INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

SPECIATION & CHARACTERISATION OF MALASSEZIA SPECIES - FROM CLINICAL CASES AND CONTROLS

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ARTICLE INFO

ABSTRACT

The objectives of the study were isolation and speciation of malassezia, correlation of clinical condition with different species, identification of risk factors associated malassezia infection and comparison of clinically significant isolates with isolates from normal skin. Speciation of clinically significant normal samples were done by morphology of colony, colony colour, cell shape & size, budding pattern and biochemical reactions M.furfur (30%), M.pachydermatis (30%), M.globosa (20%), M.obtusa (20%) were isolated from patient scalp scrapings. The isolates from normal scalp scrapings showed M.furfur (50%), Malassezia pachydermatis (33.33%), and M.globosa (16.67%). The study states that both disease affected and normal individuals harbour Malassezia sp. in their skin.

INTRODUCTION

Seborrheic dermatitis is a common disorder affecting almost half of the postpubertal population of any ethnicity and both genders. It may, however, represent a stubborn aesthetical disturbance & a source of pruritus. The malassezia spp. play a key aetiologic role, in combination with the unusual capacity of some corneocytes to be coated by these yeasts (Piérard-Franchimont *et al.*, 2006). Seborrheic dermatitis is characterised by erythema covered with greasy-looking scales & seen over areas rich in sebaceous glands namely the scalp, face, chest, back & flexural areas. It has 2 age peaks(bimodal occurrence)-one in infancy within the first 3 months of life & the second in adolescence around the second to third decades of life. Men are affected more often than women in all age groups. Acute exacerbations cause low self esteem, introversion & depression. The aetiology of seborrheic dermatitis is a convergence of three factors: (1) sebum (2) microfloral metabolism, and (3) individual susceptibility Pityrosporum ovale is the yeast form of the dimorphic lipophilic fungus M. furfur which is part of the normal skin microflora in adults. Pityrosporum ovale has a primary role in the pathogenesis of seborrheic dermatitis.

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In seborrheic dermatitis, local deposits of immunoglobulins and the release of lymphokines are responsible for the recruitment and local activation of leukocytes leading to the eventual amplification of the inflammatory reaction. Dandruff can precipitate telogen effluvium and exacerbate androgenic alopecia. Antidandruff formulations exhibiting some direct or indirect anti-inflammatory activity can improve both dandruff and its subsequent hair cycle disturbance (Piérard-Franchimont *et al.*, 2006). The role of the malassezia yeasts in these different diseases has been controversial in the past and remains an issue because of difficulties in isolation, culture and differentiation of the organism. Different species initiate or aggravate different skin diseases. In seborroheic dermatitis, M. Restricta play an important role, while in atopic dermatitis, M. globosa and/or M. restricta are major cutaneous microflora. M. globosa is a causative species of tinea versicolor, and this species is also a causative species of Malassezia folliculitis. We should therefore obtain better knowledge of the ecological and pathogenic roles of malassezia (Morishita *et al.*, 2006).

This study aims at profiling the disease and comparison of clinically significant isolates (sub species) from isolates of normal scalp scrapings. Such a study will help to have a clear understanding of the risk factors and patient response to medication. This in turn can be used to create awareness among the general population as well as practitioners and also for prescribing effective medication.

MATERIALS AND METHODS

This was a case control study conducted in the Department of Dermatology, Dr.SMCSI Medical College, Karakonam, Trivandrum, Kerala. 50 patients with seborrheic dermatitis attending dermatology OPD from May 2010 to August 2010 were included in the study. 20 patients matched for age and sex who did not have seborroiec dermatitis were the controls. Using the non probability sampling technique, all consecutive patients were included till sample size was reached. A pretested questionnaire regarding clinical, sociodemographic and other risk factors was used. Microbiological analysis and biochemical tests of scrapings from scalp was done.

OBSERVATIONS AND RESULTS

Basic data about the collected specimens

S.No.		Patients	Normal subjects
1	Number of samples	50	20
2	Direct microscopy with KOH showing fungal elements	8	2
3	Fungal growth on SDA medium	10	6
4	Percentage of specimen showing presence of fungus in direct microscopy using KOH	16%	10%
5	Percentage of fungal growth on SDA medium	20%	30%

Percentage of isolation of species

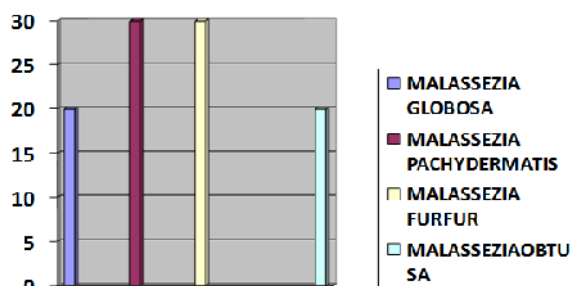| S.No.	Species	Patients		Normal subjects	
		No: of isolation	% of isolation	No: of isolation	% of isolation
1	Malassezia globosa	2	20%	1	16.67%
2	Malassezia pachydermatis	3	30%	2	33.33%
3	Malasseziaslooffiae	0	0.00%	0	0.00%
4	Malassezia furfur	3	30%	3	50%
5	Malassezia restricta	0	0.00%	0	0.00%
6	Malassezia obtuse	2	20%	0	0.00%
7	Malassezia sympodialis	`0	0.00%	0	0.00%

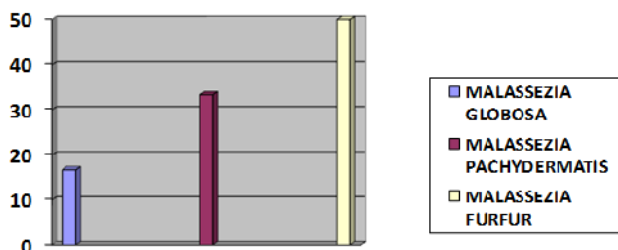**Figure. 1 Percentage of isolation of species among Patients**

Figure. 2 Percentage of isolation of species among normal subjects

RESULTS AND DISCUSSION

Of the 50 samples taken from disease affected individuals 10 of them gave culture results positive {20%}. Of the 20 samples taken from normal individuals 6 of them gave culture results positive {30%}. (Morishita *et al.*, 2006) Examination of 10+6 cultured specimens yielded Malassezia furfur as the main isolate . It formed 50% of normal flora and 30% in the disease affected individuals. In the disease affected individuals, M. Pachydermatis (30%) and M. Globosa (20%) also contributed to the isolates. In addition to the above species, M.obtusa (20%) was also isolated from affected individuals. In a study done about identification of malassezia spp.in south Indian population, the commonest isolates obtained were M.Sympodialis, M.Globosa and M.Restricta. (Kindo *et al.*, 2004) Culture positive results in our study was among the age group of 10-40years. Older age groups may have a tendency to ignore the disease when it is asymptomatic as they are not worried about the cosmetic effects and so may not consult a physician for this conditions. The proposed risk factors were immunocompromised states including diabetes mellitus. Of the cases observed none of them had any immunocompromised state, except three cases with diabetes mellitus. The disease was found equidistributed among both sexes but there was age predilection, with younger and adolescent age group being more affected.

Conclusion

The study shows that both disease affected and normal individuals harbour Malassezia in the human skin. M.furfur and M.pachydermatis are the common species seen in both normal individuals and patients. The culture from patients also yielded M.globosa and M.Obtusa. Only one sample showed M.globosa among normals and M.Obtusa was not isolated from normal scalp scrapings. The current study did not rule out diabetes mellitus and immunocompromised conditions as being risk factors for cutaneous manifestations of Malassezia spp. It opens up scope for further studies & research in seborrheic dermatitis. The study opens up new fields for discovery of new drugs that can give a life time cure for the patient. If the role of M. furfur on normal human skin is clearly identified then the ill effects of inadvertent use of many drugs can be prevented.

REFERENCES

Kindo A J, Sophia S K, Kalyani J, Anandan S. 2004. Identification of malassezia species. *Indian J Med Microbiol* 22:179-81

Morishita N., Y. Sei, T. Sugita. 2006. Molecular Analysis of Malassezia Microflora from Patients with Pityriasis VersicolorMycopathologia. 161(2): p 61-65

Piérard-Franchimont C, Xhauflaire-Uhoda E, Piérard GE. 2006. *Revisiting dandruff.Int J Cosmet Sci.* 28(5):311-8

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ISSN-0975-833X