of direct demonstration of fungal filaments, scrapings from the suspected cases, were inoculated in three different slopes of Sabouraud's medium.

Namely.

- (1) Plain Sabouraud's dextrose agar 171 cases.
- (2) Sabouraud's dextrose agar supplemented with chloramphenicol (0.125 mg/ml) - 6 cases.
- (3) Sabouraud's dextrose agar supplemented with Chloramphenicol (0.125 mg/1 ml.) and actidione (0.5 mg/ml) - 23 cases.

Cultures were kept at room temperature and observed over a period of one month. At the end of one month, there was no growth, it was recorded as such. Slopes with growth were examined by slide mount using lactophenol cotton blue and by slide culture, species identification was done by studying the colony characteristics and microscopic features in primary cultures as well as in sub-cultures.

TABLE III

	KOH Positive cases	KOH Negative cases	Total	Percentage.
Positive growth in culture	87	51	138	69%
Contaminants	21	22	43	21.5%
No growth	11	8	19	9.5%
Grand total	119	81	200	

We may see from table III, that out of 200 cases that were subjected to microscopic examination 119 were KOH Positive (59.5%), while 81 were KOH Negative (40.5%). Out of the 119 KOH positive cases subjected to cultural examination 87 gave positive growths in culture, 21 showed contaminants while in 11 cases was no growth. Out of the 81 KOH negative cases subjected to cultural examination 51 gave positive growths in culture, 22 contaminants and 8 no growths. Irrespective of KOH positivity or negativity, in all 138 out of 200 cases have showed successful growths in primary cultures (69%). This is considered very satisfactory. This high success rate of positive primary cultures, it is felt, is partly due to the addition of chloramphenicol or actidione or both to the standard Sabouraud's medium, which effectively controlled bacterial contamination and growths of saprophytic fungi. In 29 cases grown on Sabouraud's dextrose agar supplemented with these drugs, practically no contaminants was grown. The contaminant rate however, is not so low either (21.5%). The contaminants were mostly aspergillus species.

Table IV shows the incriminating species of fungi. *Trichophyton Rubrum* has been accounted for 82 of the cases (41%) followed by *Epidermophyton Floccosum* with 41 cases (20.5%) and *Trichophyton Violaceum* 12 cases (6%). It is observed that *Tr. Rubrum*, is by far the leading pathogenic fungus in both *T. Cruris* and *T. Corporis* followed by *E. Floccosum*. This is in accordance with the observations of workers elsewhere (Dey, 1962; Ahalya Rao, 1962, Kandhari and Sethi, 1964; Kalra et al, 1966; Vasu, 1966; Gugnani et al. 1967, Kotrajaras, 1967; and Nagabhushanam, 1968). *Tr. Mentagrophytes* was grown in 2 cases of *T. Corporis*. It is interesting to note that another Anthropophilic species *T. Violaceum* accounting for as many as 8 cases of *T. Corporis*, 3 cases of *T. Cruris* and a single case of *T. Capitis*. Although, it has been not possible, in this preliminary study, it is surmized that investigations of animal ringworm, in the vicinity may help in detecting the exact prevalence of these Zoophilic species in the animal population and to assess their transmission to man.

Mixed infection with *T. Rubrum* and *E. Floccosum* was observed in a single case of *T. Cruris*. Both the cases of *T. Pedis* have grown contaminants. A single case of *T. Barbae* has also grown contaminants. *Candida Albicans* was grown in one case of *T. Unguium*.

TABLE IV

Clinical Types	KOH + ve.	KOH -ve.	Tr. Rubrum.	Tr. Violaceum	Tr. mentagrophytes	Tr. Verucosum	E. Floccosum	Contaminants	No growth
T. Cruris	60	43	42	3	—	1*	24(1)@	26	7
T. Corporis	49	35	36	8	2	—	14	13	11
T. Cruris et Corporis	5	3	4	—	—	—	3	1	—
T. Pedis	2	—	—	—	—	—	—	1	1
T. Unguium	1	—	—	—	—	—	—	1	—
T. Capitis T. Barbae	1	—	—	1	—	—	—	—	—
Grand Total	118	81	82	12	2	1*	41(1)@	43	19
Percentage	59.5%	40.5%	41%	6%	1%	0.5%	20.5%	21.5%	9.5%

* Indicate mixed infection with T. Rubrum and E. Floccosum.

@ Indicates this later be turned out to be a contaminant,

THERAPEUTIC TRIAL OF TOPICAL HAMYCIN, DERMOSTATIN AND DERMAMYCIN

Since the advent of Hamycin, a polyene antifungal antibiotic derived from *Streptomyces pimpriae* Thirum (1961) and Dermostatin another antifungal antibiotic derived from *Streptomyces Viridogriseus* (1962) in the laboratories of Hindustan Antibiotics Ltd., Pimper, many workers have tried their efficacy in mycoses.

Hamycin and Dermostatin were topically tried in the treatment of superficial mycoses at Hindustan antibiotics Ltd., Sasoon Hospital, Poona, by Dr. N. J. Thirumalachar, B. B. Gokhale, and A. A. Padhye, Dr. I. Sarkary and Dr. A. Garon, Department of Dermatology, Royal Free Hospital, London, have published about the efficacy of Hamycin and Dermostatin on the superficial infections in limited group of cases in 1966.

We have treated 120 cases of superficial mycoses with topical application% of Hamycin 0.1% (58 cases) Dermostatin 0.1% (34 cases) and Dermamycin 0.5 (29 cases) respectively. Dermamycin was prepared by mixing hamycin 0.125 gms, and 0.375 gms. of Dermostatin in 100 gms. of soft white paraffin to get a concentration of 0.5% of the medicament. All the patients were advised to apply the ointment twice daily for a period ranging from 20-30 days. These patients were followed regularly and the results of treatment were assessed by clinical, symptomatological improvement and also by microscopic examination of the skin scrapings after completion of treatment. Table V shows the results of treatment.

The effect of the drugs Hamycin, Dermostatin and Dermamycin with topical application and their results

Drugs.	No. of treated cases	Duration of treatment	Mode of treatment	Complete cure	Partial improvement	No improvement
Hamycin (0.1%)	58	20-30 days.	External application with soft paraffin	33 56.9%	16 27.5%	4 7%
Dermostatin (0.1%)	34	-do-	-do-	19 55.9%	12 35.3%	3 8.8%
Dermamycin	29	-do-	-do-	19 65.5%	8 27.5%	2 7%

Results and Discussion. Out of 58 cases that were put on topical application of Hamycin 33 cases (56.9%) responded completely. Partial improvement was there for 16 cases (27.4%). There was no improvement in 4 cases. 5 cases did not turn up for the regular check-up. Out of the 34 cases, that were tried with Dermostatin 19 cases (55.9%) showed complete response, 12 cases (35.3%) showed partial response where as 3 cases did not respond at all. Dermamycin was tried on 29 cases and there was complete response in 19 cases (65.5%), 8 cases showed partial response (27.5%) and no response in 2 cases (7%).

Our trial with Hamycin and Dermostatin topically showed good results to that of I Sarkany and G. A. Caron (1961). As pointed out by Dr. M. J. Tirumalachar and Dr. A. A. Padhye (1967) the partial success of treatment reported by them may be due to the type of vehicle they used. However our trials with Dermostatin as compared to that of Dr. M. J. Tirumalachar and Dr. A. A. Padhye were low (55.9%) as compared to 77.8% of their cure rate and this may be due to the low concentration of the drug and also due to the vehicle we used. The results of trial with Dermamycin a combination product of Hamycin with Dermostatin was encouraging with a cure rate of 65.5%. This drug needs further clinical trial.

SUMMARY AND CONCLUSION

We have taken up 240 cases of various clinical types of superficial fungal infections and reported the predominant species prevalent in these parts through culture reports of 200 cases.

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