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Dermatophytosis in School Children

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Summary

Somorin, A. O., Nwabudike, I., Adetosoye A. I. and Hunponu-Wusu, O. O. (1977). *Nigerian Jonrnal of Paediatrics*, 4 (2), 39. **Dermatophytosis in School Children.** In a study of dermatophytosis in two primary schools in a sub-urban district of Lagos, 63 (1.8 per cent) out of a total of 3540 pupils were found to be suffering from various types of superficial mycotic skin infections. Six different strains of dermatophytes were isolated: *T. rubrum*, *T. metagrophytes*, *M. audiuni*, *M. canis*, *M. gypsum*, and *E. floccosum*. Tinea infection of the scalp was the commonest dermatophytosis encountered, while Tinea infection of the feet was rare.

PERIODIC medical inspection of school children is an essential part of the Lagos School Health Service which offers limited curative and preventive facilities in addition to supervision of environmental health in schools. These medical inspections have revealed a high morbidity from skin diseases (Williams, 1970) including fungal infections (Galis and Aromasodu 1970; Adebiyi, Mosuro and Doherty, 1972).

Superficial fungal infections of the skin have been studied in various parts of Africa. Verhagen, Maniar, and Vanbreuseghem (1969) described dermatophytosis among Kenyans, while Findlay (1974) reported on fungal diseases in the Transvaal, South Africa. In Nigeria, Clarke and Walker (1953) reported on fungal diseases in Lagos, while Okoro (1973) described these conditions in the Imo and Anambra States. Clarke (1959) observed that even though the moist climate of the tropical environment favoured fungal growth, the incidence of mycotic superficial infections was comparable to that in temperate climate.

A rising incidence of dermatophytosis has been noticed among school children attending the Specialist Clinics of the Lagos University Teaching Hospital, and the lesions have been observed to have predilection for certain areas of the body (Somorin, 1976). A field survey was therefore carried out to investigate the clinical observation of rising incidence of dermatophytosis in school children and to establish the different species of fungi prevalent in such infected children in a suburban area of Lagos.

Subjects and Methods

Subjects

The study was carried out among 5 to 10-year old children in two schools located about 200 and 300 meters from each other, and 100 meters from the base medical centre in the Yaba district

of Lagos. A total of 3,540 children in both schools were clinically examined, and mycological studies were carried out on those who had fungal skin diseases.

Laboratory Studies

Specimens of infected skin, hair, and nail scrapings were collected in appropriate containers and inoculated immediately into sabouraud glucose (2 per cent) Agar and cornmeal Agar at room temperature while some were used for routine microscopical and mycological studies. Lactophenol cotton blue was added to the potassium hydroxide preparation of nail and scalp scrapings for the microscopic studies while actidione, chloramphenicol and penicillin were incorporated into both agar plates. Wood lamp fluorescence study was also carried out on the clinically infected patients.

Results

Of the 3,540 school children examined, 63 (1.8 per cent) were found to be infected with dermatophytes. Thirty-eight (60.3 per cent) of these were boys while 25 (30.7 per cent) were girls.

The Table summarizes the topographical distribution of the superficial fungal infections. It can be seen that while 54 (85.7 per cent) of the children had lesions on the scalp, only 9 (14.3 per cent) had lesions at other sites. Mild symptoms occurred in only one of the children. The following dermatophytes were isolated from 56 of the 63 children: *Trichophyton rubrum*, 21 (33.3 per cent), *Microsporum audouni*, 12 (20.9 per cent), *Trichophyton metagrophytes*, 4 (11.7 per cent), *Microsporum canis*, 9 (12.5 per cent), *Epidermophyton floccosum*, 5 (8.3 per cent) and *Microsporum gypsum*, 5 (8.3 per cent). Specimens from 22 children (34.9 per cent) were contaminated by Aspergillus species.

TABLE

Topographic Distribution of Dermatophytosis in 63 School Children

Site	*No. of cases*	*Percent of total*
Scalp	54	85.7
Face	2	3.2
Leg	3	4.7
Upper limb	1	1.6
Trunk	2	3.2
Finger (Nail)	1	1.6
Total	63	100.0

Discussion

Infective skin conditions are of common occurrence in tropical environment (Clarke, 1962; Ive, 1966; Okoro, 1973; Somorin, Adetosoye and Nwabudike 1976), while Shrank and Harmman(1966) have shown that dermatoses were even commoner in village than in city dwellers.

The mild symptoms which occurred in only one of the affected children may be due to unexplained factors including the poorly-understood immunologically based host-parasite relationship of dermatophytosis (Jones, Rheinhardt, and Rinaldi, 1974; Goldsmith and Heller, 1954; Somorin, Adetosoye and Nwabudike, 1976). The apparent poverty of symptoms in

98 per cent of the children may be due to low virulence of these pathogens, coupled with the defence of the host mediated by the stratum corneum. The antimycotic property of serum might also contribute to the pathogenesis of the host-parasite bond of these opportunistic infections (Aronson, Kletter, and Kalva, 1973; Louria, 1973; Olaru, 1973; Bohme, 1973).

The present survey has demonstrated that the scalp is the commonest site (85.7 per cent in the series) of superficial fungal infections in children. The high incidence of scalp fungal dermatitis in children may be due to the low lipophilic excretions of the skin of the scalp (Gordon, 1951). It should be noted that in the present series the commonest fungus species causing scalp dermatophytosis was *Microsporum audiuni*, followed by *M. canis* and *M. gypsum*; these findings are in agreement with those of previous studies in Nigeria (Hare, 1952). It is noteworthy that none of the 54 patients with scalp infections demonstrated other culturable fungi such as *T. schoenlein, T. violaceum* and *T. ferrugineum* as observed in other African countries (Vanbreuseghem, 1958; Findlay, 1974), as well as in sub-tropical environments (Desai, 1959; Hajini et. al., 1970).

The isolation of *Trichophyton rubrum* from 33.3 per cent of children with dermatosis in this study is significantly higher than the incidence of 0.5–1 per cent among London children (Calnan, 1958) and those in the Transvaal (Findlay, 1974). *Tinea cruris* (which had been classified as a type of tinea corporis) was due mainly to *Epidermophyton floccosum* in 3.2 per cent of victims. The inability of this fungus to invade hairy skin may be due to high sebum content of the scalp. Trichophytide allergic reactions due to long standing *T. corporis* infection as noted in a previous study (Somorin, Adetosoye, and Nwabudike, 1976), were not observed in the present study.

Dermatophytoses are mild communicable diseases with no mortality except in few cases of severe fulminating *T. pedis* infection (Beare, Gerthes and Mackenzie, 1972). They however, present with considerable morbidity and thus contribute to the major health problems in Nigeria. A knowledge of the geographical distribution of these dermatoses in a tropical environment will facilitate their control; hence, studies should also be carried out in villages with rural circumstances for an overall assessment of the prevalence of the disease.

Direct contact is probably the mechanism of spread in our patients, although, Ive (1966) described a carrier stage of scalp fungal infections in Nigeria. Other sources of transmission cannot yet be excluded since *M. gypsum* which was found in 8.3 per cent of the children, had been claimed to have a geophilic transmission (Ajello and Clarke 1953).

Although superficial fungal infections of the skin among school children in Lagos is being progressively controlled by the improving school health services (Galis and Aromasodu, 1970), there is still a great need for extension of the present field community dermatology to ascertain the influence of varying environmental factors in the transmission of these diseases. Improvement of laboratory diagnostic criteria coupled with provision of organised mycological services will also sharpen academic interest in the challenge of community paediatric dermatology.

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