Short Research Article

Clinical and Mycological Study of Pityriasis Versicolor in Relation to species

ABSTRACT

Back ground: Pityriasis versicolor is a superficial infection of the skin caused by the yeast of Malassezia sp.genus. Although the disease has been described at the beginning of the 19th century, classification of its etiological agent was a matter of debate. There is only scanty information about the epidemiology and ecology of Malassezia species available and the clinical significance of the species is not completely recognized.

Aims- To evaluate the clinical & epidemiological pattern and to isolate different species of Malassezia. Also to assess the correlation between a particular species and different colours of the lesion.

Results-In this study young people of both sex are most commonly affected. Most of the lesion are hypo-pigmented and affect the upper part of the body. A few flexural lesions are also seen. M.dermatis is the most common isolated species. No significant association with color of the lesion and a species was found.

Limitation- Small sample size and difficulty to maintain the culture are two major limitation of this study.

Conclusion: M. dermatis was found as the most common species in patients with Pityriasis versicolor. Further studies about species and antifungal sensitivity will help to treat the disease better.
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Keywords: Pityriasis versicolor, malassezia sp, color of lesion, mycological study

1. INTRODUCTION

Yeast of the genus Malassezia are known to be components of the microflora of human skin and that of many warm blooded animals[1]. The occurrence of the clinical disease by Malassezia depends on the factors permitting the conversion of saprophytic yeast phase to the mycelial phase. Best known and frequent is Pityriasis versicolor[2]. It is a chronic superficial infection of skin caused by the yeast of Malassezia sp. genus, which is a commensal of keratinized layer of skin. It is a common dermatoses in tropical region, where humidity and temperature increases its prevalence. Although some of the currently recognized species can survive even a temperature of 37^0c, many isolates from human skin are more limited in their temperature tolerance. It has a worldwide prevalence of up to 50%

in the hot and humid environment and as low as 1% in cooler climates. Skin lesions of pityriasis versicolor presented with different colored lesions. The color of patches vary from almost white to pink to reddish brown or fawn colored. There has been several mechanisms postulated for the alterations in pigmentation, like the production of dicarboxylic acids by Malassezia species which cause competitive inhibition of tyrosinase[3]. M.globosa and M.restricta are the most frequently isolated species from patients with pityriasis versicolor[4]. The purpose of the present study is to isolate different species of Malassezia from pityriasis versicolor lesion and to assess the association between the species and the clinical profile particularly the color of the lesion.

2. MATERIAL AND METHODS

2.1 PATIENT SELECTION

Clinically diagnosed patients having pityriasis versicolor among out patients of the department of dermatology in a tertiary care hospital in Kerala, India.

Study period-January 2014- September 2015 (number of patients -66)

Epidemiological tool- descriptive cross sectional study.

2.2 SAMPLE COLLECTION

After obtaining approval from institutional ethical committee and informed consent from the patients , the epidemiological data and profile of the patient in terms of gender, age, occupation, socioeconomic status were collected. Details regarding the personal habits like the use of medicated oils, sunscreen, nature of sweating, use of occlusive clothing, characteristics of the workplace, practice of sports, personal hygiene, past history and family history of the disease were recorded. With regard to the type of lesion data were recorded in terms of duration, colour, number, sites involved and symptomatology.

Scrapings were taken from the scaliest sites by the use of sterile no.15 blades and samples were subjected to microscopy examination using 10% KOH. The diagnosis of pityriasis versicolor was established by the presence of both hyphae and spores in direct microscopy. Scraping were taken from the microscopically diagnosed patients for culture and transported Immediately to microbiology lab in sterile Petri dishes.

The samples were plated within the same or next day on to Sabouraud's dextrose agar containing chloramphenicol and gentamicin layered with sterile olive oil and were incubated at 32 ^{0}C. The specimen were also incubated on modified Dixon's agar plate containing chloramphenicol and gentamicin and were incubated at 32 ^{0}C. The inoculated plates were kept in biosafety chamber and observed every day for the suspected growth of Malassezia for 14 days .

2.3 SPECIATION

1. The gross morphology of suspected colonies of Malasezia was noted and further speciated by performing catalase test, Esculin hydrolysis test and temperature tolerance test.
2. Utilization of Tween 20 ,40, 60 and 80 were detected by a standard procedure and based on the results, speciation was done

Table-1&&2 Represent the scheme used for the identification of Malazzezia species

Table -1

Species	Growth on SDA	Growth n m Dixon at			Utilization of tween			
		32^{0}c	37^{0}c	40^{0}c	Tw 20	TW 40	TW 60	TW8 80
M.pachydermatis	+	+	+	+	+	+	+	+
M.sympodialis	-	+	+	+	-	+	+	+
M.globosa	-	+	-	-	-	-	-	-
M.dermatis	-	+	+	+	+	+	+	+
M. furfur	-	+	+	=	+	+	+	+
M.sloofiae	-	+	+	+	+	+	+	+
M.obtusa	-	+	-	-	-	-	-	-
M.restricta	-	+	+	-	-	-	--	-

Table-2

Species	Esculin	Polyetoxylated castor oil	Catalase reaction
M.pachydermatis	+	+	+
M.sympodialis	+	-	+
M. globosa	-	-	+
M. dermatis	-	-	+
M.furfur	-	+	+
M.sloofiae	-	-	+
M.obtusa	+	-	+
M.restricta	-	-	-

3.STATISTICAL ANALYSIS

Statistical analysis was done using Pearson's ch^2test and P values were calculated. Kruskal Wallis test is used to find the association between Malassezia species and mean age of the patient. A P value of< 0.05 was considered significant.

3. RESULTS AND DISCUSSION

Sixty six patients diagnosed as pityriasis versicolor both clinically and microscopically (KOH smear showed short hyphae), who attended the out patient department from January 2014 to June 2015 were included in the study .Skin scrapings were taken from all 66 patients for culture and speciation.

Of the 66 patients 32 were males and 34 were females . Age of patient ranged from 8 to 74 . Maximum number of patients were young in the age group of 19-29. Most of the patients were non-professional followed by students.

93.9% of patients gave the history of cosmetics like Talcum powder, oil, soap , deodorant etc., and 69.7% patients use synthetic dressings. And good percentage of patients gave history of sun exposure and excessive sweating (87.8%).

12.1% of our patients had family history of pityriasis versicolor. 33.3% had past history of pityriasis versicolor. 40% patients had the lesions for more than 1 year. 59% patients had normal skin texture. That main complaint of the patient was only discoloration.

A small percentage (12.12%) had coexisting seborrheic dermatitis. And only a very few patients had systemic illnesses like diabetes mellitus.

Most (56%) of the patients presented with hypo-pigmented lesion, yellow white in color, followed by different shades of hyperpigmentation. Upperpart of the body like face, neck and trunk are most commonly involved. No patients had lesion in the lower limbs or groin.

42 out of 66 (63.63%) samples of skin scrapings were able to identify Malassezia species. Malassezia dermatis (19/42) was the most common species isolated followed by Malassezia globosa. M.sloofiae ,M.furfur, M.obtusa and M.restricta. were the other species isolated.

In this study, no significant difference was found in species isolated with the clinical type and the anatomical site of lesions. Also no significant association was found with age, gender, use of cosmetics, skin type, life style ,with the frequency of species.

Although pityriasis versicolor has worldwide occurrence, its frequency is variable and depends on different climatic, occupational and socio-economic conditions. Our study showed equal frequency of the disease among male and females. Many studies shows higher prevalence in male subjects, while in other studies female patients were more affected [5,6]. Apparently there is no predominance between genders. Male predominance seen in certain studies may be due to the fact that they are involved in more outdoor activities.

Maximum number of patients in our study were younger age group [39.3% between 10-30]. Similar findings were published by many workers[7,8,]. This may be due to the fact increased sebum production in adolescents and young adults, which favors the growth of Malassezia.

As per the questionnaire, we observed a few common habits of the study population. Sun exposure was seen in a high frequency of study population(64.6%) . Use of cosmetics are also attributed to the development of pityriasis versicolor by altering the skin microform

and pH. In our study 93.9% of patients use some form of cosmetics either oil, soap, powder etc.

Most of the patients in our study had normal (59%) skin texture followed by dry(23%) and oily (18%). This finding is similar to study done by Ghosh et al[9]. 12.2% patients of our study had coexisting seborrheic dermatitis. Similar coexistence was also noted by other workers also. In the present study, only a small number of patients (4.5%) had coexisting systemic diseases like Diabetes mellitus. This is similar to the study by Ghosh SK et al[9].where 2.73% had diabetes mellitus.

Most of the lesions of pityriasis versicolor were hypopigmented, Almost similar observation was done by Krishnan et al[11]. In the present study common sites of affection are trunk, neck and face. Flexural involvment (axilla, groin) was also not rare. Lower part of the body (below waist) was not at all involved. Similar findings were also noted by Dutta et al[11], Rao et al[12] and Krishnan et al[10] . (Figures 1),2,) 3) represent hypopigmented, erythematous &hyperpigmented lesions of Pityriasis versicolor in different body parts).

Figure - 1

Figure - 2

Figure - 3

Regarding the pattern of lesion, most of our study subjects had nummular pattern (69.7%) of lesions followed by follicular(9%) and circinate (3%) pattern. This is similar to the findings of study by Motto MP et al [13].

We reported Malassezia dermatis to be the predominant isolate grown in 19 (45.23%) patients. This is in contrast with all other studies. Most of the studies reported Malassezia globosa as the predominant species and a few studies reported Malassezia sympodialis to be the predominant isolate. Dutta et al[11], Chaudhary et al[14], and Nakabayashi et al[15], in their studies have reported M.globosa as the predominant isolate. However, Gupta et al [16] in their research reported M. sympodialis as the predominant isolate followed by M.globosa and M.furfur. Difference in the frequency of species we got in our study was probably due to the difference in environmental factors such as high temperature and high humidity (Averages 86^0F & 78% humidity during summer months) in our area.. M.sympodialis was not isolated from any of the lesion, even though it was reported as the second commonest in most other studies. M.furfur is responsible for PV especially in tropical countries. Dutta et Al[11] and Tarazooie et al [17] have reported M.furfur to be the second most frequent species isolated from PV patients. However in the present study it is the fourth most common agent.

Figure-4, Tween assimilation pattern of M.dermatis.

M.dermatis was the predominant isolate from both hypopigmented and hyperpigmented lesions. No specific relation with Malassezia species and the color of lesion was noted so far. The hypopigmentation induced by these fungus can be explained on the basis of production of dicarboxylic acids, main component of which is azealic acid. This acid

acts through competitive inhibition of DOPA tyrosinase and perhaps has direct cytotoxic effect on hyperactive melanocytes. The pathogenesis of hyperpigmentation is also unknown but it may be due to increased thickness of the keratin layer and more pronounced inflammatory cell.

4.CONCLUSION

The present study suggests M.dermatis to be the most prevalent species, followed by M.globosa, M.sloofiae, M.furfur, M.obtusa and M.restricta. No statistically significant association was found with a particular species with age, sex, personal habits uses of cosmetics, site of lesion or color of lesion. However, more studies with larger samples have to be performed to clarify the investigated subject. Since Malassezia species show different response to antifungal therapy, correct identification of Malassezia species may help in the selection of appropriate antifungals. Thus correct identification of Malasezia species and antifungal susceptibility tests could facilitate selection of appropriate antifungal agents.

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