

## DERMATOPHYTOSES IN CHILDREN : STUDY OF 137 CASES

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### SUMMARY

Dermatophytoses are common fungal infections caused by dermatophytes but there are few data about this condition in the childhood. 137 children below the age of 12 and clinically diagnosed as *tineas* were investigated prospectively at Instituto de Puericultura e Pediatria, Rio de Janeiro, from 1994 to 1999. Hair, skin/nails scraping and pus swabs were collected from lesions and processed for fungus. Male children from 2 to 12 years were mostly affected; *tinea capitis* (78 cases) mainly caused by *Microsporum canis* (46 cases) was the most common clinical form. *Tinea corporis* (43 cases) mainly caused by *Trichophyton rubrum* (17 cases) accounted for the second most frequent clinical form. *Tinea cruris* (10 cases) with *Trichophyton rubrum* (5 cases) as the most common etiologic agent accounted for the third most frequent clinical form. *Tinea pedis* and *tinea unguium* were much less frequent (3 cases each). *Trichophyton rubrum* was the most common etiologic agent isolated in these cases (3 cases).

**KEYWORDS** : *Tinea*; Dermatophytosis; Child

### INTRODUCTION

Dermatophyte infections also referred to as *tinea* infections are limited to the superficial layers of the epidermis particularly the *stratum corneum* and the high keratin – concentration containing appendage structures, the hair and nails. Dermatophytes are classified in three genera *Epidermophyton*, *Trichophyton* and *Microsporum*. They are also identified based on their origin. Anthropophilic dermatophytes (man), zoophilic dermatophytes (animals) and geophilic dermatophytes (soil). While the dermatophytoses occur at any age, some are particularly prevalent in children. *Tinea capitis* is the commonest fungal infection below the age of 12 and boys are more affected than girls<sup>8</sup>. *Tinea cruris* is believed to be restricted to males, teenagers and young adults<sup>8</sup>. *Tinea pedis* is less common in children than in adults and rare before four years<sup>2,11</sup>. Dermatophyte rarely infect neonates aged infants. The incubation period for *Trichophyton rubrum* can be as short as two days in neonates<sup>7</sup>. *Tinea faciei* is also rare<sup>12,13</sup>.

Because, there have been few published reports on dermatophytoses in children the present study was aimed at finding the frequency and causal agents in Rio de Janeiro<sup>3,4,5,9,10,14,15,17</sup>.

### MATERIAL AND METHODS

137 children below the age of 12 and clinically diagnosed as *tineas* were observed prospectively at the outpatient Dermatologic Unit of Instituto de Puericultura e Pediatria, Rio de Janeiro, from 1994 to 1999.

Clinical specimens were obtained by scraping suspected lesions (skin, nails), by epilating suspected hairs and pus swab. The material was examined with 10 p. 100 potassium hydroxide and cultured on Sabouraud's dextrose agar medium containing chloramphenicol actidione. The cultures were observed daily for three weeks before being considered negative.

### RESULTS

There was a greater proportion of cases in the age range from 2 to 12 years and predominantly of the male sex (Table 1). Scalp dermatophytosis was the most common clinical form (78 cases) with *Microsporum canis* as the predominant agent (46 cases). *Tinea corporis* (43 cases) followed

**Table 1**  
Distribution of cases according to age and sex

Age	Sex		Total
	Male Number	Female Number	
0 – 11 months	3	-	3
12 – 23 months	12	11	23
2 – 12 years	58	53	111
Total	73	64	137

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*tinea capitis* and *Trichophyton rubrum* was isolated in 14 cases (Table 2). *Tinea cruris* accounted for 10 cases and *Trichophyton rubrum* was isolated in 5 cases. *Tinea pedis* and *tinea unguium* accounted for 3 cases each. *Trichophyton rubrum* was the prevalent agent in these cases (3 cases) (Table 2) (Figs. 1, 2, 3).

## DISCUSSION

In 1984 the prevalence of dermatoses at the Dermatology Unit (IPPMG)<sup>16</sup> revealed impetigo (92/11.7%), scabies (68/8.6%), *verrucae* (51/6.5%), *molluscum contagiosum* (42/5.3%), dermatophytoses (29/

**Table 2**  
Distribution of cases according to clinical form and mycologic examination

Clinical form	Direct microscopy and culture						Direct microscopy	Total
	Tm	Tr	Tt	Mc	Ef	Mg		
<i>Tinea capitis</i>	2	1	19	46	-	-	10	78
<i>Tinea corporis</i>	2	17	5	7	1	1	10	43
<i>Tinea cruris</i>	-	5	-	-	-	-	5	10
<i>Tinea pedis</i>	-	-	-	-	1	-	2	3
<i>Tinea unguium</i>	-	3	-	-	-	-	-	3
Total	4	26	24	53	2	1	27	137

Tm – *T. mentagrophytes*; Tr – *T. rubrum*; Tt – *T. tonsurans*; Mc – *M. canis*; Ef – *E. floccosum*; Mg – *M. gypseum*



**Fig. 1** - *Tinea capitis* by *Trichophyton tonsurans*



**Fig. 2** - *Tinea corporis* by *Trichophyton rubrum*



**Fig. 3** - *Tinea corporis* by *Trichophyton tonsurans*



**Fig. 4** - *Tinea corporis* by *Microsporium canis*

3.7%), pityriasis versicolor (23/2.9%), ectima (16/2%) and candidiasis (15/1.9%), as the most frequent infections and parasitic disorders.

A decade later (1994–1999), the observed 137 cases of dermatophytoses (approximately 22.8 cases per year) show a very close proportion.

*Tinea capitis* may be transmitted from animals or other children. The most frequent cause of zoophilic scalp infection is *Microsporum canis* from cats or dogs. In *M. canis* infection hairs break 2 – 3 mm above the scalp. In some children scales adhere to an erythematous base resembling severe dandruff. *Kerion* is more common seen with zoophilic species but can occur with those of human origin<sup>3,5,9,10,14</sup>. In our series boys were most frequently affected and there were two cases of *Kerion* caused by *Microsporum canis* and *Trichophyton tonsurans*, each one.

Other sources of *tinea capitis* include *Trichophyton mentagrophytes* (rodents), observed in two cases in our series. Anthropophilic scalp ringworm is caused mainly by *Trichophyton tonsurans*. The main clinical features were diffuse or circumscribed hair loss scaling; itching is variable but many children appeared relatively asymptomatic. The infected hairs break at scalp level in anthropophilic infections.

*Tinea corporis* may be associated with scalp infection or occur in isolation. In children the common cause is *Trichophyton rubrum*. Nevertheless, *M. canis* was prevalent in other series<sup>10</sup>.

We did not observe association of the clinical forms. It is important to examine children with *tinea corporis* for evidence of infection elsewhere. As stated by others *tinea pedis*, *tinea unguium* and *tinea cruris* are uncommon in childhood<sup>2,11</sup> except in one Brazilian series<sup>10</sup> where it is reported as the third most frequent clinical form. *Tinea cruris* is mainly seen in male teenagers and young adults. *Tinea unguium* in children is often accompanied by *tinea pedis* and a family story of *tinea unguium*<sup>6</sup>. Soil is the source of *Microsporum gypseum*; human infections caused by direct contact with soil containing this fungus are possible<sup>1</sup>. The lesions are usually inflammatory, impetiginous as in the described case.

## RESUMO

### Dermatofitoses na criança: estudo de 137 casos

As dermatofitoses são infecções fúngicas freqüentes causadas por dermatófitos mas há poucos relatos sobre esta condição na infância. Cento e trinta e sete crianças abaixo de 12 anos e clinicamente diagnosticadas como tinhas, foram investigadas prospectivamente no Instituto de Puericultura e Pediatria, Rio de Janeiro, no período de 1994 a 1999. Foram submetidas ao exame micológico de raspado de pele e unhas, pelos e pus das lesões. Meninos na faixa etária de 2 a 12 anos foram mais afetados; *tinea capitis* (78 casos) por *Microsporum canis* (46 casos) foi a forma clínica mais freqüente. *Tinea corporis* (43 casos) por *Trichophyton rubrum* (17 casos) foi a segunda forma clínica mais freqüente. *Tinea cruris* (10 casos) por *Trichophyton rubrum* (5 casos) como o agente mais comum foi a terceira forma clínica mais freqüente. Nas *Tinea pedis* e *tinea unguium* (3 casos cada), o *Trichophyton rubrum* foi o agente mais isolado (3 casos).

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