A STUDY ON CLINICAL PATTERNS OF PITYRIASIS VERSICOLOR AND SUSCEPTIBILITY OF MALASSEZIA SPECIES TO VARIOUS ANTIFUNGALS IN A TERTIARY CARE HOSPITAL IN PUDUCHERRY

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ABSTRACT

BACKGROUND

Pityriasis versicolor is a superficial cutaneous fungal infection caused by *Malassezia furfur*, a dimorphic fungus. This study is undertaken to know various clinical patterns of disease, to culture and study the in vitro susceptibilities of *Malassezia* species to various antifungals.

MATERIALS AND METHODS

A cross sectional study of 100 patients with Pityriasis versicolor were evaluated clinically at a tertiary care hospital in Puducherry. The study period was 2 years. History and clinical examination was done and scraping samples were sent to Microbiology department for culture and sensitivity. Data was recorded accordingly.

RESULTS

Majority of the patients were young males. Most of the patients had asymptomatic hypopigmented macules over face and neck. Most of the patients use synthetic clothing and shown exacerbation during summer months. Recurrence is rare. Majority of patients show mild to moderate scaling. Seborrheic dermatitis and acne vulgaris are the most common associated dermatoses. Majority were KOH and Woods lamp positive. Sixty-seven patients were culture positive and most of patients show *M. furfur* colonies and all patients are sensitive to the three common antifungals.

CONCLUSION

Overall, our study shows *M. furfur* is the most common isolated species and all are sensitive to the three commonly used antifungals: Fluconazole, Itraconazole and Ketoconazole. Hence, *Malassezia* species has not developed resistance against these drugs in our study area, and they can be used successfully in treatment of Pityriasis versicolor.

KEYWORDS

Pityriasis Versicolor, *Malassezia Furfur*, KOH, Woods Lamp, Antifungals.

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BACKGROUND

Pityriasis versicolor is a cutaneous, superficial fungal infection due to colonization of stratum corneum by a dimorphic fungus known as *Malassezia furfur*.¹ It is more prevalent in tropical region due to the relative high temperature and humidity.² Clinically, the disease is usually asymptomatic with hypo or hyper pigmented macules or patches.

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Usually, the patient seeks medical attention for cosmetic blemishes. Wood's lamp examination usually shows yellowish fluorescence of the involved skin.³ The organism can readily be identified by treating skin scraping with 10% KOH. The fungi appear as short, thick hyphae with a large number of spores (spaghetti and meat-ball appearance).³ Culture and molecular analysis of *Malassezia* microflora may be used to identify different *Malassezia* species.⁴ Currently, twelve different species of *Malassezia* have been described.⁵ There are a number of treatment options, topical and systemic therapies for pityriasis versicolor. This study is undertaken to know "clinical patterns of the disease with respect to morphology, distribution, epidemiological factors like age, sex distribution and seasonal variation of the disease, and to culture & study the in vitro susceptibilities of *Malassezia* species to various antifungals".

MATERIALS AND METHODS

One hundred patients of Pityriasis versicolor were selected from those attending the outpatient department of

Dermatology, Venereology and Leprosy at Aarupadai veedu medical college and hospital, Puducherry from October 2014 to September 2016.

It is a cross sectional study. All newly diagnosed, untreated male and female patients attending Dermatology OPD (Out Patient Department) with pityriasis versicolor were selected and included in the study after taking consent. Previously diagnosed and treated cases were excluded. The study was approved by the Institutional Ethical Committee. A detailed history was taken with particular reference to onset, duration, symptoms, clothing and associated dermatoses were recorded.

Factors like seasonal variation, family history and presence of any associated dermatologic illnesses were noted. A thorough clinical examination was done with reference to the site, colour, extent of the lesion, number and type of lesions and the details were recorded.

KOH examination and Wood's lamp examination were done in all patients before therapy.

Skin scrapings were sent to Microbiology department for Culture (Using HiCrome Malassezia agar) & sensitivity (Using E-strips) and results were recorded accordingly.

RESULTS

Of a total of 100 patients included in our study, the disease was found to be highly prevalent in patients belonging to the second and third decades of life (60%) and occurred in men more, when compared to females. (M: F ratio is 2.1:1). A positive family history was observed and it accounted to 13% in this study.

Most of the patients were asymptomatic (71%) and came to hospital for cosmetic concern.

Majority of the lesions were on the face & neck (68%), back (31%) and chest (28%) [Graph 1]. The disease showed an exacerbation especially in the summer months (60%).

Most of the lesions were hypopigmented (69%) macules (63%). Recurrence was a problem in a small group of patients (11%). The most common associated dermatoses were seborrheic dermatitis and acne vulgaris. 56% had mild scaling, 30% had moderate scaling and 14% had severe scaling.

KOH examination was positive in 98% of the cases. 74% of patients showed yellowish fluorescence on Woods lamp.

Sixty-seven patients were culture positive and among them 44 showed *M. furfur* colonies and 23 showed *M. globosa* colonies [Graph 2]. All 67 culture positive patients were found to be susceptible to the three commonly used antifungals- Fluconazole, Itraconazole and Ketoconazole.

Graph 1. Showing Distribution of Lesions

Graph 2. Culture & Species Identification

Figure 1A, B

Figure 1A. Pityriasis versicolor (Hypopigmented) over the back.

Figure 1B. Pityriasis versicolor (Hyperpigmented) of shoulder region extending to the upper chest

Figure 2A, B

Figure 2A. HiCrome Malassezia agar- Twin pack.

Figure 2B. Culture of *Malassezia furfur* on HiCrome agar showing mauve colour colonies.

	Present (%)	Absent (%)
Itching	29	72
Recurrence	11	89
Summer exacerbation	60	40
Synthetic clothes usage	54	46
Positive family history	13	87
Woods lamp fluorescence	74	26
KOH positive	98	2
Culture positive	67	33

Table 1. Results of the Study

Figure 3A, B, C, D

Figure 3A. HIMEDIA- HiCrome strip packs for sensitivity tests.

Figure 3B. Antifungal susceptibility of *M. furfur* against Fluconazole.

Figure 3C. Antifungal susceptibility of *M. furfur* against Itraconazole.

Figure 3D. Antifungal susceptibility of *M. furfur* against Ketoconazole.

DISCUSSION

This study done at tertiary care centre provided number of facts of them, many had a good correlation with the studies conducted by previous workers.

The most affected age group in this study belonged to the age group of 21 to 30 years (36%) followed by 11-20 years (24%). Similar results were observed by Guillot et al⁶ In his study, he inferred that, most patients had manifested disease during puberty or thereafter and found it to be less frequent over 50 years of age.⁶ Cullen,⁷ Michalowski et al,⁸ Terragni et al⁹ have also observed that pityriasis versicolor is uncommon before puberty. Accounting to, the changes in the skin sebum levels.

In our study, the prevalence of disease was more among males accounting to 68% when compared to females (32%).

Rao et al¹⁰ Maheshwariamma, and Singh et al¹¹ have also observed almost similar results with more prevalence of cases in males. This probably could be attributed to their occupation and outdoor activities.

Thus, the gender prevalence in the present study is in concurrence with the observations made by other authors.

In our study, 29 patients had clinical features of itching, while the rest (71) of them were asymptomatic. Gupta et al¹² also had similar observation in their study and they opined that majority of patients were asymptomatic and they were chiefly of cosmetic concern. Thus, the result of the present study has good agreement with the above study.

In this study, 11% of patients had recurrence of lesions. Almost similar result was opined by the study done by Gatha S. Rao. Recurrence was attributed to persistence of the yeast in the deeper part of hair follicle.¹¹

In the present study, 60 patients had exacerbation in summer while remaining didn't show any seasonal variation.

Klenk et al¹³ has observed that *Tinea versicolor* is more frequently seen in humid, warm climates or in the tropics than in dry cold zones. Rao et al, has also found that, 35% of the patients had the disease first in summer and this could probably be due to increased sweating. There by, predisposing the person to the infection.¹⁴ The results of the present study concurred well with the above mentioned studies.

In our study, the incidence of *tinea versicolor* in patients using synthetic clothing was more (54%). Similar result was observed in the study done by Singh G.¹¹

In the present study 13 patients had history of similar complaints in the family. Rao et al¹⁰ found a positive family history in 38.30% of patients, out of whom 10% gave history in spouses and 13.30% in parents. Whereas, Tschen¹⁵ has observed that there is little evidence that the disease is highly contagious, since only 7.5% of cases are present in the same couples living together. Thus the various factors attributable to the existence of the disease in the family are variable.

In the present study 68% showed macules, 4% had patches, follicular lesions were seen in 3% and mixed variety of lesions (macules, patches and follicular) were seen in almost 25% of patients. Rao et al¹⁰ found macular lesions in 86.60% of patients, follicular in 6.60% of patients, confluent in 10% of the patients and guttate in 1.60% of patients whereas Assaf and Weil,¹⁶ found patchy lesions more in their study.

In our study, 69 patients had hypopigmented lesions, 20 had hyperpigmented lesions, 11 patients had both hypo and hyperpigmented lesions. Assaf and Weil¹⁶ have observed that lesions typically begin as reddish macules later becoming hypopigmented, and hyperpigmentation occurs occasionally which may be due to individual differences in the inflammatory response.

In our study, 56 patients had mild scaling, 30 had moderate scaling and 14 patients had severe scaling. Assaf and Weil¹⁶ have found scaling in all the patients in their study. Similarly, Tschen¹⁵ found the scaling to be fine and greasy in all their patients. In the present study, 68 patients had lesions on the face, 21 had lesions over the neck, 31 over back, 28 over chest, 4 patients shown lesions over the upper limb and 2 over their abdomen. Gupta et al¹⁴ found the lesions to be more often on lipid rich areas of the body like the face, neck and the trunk. Similarly, Assaf and Weil¹⁶ found the trunk, arms, neck to be the commonly affected sites. Rao et al¹⁰ found the disease in 71.6% over the neck, 70% over the back and 58.30% over the chest.

Hence, the distribution of the lesions in our present study is different from the observation made by other authors.

In the present study, 7 patients showed associated seborrhoea, 6 showed acne, 3 had *tinea corporis* and 10 patients had miliaria, ichthyosis, alopecia, atopy, vitiligo, P. rosea, DPN, skin tag, senile pruritis and psoriasis (each one respectively), while the remaining 75 patients did not have any associated dermatological illness. Assaf and Weil¹⁶ have

mentioned common association between pityriasis versicolor and seborrheic dermatitis as the two conditions, which disappear significantly with azole antifungals. Tschen¹⁵ found seborrheic dermatitis, hyperhidrosis, psoriasis and atopic dermatitis co-exist frequently with pityriasis versicolor. Rao et al¹⁰ found seborrheic dermatitis in 11.60% of their patients who had tinea versicolor.

Ninety-eight patients showed positive KOH examination. Rao et al¹⁰ in their study of 120 patients, found positive KOH results in 46.6% of the patients. In the present study, 74 patients showed fluorescent lesions. Savin has found positive Wood's lamp examination in 1/3rd of patients. Hence, our findings of Wood's lamp examination concur well with the studies conducted by Savin. In the present study, 67 patients were culture positive showing mauve colonies on agar. The remaining 33 patients did not show any growth on culture plates and hence considered as Culture negative. Among the 67 culture positive patients, 44 of them show *M. furfur* colonies and the remaining 23 show *M. globosa* colonies. In a study conducted by Parveneh Afshar in Sari, Iran, 74.6% of the patients showed *Malassezia* species in culture. *M. globosa* (54%) was found to be the predominant pityriasis versicolor isolate, followed by *M. furfur* (32%), and other species.¹⁷ Thus, our culture finding correlates with the above study, but in contrast, *M. furfur* is the most common species than *M. globosa* in our study.

CONCLUSION

We conclude that Pityriasis versicolor is the most common chronic, mild, usually asymptomatic superficial fungal infection of the tropical climate. All species respond to the three most commonly used antifungals. Hence, it is evident that the *Malassezia* species has not developed resistance against these common drugs in our study area till now, and they can be used successfully in treatment of Pityriasis versicolor.

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