Clinical aspects of patients with pityriasis versicolor seen at a referral center for tropical dermatology in Manaus, Amazonas, Brazil

Aspectos clínicos de pacientes com pitiríase versicolor atendidos em um centro de referência em Dermatologia Tropical na cidade de Manaus (AM), Brasil*

Patrícia Motta de Morais [1]
Maria da Graça Souza Cunha [2]
Maria Zeli Moreira Frota [3]

Abstract: BACKGROUND: Pityriasis versicolor (tinea versicolor) is a chronic superficial mycosis caused by yeasts of the *Malassezia spp*. genus commensal of the keratinized layers of the skin. Under conditions not yet understood, it becomes pathogenic determining the clinical manifestations of the disease. It is a recurrent skin condition and persistent hypopigmentation may remain after treatment, causing social problems to those affected.
OBJECTIVE: To describe the clinical and epidemiological features of patients diagnosed with tinea versicolor treated at a referral center for dermatology (Alfredo da Matta Foundation).
METHODS: Case-studies in which cutaneous manifestations and epidemiological characteristics of patients diagnosed with tinea versicolor treated at Alfredo da Matta Foundation were detailed.
RESULTS: One hundred and sixteen patients were included in the study from January to August 2008. Most subjects were male, of mixed ethnicity and young age. Most were students who were predisposed to the development of macules. The majority had extensive injuries and past history of the disease.
CONCLUSION: The results revealed a high proportion of individuals with extensive clinical manifestations and duration of the disease.
Keywords: Epidemiology, Skin manifestations, Tinea versicolor

Resumo: FUNDAMENTOS: A pitiríase versicolor (tinha versicolor) é uma micose superficial crônica, causada por leveduras do gênero Malassezia spp. comensais das camadas queratinizadas da pele e que, sob determinadas condições ainda não esclarecidas, se torna patogênica, determinando as manifestações clínicas da doença. É uma dermatose recidivante e, mesmo após tratamento, pode deixar hipopigmentação persistente, causando problemas sociais aos indivíduos acometidos.
OBJETIVO: Descrever as características clínicas e epidemiológicas de pacientes com diagnóstico de tinha versicolor atendidos em uma unidade de referência em Dermatologia (Fundação Alfredo da Matta).
MÉTODOS: Estudo de série de casos em que foram detalhadas as manifestações cutâneas e as características epidemiológicas de pacientes atendidos na Fundação Alfredo da Matta com diagnóstico de tinha versicolor.
RESULTADOS: Cento e dezesseis pacientes foram incluídos no estudo no período de janeiro a agosto de 2008. A maioria dos indivíduos é do sexo masculino, de cor parda, da faixa etária jovem e formada por estudantes, que apresentavam fatores predisponentes ao surgimento das manchas. Também a maioria apresentava lesões extensas e história passada da doença.
CONCLUSÃO: O estudo mostrou alta proporção de indivíduos com quadros extensos e de longa duração da doença.
Palavras-chave: Epidemiologia, Manifestações cutâneas, Tinha versicolor

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[1] Specialization in Dermatology from the Brazilian Society of Dermatology; MSc student in Tropical Pathology, Federal University of Amazonas (UFAM); Dermatologist, Alfredo da Matta Foundation (FUAM) - Manaus (AM), Brazil.
[2] PhD in Medicine, Federal University of Ribeirao Preto (UFERP); Advisor for the Master's Program in Tropical Pathology, Federal University of Amazonas (UFAM); Dermatologist, Alfredo da Matta Foundation (FUAM) - Manaus (AM), Brazil.
[3] MSc in Biological Sciences (Microbiology), University of São Paulo (USP); Specialization in Biology and Physiology of Microorganisms, with concentration on Mycology; Assistant Professor, Federal University of Amazonas (UFAM) - Manaus (AM), Brazil.

INTRODUCTION

Pityriasis versicolor is a superficial chronic fungal infection caused by yeasts of the *Malassezia spp.* genus. Today 13 species of the genus are known, commensal on human skin and warm-blooded animals such as pigs, monkeys, goats, horses, dogs, cats and others. They may cause dermatosis and systemic infections in humans as well as skin lesions and otitis externa in animals. [1]

The lesions of pityriasis versicolor were first described by Willan (1801), but the fungal nature of the organism was recognized in 1846 by Eichstedt. [2] For more than 100 years, other classifications were assigned to the genus and species. However, the terminology *"Malassezia* yeasts" was given taxonomic priority for lipophilic fungi that are part of the normal flora of the skin.

Pityriasis versicolor is a common dermatosis in tropical regions, where high humidity and temperature increase its prevalence. It can affect 40% to 50% of individuals from certain geographic regions and ethnic groups. [3] is a common dermatosis in our environment, especially in our region, where the climate and humidity throughout most of the year increase its frequency.

It is usually asymptomatic, but recurrences are frequent. Although not a disease that threatens function or life and, in most cases, with a good response to treatment, the clinical aspect of lesions and the residual hypochromia or achromia that the disease may cause leads to great social stigma. The pathogenesis of the lesions and factors that account for the disruption of the balance between *Malassezia* yeasts and the host are still uncertain.

It was previously believed that *Malassezia furfur* was the only agent of pityriasis versicolor. Today 13 species of *Malassezia* are known, especially now with the evolution of new technologies such as molecular biology and studies of identification of this yeast, which are acquiring greater importance. [4]

In addition to pityriasis versicolor, other skin diseases may be associated with this yeast, such as seborrheic dermatitis, folliculitis by *Malassezia*, psoriasis, atopic dermatitis, confluent and reticulated papillomatosis of Gougerout and Carteaud, onychomycosis, otitis and neonatal pustulosis. [5]

The disease becomes chronic without treatment. It is a relapsing disease that tends to recur in about 60% of the cases within a year after treatment and in 80% after two years. [6.7]

MATERIAL AND METHODS

A descriptive study, in which the clinical and epidemiological characteristics of patients diagnosed with pityriasis versicolor treated at Alfredo da Matta Foundation (Manaus) were detailed, was conducted. The study protocol and the term of informed consent were approved by the Ethics and Research Committee of Alfredo da Matta Foundation.

From January to August 2008, 116 individuals with clinical diagnosis of pityriasis versicolor and positive direct mycological examination were evaluated. A questionnaire was administered to the patients participating in the project and their clinical and epidemiological profile was evaluated. Some patients spontaneously requested to participate and some were referred by dermatologists from other health units.

Those selected met the following criteria: suggestive clinical manifestations and positive direct mycological examination (presence of blastospores grouped as 'bunch of grapes' and / or short and thick pseudo-hyphae; blastospores grouped as' bunch of grapes' and isolated and budding blastospores); those who agreed to participate in the study by signing an informed consent. Individuals who had used topical and oral antifungal drugs in the last 30 days of treatment, patients using topical medication on the day of collection and pregnant women were excluded from the study.

The epidemiological data and the profile of the study patients were acquired in terms of gender, age, race, occupation and clinical features. The patients answered questions regarding their personal habits and lifestyle, such as use of oils in the skin, sunscreen, excessive sweating, use of occlusive clothing, family history, characteristics of the workplace, practice of sports, personal hygiene , past history of the disease, among others.

With regard to clinical data, the type of lesions in terms of color (hypochromic, hyperchromic, erythematous or associated), form (nummular, circinate, papular, follicular, and confluent), and symptomatology were evaluated. The degree of involvement was divided into: patients with pityriasis versicolor with involvement of a single site (one of the following: head, neck, trunk, abdomen, lumbar region, upper or lower limbs); patients with pityriasis versicolor with partial involvement of the body (two to three regions involved) and patients with pityriasis versicolor with extensive involvement (four or more regions involved).

A descriptive analysis with presentation of data in frequency tables was performed.

RESULTS

Table 1 shows the distribution of pityriasis versicolor by sex, age, race and skin type in the individuals studied from January to August 2008.

Table 1: Pityriasis versicolor in relation to gender, age, race and skin type in individuals studied from January to August 2008

Variables (n = 116)	FI	%
Gender		
Male	60	51,7
Female	56	48,3
Age interval (years)		
0-|10	4	3,4
10-|20	39	33,6
20-|30	21	18,1
30-|40	21	18,1
40-|50	15	12,9
>50	16	13,8
Mean ± SD *	30,9 ± 17,3	
Median	27	
IQ *	23,5	
Amplitude	6-93	
Race		
White	39	33,6
Brown	77	66,4
Skin Type		
Normal	46	39,7
Dry	42	36,2
Oily	28	24,1

* FI = frequency of individuals; SD = standard deviation; IQ = interquartile range, p <0.05% (Shapiro-Wilk test)

Of the 116 cases studied, 51.7% (60/116) were male patients and females accounted for 48.3% (56/116) of the subjects in the study. The distribution of pityriasis versicolor by age during the period of the study showed that the most affected age group was 10-20 years with 33.6% (39/116) of the patients affected. Next, in equal frequency, we find the age ranges of 20 to 30 and 30 to 40 years with 18.1% each (21/116). The other age groups were less frequent. The mean age was 30.9 ± 17.3. In relation to race, 66.4% (77/116) were brown and 33.6% (39/116) were white. Normal skin was the most frequent in the study, found in 39.7% (46/116) of the patients; dry skin was observed in 36.2% (42/116) and oily skin, in 24% (28/116).

With regard to occupation, students predominated in 37.1% (43/116), which is consistent with the prevalent age group in the study (11-20 years). Liberal professionals were second with 16.4% (19/116) and home professionals were third in frequency - 12.9% (15/116). The other categories were less common (Table 2).

Table 3 shows the main habits, activities, use of medication, and individual characteristics of the 116 patients diagnosed with pityriasis versicolor. Factors possibly associated with the onset of the disease were found in the following frequencies: use of cream or oil on the hair in 63.8% (74/116) of the cases; sun exposure in 53.4% (62/116); excessive sweating in 49.1% (57/116); cases of "white skin patches" in the family in 44.8% (52/116); practice of sports was reported by 39.7% (46/116); 34.5% (40/116) worked outdoors; 29.3% (34/116) applied oil or moisturizers to the skin and 23.3% (27/116) wore occlusive clothing.

Past history of pityriasis versicolor was reported by 52.6% (61/116) of the subjects, while 47.4% (55/116) reported the first episode of the disease during the interview. Of the 61 individuals who had presented the clinical manifestations of pityriasis versicolor in the past, 50.8% (31/61) had a history for more than 10 years; 31.7% (19/61) from 2 to 5 years and 18.0% (11/61) from 5 to 10 years. Regarding the number of relapses, 68.9% (42/61) had a recurrence of the disease annually; 26.2% (16/61) two to three recurrences and 4.9% (3 / 61) four or more. Patients who had been previously treated for the disease accounted for 57.8% (67/116) of the sample (Table 4).

Asymptomatic individuals corresponded to 50.9% (59/116) of the cases. Pruritus was observed in 48.3% (56/116). Regarding color, hypochromic lesions corresponded to 62.9% (73/116); 29.3% (34/116) had more than one color; 5.2% (6 / 116) were exclusively hyperchromic lesions and 2.6% (3 /116) were erythematous. Concerning the clinical form, 91.4% (106/116) had nummular lesions, 48.3% (56/116) had confluent lesions, 24.1% (28/116), follicular lesions and 0.9% (1 / 116), circinate lesion. Nobody presented papular lesions (Table 5).

Of those affected, 52.6% (61/116) had four or more body regions involved, 37.1% (43/116) had two to three regions involved and 10.3% (12/116), only one site. The average number of affected areas was

Table 2: Pityriasis versicolor in relation to occupation in patients studied from January to August 2008

Occupation	FI	%
Liberal Professional	19	16.4
Industrialist	4	3.4
Student	43	37.1
Home Professional	15	12.9
Government Worker	9	7.8
Professor	1	0.9
Unemployed	4	3.4
Retired	5	4.3
Others	16	13.8
Total	116	100,0

Table 3: Pityriasis versicolor in relation to the habits, activities and characteristics of the individuals studied from January to August 2008

Questionnaire (n = 116)	FI	%
Showers after sweating	84	72.4
Uses oil or cream in the hair	74	63.8
Is exposed to the sun everyday	62	53.4
Sweats excessively	57	49.1
Cases of white patches in the family	52	44.8
Practices exercises	46	39.7
Works outdoor	40	34.5
Showers after exercising	36	31.0
Uses oil or moisturizers in the skin	34	29.3
Wears occlusive clothing	27	23.3
Drinks alcohol	19	16.4
Bathes in river	16	13.8
Smokes	14	12.1
Uses sunscreen	12	10.3
Uses transportation with air conditioning	11	9.5
Menopause	9	7.8
Uses swimming pool	7	6.0
Is stressed or anxious	72	62.1
Others	8	6.9

Table 4: Pityriasis versicolor in relation to the first episode of the disease, past history, number of relapses per year and previous treatment in the individuals studied from January to August 2008

Variables (n = 116)	FI	%
First episode		
Yes	55	47,4
No	61	52,6
Past history of disease (years) n = 61		
2 |-| 5	19	31,7
5 -| 10	11	18,0
> 10	31	50,8
Number of relapses per year (n = 61)		
1	42	68,9
2 a 3	16	26,2
4 or more	3	4,9
Previous treatmen (n = 116)		
Yes	67	57,8
No	49	42,2

3.73 ± 1.74. As for location, 80.2% (93/116) had lesions on the trunk; 74.1% (86/116) on the upper limbs; 51.7% (60/116) on the abdomen and lower limbs; 44% (51 / 116) on the lumbar region; 38.8% (45/116) on the neck, and 32.8% (38/116) on the head (Table 6).

DISCUSSION

Pityriasis versicolor is a chronic superficial fungal infection caused by yeasts of the *Malassezia spp*. genus. It is a frequent dermatosis in tropical regions, where high humidity and temperature increase its prevalence. [3]

Yeast colonization begins at puberty, but the agent has been isolated in children. In the elderly the amount of yeasts decreases, perhaps due to a reduction in skin lipids. [6] Prevalence at younger ages seems to be more common in tropical regions, where the climate is hot and humid. [3]

Lesions are round or oval macules, papules or isolated plaques that may coalesce and cover large areas of the body, separated by raised areas of normal skin. They show various colors, from hypochromic macules to erythematous or hyperchromic lesions. According to Lacaz, patches of pityriasis versicolor have a brown or yellowish color and, if scraped with a fingernail, furfuraceous scaling is observed (Besnier's sign "or" scratch sign). Zireli's sign corresponds to the scaling observed when the skin is stretched. [6,9]

The factors involved in the transformation of the yeast in its pathogenic mycelial form are uncertain. Endogenous and exogenous factors have been implicated as: genetic inheritance, congenital or acquired immunosuppression, malnutrition, use of oral contraceptives and corticosteroids, hyperhidrosis, endocrine disorders, elevated temperature, humidity, occlusive clothing, use of oil or moisturizers on the skin and even the chemical composition of sebum. [9] The presence of these factors may explain the frequent relapses and chronicity of the disease after treatment. [7]

The diagnosis is primarily based on typical clinical manifestations in combination with bright yellow fluorescence under Wood's light and, especially, direct mycological examination. The methods of lesion scraping or adhesive tape may be used for material collection and observation under an optical microscope. Potassium hydroxide (10 to 20%) with methylene blue 1% or Parker blue-black ink is used for better visualization of fungal structures. On direct examination the presence of yeast cells and pseudohyphae is easily identified. Vitiligo and pityriasis alba should be considered in the differential diagnosis. [7]

The treatment of pityriasis versicolor is mostly effective. The medication can be topical, oral or combined. Topical treatment is indicated in virtually all cases as a single or combined therapy. It includes keratolytic and azolic antifungal agents such as

Table 5: Pityriasis versicolor in relation to symptoms, color and clinical form of lesions in subjects studied from January to August 2008

Variables (n = 116)	FI	%
Symptoms		
Absent	59	50,9
Pruritus	56	48,3
Others	1	0,9
Color of the lesion		
Hypochromic	73	62.9
Hyperchromic	6	5.2
Erythematous	3	2.6
Associated	34	29.3
Clinical form		
Nummular	106	91.4
Confluent	56	48.3
Follicular	28	24.1
Circinate	1	0.9

Table 6: Pityriasis versicolor in relation to number and regions affected by the disease in patients studied from January to August 2008

Number of regions involved (n = 116)	FI	%
1	12	10,3
2 a 3	43	37,1
4 or more	61	52,6
Mean ± SD *	3,73 ± 1,74	
Amplitude	1-7	
Regions affected		
Head	38	32.8
Neck	45	38.8
Trunk	93	80.2
Abdomen	60	51.7
Lumbar region	51	44
Upper limbs	86	74.1
Lower limbs	60	51.7

* Standard Deviation p> 0.05% (Shapiro-Wilk Test)

selenium sulfide, salicylic acid associated with sulfur, propylene glycol in water, zinc pyrithione, ciclopiroxolamine, bifonazole, clotrimazole, fluconazole, ketoconazole, miconazole, econazole and terbinafine. Systemic therapy is primarily indicated to treat extensive lesions resistant to topical treatment and in relapse. Oral treatment is done with azoles and includes ketoconazole, itraconazole or fluconazole. Ketoconazole and itraconazole can be used for prophylaxis of recurrences. [9]

Our study showed higher frequency of the disease in male patients. Several works in the literature studied pityriasis versicolor in relation to gender. Many studies show higher prevalence in male subjects, [10-13] while in other studies female patients were more affected. Apparently, there is no predominance between genders.[14,15]

We observed a higher incidence of the disease at a younger age, which is in agreement with most studies published. This may be explained by the androgen stimulation seen in adolescents and young adults, resulting in a greater development of the sebaceous glands with more secretion of sebum in the skin, which favors the growth of *Malassezia* yeasts. [10.13] The age extremes are the least affected by the disease due to decreased sebum activity. [6] Most cases of the disease occur in young adults and affect the trunk and upper limbs, but in warm climates involvement seems to be more extensive and individuals of lower age than those in temperate countries are affected. [10.16]

Studies in relation to race show variation in prevalence. In Brazil, a study conducted by Belém, in the state of Paraiba, found a greater frequency of the disease in Caucasians (46.2%), followed by browns (33%) and blacks (20.8%). Framil [15] (2006) found a higher incidence of this dermatosis in Caucasians (77.4%), and justifies this finding due to the higher prevalence of this race in the population treated at the Dermatologic Clinic of Santa Casa de São Paulo.Our study population was constituted mainly by browns (mulattos), which represent the most prevalent race in our region.

With regard to the type of skin, we found a higher frequency of pityriasis versicolor in normal skin in 39.7% of the subjects, but dry skin was reported by 36.2%. Some studies have reported a possible association between the chemical composition of sebum and pityriasis versicolor. As causal yeasts are lipid-dependent, it is believed that the oiliness of skin can play an important role in the induction of lesions. [9] These data are not in agreement with our findings. The minority of the subjects studied referred oily skin. The difficulty in finding a standard classification for skin type due to the lack of specific clinical criteria may may yield wrong results.

Very few studies have analyzed pityriasis versicolor in relation to occupation. Belém *et al*. evaluated a sample of 515 patients from Paraíba and obtained results similar to those found in our sample, with students representing the majority of the sample (38.5%), followed by home professionals (26.4%) and liberal professionals (12%). [15]

As for the questionnaire, we observed a few common habits of the study population. Sun

exposure was an associated factor with a high frequency in the study. It may make the scaly lesions of this mycosis more apparent, especially when they are hypochromic. [9] Excessive sweating is also a predisposing factor to the development of pityriasis versicolor according to some studies. [9] In addition, young patients have higher androgenic activity with higher sebum secretion. This fact associated with the regular practice of exercises stimulates sweating, and the high temperature in our region throughout the year increases the chance of disease recurrence. Few studies associate genetic factor and pityriasis versicolor. Hafez *et al*. conducted a prospective study with 300 pityriasis versicolor patients and found a positive family history in 39%, especially in first-degree relatives. [17] Terragni *et al*., for a period of 10 years, found a positive family history in 43.8% of the children participating in the study. [18] In 2008, He identified a positive family history in 21.1% of the subjects with pityriasis versicolor, mainly in first-degree relatives. These authors believe that there is a polygenetic and multifactorial inheritance and that in these cases the disease occurs earlier, has long duration, and recurrences are more frequent. [13] Other predisposing factors were use of oil or moisturizers in the skin and the use of occlusive clothing. These habits may predispose the individual to the development of lesions. [4,9]

Individuals with a history of pityriasis versicolor for over 10 years accounted for half of the patients seen in our study, and this shows the chronic and relapsing nature of this pathology. [7,8,9,19] Ingordo, studying a group of Italian sailors, found a significant association of past history of the disease in individuals with pityriasis versicolor, backing the hypothesis that constitutional factors may be important in the pathogenesis of this dermatosis. [20]

In relation to symptoms, the frequency of asymptomatic individuals and those complaining of pruritus was similar. This finding is consistent with most studies that define the disease as asymptomatic or oligosymptomatic. Pruritus, when present, is mild or moderate, as observed in our study and reported by other authors. [7,9]

Our study showed a higher frequency of hypochromic lesions. Prevalence of hypochromic lesions was also reported by Chetty in 1979. [21] Thoma described a variant called "Alba" for pityriasis versicolor. [22] An erythematous macular variant (pityriasis versicolor *rubra)* and another with black lesions (pityriasis versicolor *nigra)* were described, as well as their transformation from one form to the other or even to the hypochromic or alba variant. [23] DiFonzo and Faggi mention the association of two colors in the same individual. The explanation, according to the authors, could be the age of lesions, the host's inflammatory response, exposure to sunlight or the type of pigmentation of the patient's skin. [24] The depigmentation observed in lesions of pityriasis versicolor could be due to a decrease in the activity of tyrosinase caused by dicarboxylic acids, such as azelaic acid, produced by the agent, or by a direct cytotoxic effect on melanocytes. [25]

CONCLUSION

In the study, pityriasis versicolor affected young people of both sexes, brown, and with predisposing factors. Most had past history of the disease and had been treated before. Lesions were mostly extensive, involving all the anatomic regions studied and with predominance of hypochromic, nummular and confluent macules. ❑

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MAILING ADDRESS / ENDEREÇO PARA CORRESPONDÊNCIA:
Patrícia Motta de Morais
Rua 02, nº 7, Condomínio ANIEL, apartamento 301, Parque 10 de Novembro
69054 729 - Manaus - AM, Brazil
Phone.: 92 3877 0495 / 8127 9559
Fuam: 92 3663 4747
E-mail: pattymmorais@hotmail.com

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