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## Survey of Superficial Mycotic Diseases in Calcutta Metropolis

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Survey of superficial mycotic diseases in some Corporation wards of Calcutta metropolis for the period of 1980-1984 revealed that there was 94.01% of Pityriasis versicolor, 5.03% of Tinea nigra and 0.95% of Piedra. The epidemiological factors of the diseases were also studied.

**Key words :** Survey, Superficial mycoses, Calcutta metropolis.

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In India, the discipline of medical mycology is very much neglected although researches on several aspects of mycotic diseases started long ago in 1900 in the School of Tropical Medicine at Calcutta and later in different centres of India (Ammu, 1978; Basumallick *et al.*, 1967; Mahapatra, 1985; Rajendran, 1987). The city of Calcutta has grown to the rank of metropolis despite its physical, climatic and economic constraints (Census, 1981). This super metropolis developed within a typical rural landscape of West Bengal delta and is characterised by innerside highlands, scattered pockets of marshes, poor drainage facilities, moist hot climate, high population density and lack of adequate potable water. All these conditions have helped to expose the human population to several tropical diseases. This congenial atmosphere is most conducive for the prevalence and spread of the mycotic diseases in Calcutta Metropolis.

In the present investigation an attempt has been made to survey the incidence of the superficial mycotic diseases in some Corporation wards of the Calcutta metropolis as no such records are available at present. The survey was conducted from 1980 to 1984 (5 years).

The superficial mycoses are confined to the outermost layer of the skin and hair. Three types of superficial mycoses were observed during this period viz (i) Pityriasis versicolor, (ii) Tinea nigra and (iii) Piedra.

#### MATERIALS AND METHODS

The survey was conducted at the outdoor department of Dermatology of National Medical College and Hospital and Calcutta University Health Center (both are in Calcutta metropolis).

The primary isolation of the pathogens from the patients was made after the attending doctors diagnosed the case as mycoses.

To obtain the invitro cultures of pathogens, three types of media were used viz. (i) Sabouraud Cycloheximid Chloramphenicol medium (sterilized at 12 lb pressure for 10 minutes, used only for primary isolation) (ii) Sabouraud Glucose Agar medium (sterilized at 15 lb pressure for 15 minutes, used both for primary isolation and maintaining the cultures of pathogens) and (iii) Cornmeal agar medium (sterilized at 15 lb pressure for 15 minutes to observe the growth pattern of the pathogens).

The genus *Malassagia* (isolated from the patients affected with Pityriasis versicolor) was studied only by microscopic observations of the clinical materials (skin scrapings) as it could not be grown on any of the media mentioned above.

For the observation of the fungal pathogens primary isolations were made from the infected skin lesions which were superficially washed with 70% alcohol and scraped at the margin of the lesions with a blunt and sterile scalpel and from the infected hairs of the patients which were cut with a sterilized scissor. All the aseptic measures for the purpose were taken during the process.

To detect the presence of fungal pathogens in isolated clinical materials KOH (10% Soln.) mount and PAS stain of the scrapings (skin lesions) and cuttings (hair) of infected specimens were made. Simultaneously an amount of collected infected materials were furrowed into the plates containing the three types of nutrient media, mentioned above. The plates were incubated at  $30^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$  for six weeks and requisite moisture was maintained to prevent drying. The culture plates were monitored every day for one week. After that any microbial growth if found was immediately transferred into a fresh sterilized Sabouraud Glucose Agar slants for further study. After six weeks the plates were discarded. The cultures were maintained at  $25^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$  on Sabouraud Glucose agar medium and Cornmeal agar medium.

The pathogens thus obtained were properly stained with Lactophenol-cottonblue and critically observed under microscope. The morphology, colour, conidia

production and other characters were observed. The pathogens were identified by the Commonwealth Mycological Institute, Kew, Surrey, England.

#### Observations

The prevalence of superficial mycosis in Calcutta metropolis is 15.89% of the total mycoses ( 13989 cases ) during the period of investigation. Of these, Pityriasis versicolor is 94.01%, Tinea nigra is 5.03% and Piedra is 0.95% only. It is commonly known as liver spot. The total number of cases of superficial mycosis was 2223 recorded during the period of investigation ( 1980-1984 ).

#### Pityriasis Versicolor

It is the second commonest mycotic disease in Calcutta metropolis being next to dermatophytosis. The total number of cases observed was 2090 during the period of investigation. It is a chronic and mild infection of the stratum corneum. The affected areas are scalp, face, trunk, upper arm, chest, back and shoulders.

The clinical symptoms of the disease are greyish-brown or dark brown patches with scaling on the chest, trunk, upper arms and other areas except in the ears. This shows the sebum dependent nature of the casual organisms. The hypopigmented macule is also very prominent. The lesions which start as tiny, multiple macular spots, begin to enlarge and coalesce with each other to form a layered area. In some cases papular lesions are also found which are perifollicular.

The causal organisms are *Malassazia furfur* and *Malassazia ovalis*, the two well known lipophilic yeasts.

The ecological study shows that both the species are common endogenous saprophytes of the normal skin. The organism are found to be more on the skin of grown up males than females.

Of the 94.03% cases of Pityriasis versicolor, *M. furfur* is found to be involved in 62.48% ( 1389 cases ) and *M. ovalis* in 31.53% ( 701 cases ).

The disease is easily curable by keratolytic agents like sulphur salicylic acid ointment ( 3% sulphur and 2% salicylic acid in ointment base ) which is to be applied twice a day for a week to several according to the condition of the symptoms.

#### Tinea nigra

The prevalence of Tina nigra ( in Calcutta metropolis ) is 5.05% of the superficial mycosis ( 15.89% ).

It is also a superficial asymptomatic fungus infection of the stratum corneum. The infection is generally found in palmar surface of the hand, wrist, and face.

The clinical symptoms are blackish macule on the surface of palm or on any skin surface. The macules are neither elevated nor with any scale. The spots are well defined and demarcated zones.

The causal organism is *Exophiala werneckii*.

In all 112 cases were observed during the entire period of study.

The ecological study reveals that the organisms are abundant in soil, sewerage and decaying plant materials in city's waste materials.

The disease is curable with the keratolytic agents i.e. sulphur salicylic acid (3%) in ointment base which is to be applied twice daily.

#### *Piedra*

The prevalence of Piedra in Calcutta metropolis is 0.94% of the superficial mycosis. Totally 21 cases of Piedra were recorded during the period of investigation.

It is a fungus infection of the hair shaft, typically characterised by the presence of firm and hard irregular nodules which are composed of fungal elements cemented on the hair surface. Single or multiple nodules on a single hair shaft are very common. There are two types of Piedra viz white and black Piedra.

The causal organisms are *Trichosporon beigellii* causing the white piedra and *Piedraia hortae* which is the causal agent of black Piedra. The prevalence of white piedra is more (0.67%) than black Piedra (0.27%).

The ecological study reveals that both the organisms are abundant in low level stagnant water ponds which are found in large number in the south region of Calcutta. All the piedra affected patients are from those regions and almost all of them have reported to be habituated to take bath in those ponds.

The disease is curable by removing the infected hairs or by apply 3% benzoic acid and salicylic acid combination with 3% sulphur ointment application once a day for four to six weeks in severe cases.

Some epidemiological factors notably observed in the study are presented below :—

It has been found that the males (72.78%) are more susceptible to superficial mycosis than the female (27.22%). But in case of tinea nigra the females are more prone to infection than the males.

The age group of 11-20 years are more prone to this type of infection (86.37%) followed by the age group of 21—above (9.31%) and 1-10 years (4.32%).

Among the occupational factors, school children, teachers and clerks are more

prone ( 49.84% ) which is followed by house wives ( 21.41% ), industrial workers ( 14.30% ), jobless persons ( 9.58% ), others ( 3.11% ) and farmers ( 1.76% ). The second place occupied by house-wives is due to their proneness to tinea nigra specifically.

The study also reveals that all the superficial mycoses are more prevalent in the month of July which is followed by June and August every year. This is due to the high temperature and humidity prevailing during this period.

**Table 1.** Incidence of different causal organisms of superficial mycoses among the population in some areas of Calcutta Metropolis

Year	Pityriasis versicolor		Tinea nigra	Piedra		TOTAL
	Malassezia furfur	Melassezia ovalis	Exophiala werneckii	Tricho sporon beigelii	Piedraia hortae	
1980	281	116	18	2	2	419
1981	301	130	20	3	1	455
1982	246	138	19	2	1	406
1983	276	161	26	4	1	468
1984	285	156	29	4	1	475
Total	1389	701	112	15	6	2223
%	62.48	31.53	5.05	0.67	0.27	

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#### REFERENCES

- Amma, S.N. (1978). Clinical and epidemiological studies on tinea versicolor in Kerala. *Ind. J. Dermatol. Venerol. Leprol.* 44: 345-357.
- Basumallick, K.C., Chatterjee, B.D., Banerjee, P.L. and Dutta, M. (1967). An epidemiological study of systemic cryptococcosis in Calcutta area. *Ind J. Med. Res.* 55: 529-534.
- Census (1981). *Census, Govt of India, 1981.*
- Mohapatra, L.N., (1985). Medical Mycology in India, *Kavaka* 13(1): 15-20.
- Rajindran, C. (1987). Mycoses-A growing Concern, *Kavaka* 15(1.2): 1-4.

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