

A Study Of Prevalence Of Different Species Of Malassezia Causing Pityriasis Versicolor In Different Age Groups In A Tertiary Care Hospital In Kolkata

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Abstract: Pityriasis versicolor is a superficial skin disease involving upto the stratum corneum layer of the skin and the sebaceous glands. The main complain of the patients being cosmetic and itchiness on profuse sweating. Most common causative agent is Malassezia species. **Materials and Methods-** Skin scrapings were collected from 88 consecutive patients from Dermatology OPD, RGKMCH of various age groups. Speciation done in Microbiology laboratory. Direct smear preparation with 10% KOH and culture inoculation primarily in SDCA and MDA was done, followed by LCB mount and biochemical tests for speciation. **Observation:** In the present study, higher incidence was found among 15-25 years age group (81.81%) and the most common species being Malassezia furfur. **Conclusion:** Pityriasis versicolor is most prevalent in the age group of 15-25 yrs and M. furfur to be the most prevalent species, followed by M. globosa, M. restricta and M. sympodialis.

Key words: Age groups, Malassezia sp, Pityriasis versicolor.

I. Introduction

Pityriasis versicolor is a mild, chronic infection of the skin caused by Malassezia yeasts and characterized by discrete or confluent, scaly, discoloured or depigmented areas, mainly on the upper trunk [1]. It is a superficial cutaneous fungal infection of the stratum corneum [2]. The lesions are characterized by a branny or furfuraceous consistency. They are discrete or conrescent and appear as discoloured or depigmented areas of the skin. Margins of the macules are sharply delineated. Lesions tend to be discrete in the beginning, but may fuse to give a serpiginous border as they enlarge. Hair shafts and nails are not infected. Hyperpigmentation with fawn-coloured macules is much more common than hypopigmentation. A light scaling may be seen.

The lesions start as tiny, multiple, macular spots that soon scale and enlarge. The lesions have often been present for more than a year when the patient is seen by a physician. Patients who seek medical attention do so for cosmetic reasons, but upto a third will have noted slight itching or burning in the area of the lesions, particularly when sweating. The expression of infection is promoted by heat and humidity. Left untreated, the infection waxes and wanes for months and years.

A common observation in reviewing a series of cases of pityriasis versicolor is that both hypo and hyperpigmented lesions occur, sometimes on the same patient.

Members of the genus Malassezia are opportunistic yeasts of increasing importance, due in large part to advances in detection and culture methodology which have been allowed their investigation and revealed their importance in human and animal diseases [3,4]. The lipid-dependent genus Malassezia is considered as the causative organism. Of which M. furfur, M. globosa, M. sympodialis, M. slooffiae, M. obtusa are considered to be the most common aetiologic agents. M. furfur responsible for pityriasis versicolor mainly under tropical climate [5]. The differences in frequencies of Malassezia species among different studies may be attributed to different culture media (MDA / LNA) and perhaps to ethnic and geographic factors [6].

The role of sex in propensity to development of PV is still unclear. Some found that PV is more common in men, while others indicated higher incidence of infection in females which may be due to extra attention to beauty and skin hygiene [7,8]. Age prevalence to be 20-30 yrs. Although the morphologic characteristics (colony & microscopic examination) for Malassezia is used for primary identification, but they don't provide sufficient information for specific identification of isolates. So, to avoid confusion, physiological tests should be carried out. Two simple preliminary tests for this purpose are, the subculture on SDA (at 31°C) and the catalase reaction. All lipid-dependent species except M. restricta exhibit a catalase positive reaction.

II. Materials & Methods:

The study was conducted at the department of Microbiology in collaboration with the Department of Dermatology, R.G.Kar Medical College & Hospital,(RGKMCH)Kolkata-700004 ,during the period of July 2011 to June 2012.Patients from Kolkata and adjoining districts attending Dermatology OPD with hypo- or hyper-pigmented macular lesions of different age groups. Skin scrapings were collected from 88 consecutive patients from Dermatology OPD, RGKMCH.The study was prospective, cross-sectional, tertiary care hospital based. For each patient following protocol was followed:

Clinical Assessment:

Patients attending Dermatology OPD, RGKMCH with hypo /hyperpigmented macular lesions during July 2011 to June 2012 were examined for pityriasis versicolor. Detailed history regarding socioeconomic condition, duration of the illness, associated itchiness were taken. Any drug intake history was also enquired about.

Specimen Collection:

Skin scrapings collected from the junction of active lesion and healthy and normal skin with the help of cellotape and sterile scalpel blade.

Sample Processing:

All the samples were examined by 10% KOH under direct microscopy .Three skin samples were inoculated in SDCA with olive oil overlay,MDA and BA.Cultures were incubated at 37°C and 25 ° C on D3/D7 for any fungal growth. Fungal growth further processed by gram staining, LCB mount and biochemical tests for species identification such as catalase and urease test ,glycine assimilation and tween (20,40,60,80) utilization.

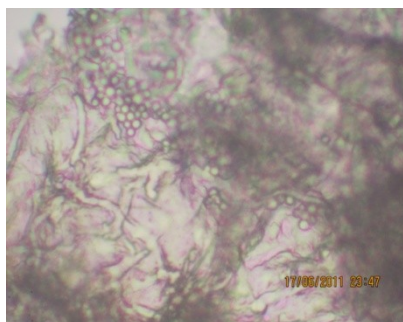


Fig 1:sphagetti-meatball in 10% KOH.

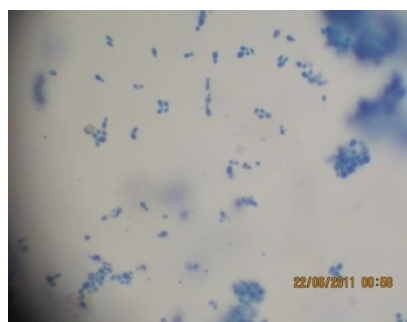


Fig 2:LCB mount

III. Results:

The study was carried out in the Department of Microbiology in collaboration with the Department of Dermatology, R.G.Kar Medical College and Hospital.

Cases included both hypo- and hyper- pigmented macular rashes, clinically suspected as pityriasis versicolor. Samples were collected from 98 individuals attending Dermatology OPD.

Out of 98 clinically suspected cases, 88 were found to be suggestive for pityriasis versicolor all of which also showed growth of Malassezia on cultivation. Remaining 10 did not show any positive finding either in KOH preparation or culture.

Table I:Distribution Of Cases According To Age Groups:

| TOTAL NO OF CASES | <15YRS | 15-25YRS | >25YRS |
|-------------------|----------|------------|------------|
| 88 | 2(2.27%) | 72(81.81%) | 14(15.90%) |

Table 1 showing maximum prevalence of the disease in the age group of 15-25 yrs (81.81%).

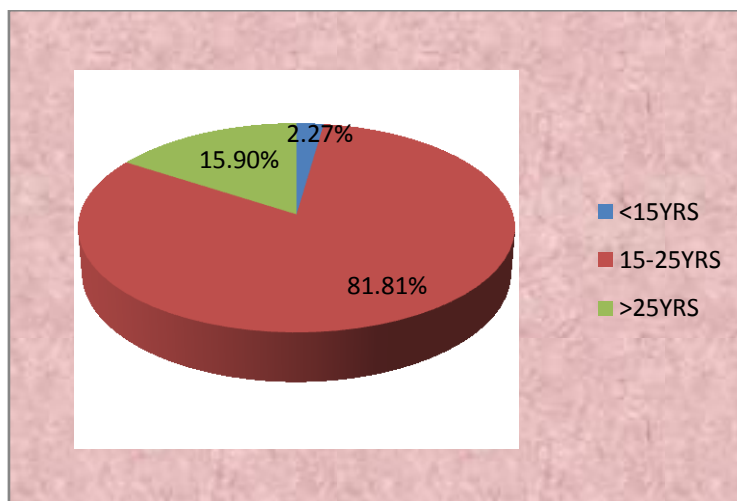


Fig 3: Pie Diagram Showing Age Group Wise Distribution Of Cases

Table ii: Prevalence Of Different Malassezia Species Among The Total Culture Positive Cases:

| TOTAL NO. OF CULTURE POSITIVE CASES | 88 |
|-------------------------------------|------------|
| M. furfur | 53(60.23%) |
| M. globosa | 25(28.41%) |
| M. restricta | 6(6.82%) |
| M. sympodialis | 4(4.55%) |

Table 2 demonstrating the prevalence of four malassezia species among 88 culture positive isolates. M. furfur isolates are highest (60.23%) in number followed by M.globosa (28.41%), M. restricta (28.41%) and M.sympodialis (4.55%).This configuration is also depicted through a pie diagram.

Table Iii: Prevalence Of Malassezia Species According To The Age Groups:

| SPECIES | <15YRS | 15-25YRS | >25YRS | TOTAL |
|----------------|-----------|------------|------------|------------|
| M. furfur | 1(1.14%) | 44(50%) | 8(9.09%) | 53(60.23%) |
| M. globosa | 1(1.14%) | 20(22.73%) | 4(4.55%) | 25(28.41%) |
| M. restricta | 0 (0%) | 5(5.68%) | 1(1.14%) | 6(6.82%) |
| M. sympodialis | 0 (0%) | 3(3.41%) | 1(1.14%) | 4(4.55%) |
| TOTAL(88) | 2 (2.27%) | 72(81.82%) | 14(15.91%) | (88) |

Table 3 showing higher prevalence of M.furfur (60.23%) among the 15-25yrs age group (50%), next to it was M. globosa which accounted for 20 isolates(22.73%) among the total 88 cases. This table also shows no incidence of M.restricta and M.sympodialis in below 15yrs age group(2.27%) and very low incidence (1.14% each) among above 25yrs population.

IV. Discussion:

Pityriasis versicolor is a mild, chronic infection of skin caused by malassezia yeasts and characterized by discrete confluent, scaly, discoloured or depigmented areas, mainly on the upper trunk. Colonization by these species is specially dense in the scalp, the upper trunk and flexures, areas rich in sebaceous glands and their secretions [1]. The characteristic changes include hyperkeratosis, parakeratosis, acanthosis and a mild inflammatory infiltrate. The organism can be seen in the upper layers of the stratum corneum and electron microscopy shows the presence of organisms intercellularly. Increased cell turnover is found in affected cells.

The study was conducted on patients attending Dermatology OPD. The study was carried out in the department of Microbiology in collaboration with the Dermatology department. R.G.Kar Medical College and Hospital, during the midway of July, 2011 to June, 2012.

Both hypo- and hyper-pigmented macular rashes, clinically suspected as pityriasis versicolor were included in the study population. Samples were collected from 98 individuals attending Dermatology OPD. Out of 98 clinically suspected cases, 88 were found to be suggestive for pityriasis versicolor, all of which also showed growth of malassezia on cultivation. Remaining 10 did not show any positive finding either in KOH preparation or culture.

Pityriasis versicolor is known to affect mainly young adults [9,10,11]. The commonest age group affected is 25-30 years in males and 20-25years in females [12] but it may occur in children[12,13,14]and in the aged. Though cases occurring in 11month and 12 month old and less than

6 month old children have also been reported[15]. The youngest case of PV was a 8 week old male infant[16]. In the present study, higher incidence was found among 15-25 years age group (81.81%) and age group below 15years lead to the least incidence (2.27%). This was in accordance with the findings of other studies [17]. A study done on Central African population also showed results similar to that of the present study. Another study conducted in Northern Iran showed highest prevalence in 20-25 years age group[18]. This may be due to varying geographical and environmental conditions.

The present study conducted among 98 clinically suspected pityriasis versicolor cases revealed prevalence of four malassezia species whereas in various studies most commonly isolated species are seven in number. Chowdhury et al,[9] isolated 12 malassezia species of which *M. globosa*, *M. sympodialis*, *M. furfur* were of clinically significant. Present study also documented this fact. It revealed *M. furfur* to be the most prevalent species among the 88 culture positive cases. It is supported by a few studies conducted under the tropical climate[19,20]. Next in frequency was *M. globosa* followed by *M. restricta* and *M. sympodialis*. This findings are contradictory to the studies by Aspiroz et al[21], Nakabayashi et al[7] and Crespo Erchiga et al[22] who isolated *M. globosa* as the most common species at the frequencies of 58.2%, 55% and 55% respectively.

In two similar studies have been done in South India by Kindo et al,[18]revealed that *M. sympodialis* is the commonest agent (58.3%) followed by *M. globosa* (39.6%).

Another study from North-Central India, conducted by Dutta et al,[23]revealed that 54% of isolates belonged to *M. globosa* and the next common species being *M. furfur*(30%).

Of the previous 17 studies,11 showed *M. globosa* to be the most common species isolated. Its pathogenicity might be explained by high lipolytic activity[22]. A few studies have found *M. sympodialis* to be the most common species [18].

The differences in frequencies of malassezia species among different studies may be attributed to different culture media(MDA /LNA) used and perhaps to ethnic and geographic factors[20].

Rahul et al,[9] found no definite relationship of species and the pigmentary changes produced. This supports the present study finding where only 5 cases presented with hyperpigmented lesions. Along with this as the predominant isolate in both hypo- and hyper-pigmented isolates was *M. furfur*, probably no relationship exists.

V. Conclusion:

Thus malassezia species were found to be the causative organism of pityriasis versicolor. Both hypo-or hyper-pigmented macular rashes were seems to be clinically significant.

The lesion is most prevalent in the age group of 15-25 yrs. The present study suggests *M. furfur* to be the most prevalent species, followed by *M. globosa*, *M. restricta* and *M. sympodialis*. Pityriasis versicolor is a superficial skin disease involving upto the stratum corneum layer of the skin and the sebaceous glands. The main complain of the patients being cosmetic and itchiness on profuse sweating.

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