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GENDER DIFFERENCES IN EPIDEMIOLOGY, RISK FACTORS AND CLINICAL PROFILE OF PATIENTS WITH PITYRIASIS VERSICOLOR

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ABSTRACT **Aim:** To elucidate gender differences in epidemiology, risk factors and clinical profile of patients with pityriasis versicolor. Method: A total of 150 patients with a clinical diagnosis of Tinea versicolor were enrolled in the study. Demographic characteristics, risk factors, history and clinical presentation was noted and compared between the two genders. Data was analysed using SPSS 18.0 version. Chi-square and Independent samples 't'-tests were used. **Results:** There were 103 (68.7%) males and 47 (31.3%) females. No significant difference between two sexes was observed for patient age, BMI, place of residence, education, family history and seasonal variation. Significantly higher proportion of females as compared to males were married, had sedentary occupation and used synthetic clothes ($p<0.05$). Tobacco/alcohol use, irregular bathing, topical oil use emerged as risk factors significantly more common in males as compared to that in females ($p<0.05$). No significant difference in clinical profile of disease was observed between two sexes excepting hyperhidrosis which was significantly higher in males (51.5%) as compared to that in females (25.5%) ($p=0.003$). Conclusion: Although slight differences in sociodemographic and risk factor profile were seen between male and female patients of pityriasis versicolor, however, there was not much significant difference in clinical profile of disease between the two sexes.

KEYWORDS : Pityriasis versicolor, Gender differences, Risk factor, Epidemiology, Clinical profile.

INTRODUCTION

Pityriasis versicolor (PV) is a fungal infection of superficial skin that is caused by Malassezia spp. which is identified as a dimorphic lipophilic yeast which transforms into filamentous mycelia when active1. The prevalence of PV goes as high as 50% in tropical countries like India owing to hot moist climate as compared to only 1.1% in countries like Sweden owing to colder climate[2]. The disease is characterized clinically by presence of scaly, dyspigmented irregular macules most often occurring on the trunk and extremities[3].

The conversion of Malassezia from a harmless commensal of healthy skin to pathogenic filamentous form is affected by a number of factors including genetic predisposition, environmental conditions such as heat and humidity, immunodeficiency, pregnancy, oily skin, and application of oily lotions and creams[2]. With respect to its prevalence in two sexes, there are huge differences among different studies. While some studies report females to be at a higher risk[4], some others place males at a higher risk[5]. On the other hand, some studies do not see much differences in two sexes with respect to sex of the patient6. The differences in prevalence of PV between male and female patients are thus an enigma and vary from one study to another study.

Climate and risk factor exposure pattern have a detrimental effect on the prevalence as well as clinical manifestation of PV. Given the marked differences in gender roles in society, the extent of exposure to different risk factors and sociodemographic determinants may vary between the two sexes, Hence, the present study was carried out to evaluate and compare the sociodemographic, risk factors and clinical profile of PV between males and females among patients visiting a tertiary care centre in North India.

MATERIAL AND METHOD

The present descriptive study was carried out at Department of Dermatology, Venereology & Leprosy, Era's Lucknow Medical College & Hospital, Lucknow. After obtaining permission from institutional ethics committee and informed consent from the participants. The sample size of the study was calculated using the formula $z^2 \frac{p(1-p)}{d^2}$ where z is a constant with value 1.96 at, the value of p is 0.5 for descriptive studies and d is the error allowance (taken as 10% or 0.1 for the study). The calculated sample size was 96, however, we included a total of 150 patients to enhance the power of the study.

The inclusion criteria of the study was simple and allowed inclusion of all the clinically diagnosed cases of Tinea versicolor. Patients with critical illness or those unable to undergo investigations necessary for study were excluded from the study.

A detailed history regarding the age, sex, occupation, onset, duration, seasonal variations, family history, personal habits and course of the disease was taken. A detailed clinical examination was done noting the distribution of the lesions, color of the lesions, presence of scales and associated conditions.

Data Analysis: Data was analyzed using SPSS 18.0 Software. Data has been displayed as numbers and percentages and mean±standard deviation. Chi-square and Independent samples t-tests were used for comparison of data.

RESULTS

More than two third (68.7%) patients were males. There were only 47 (31.3%) female. Sex-ratio of the study was 2.19. Statistically, there was no significant difference between two sexes with respect to body mass index, place of residence, education and family history ($p>0.05$). Among demographic factors, significantly higher proportion of females (95.7%) as compared to males (75.7%) had sedentary occupations ($p=0.003$). Proportion of those having a married social status was also significantly higher in females (57.4%) as compared to that in males (34%) ($p=0.007$). Among other risk factors, use of synthetic clothes was also significantly higher in females (95.7%) as compared to that in males (65%) ($p<0.001$) whereas personal habits like tobacco/alcohol use were prevalent in significantly higher proportion of males (56.3%) as compared to that in females (4.3%) ($p<0.001$). Irregular bathing and topical oil use was also significantly higher in males (36.9% and 84.5% respectively) as compared to that in females (12.8% and 70.2% respectively) ($p<0.05$) (Table 1).

Majority of patients in both the sexes had duration of complaints <6 months, gradual onset, absence of pruritus, involvement of chest/neck, non-localized distribution, macular/mixed morphology, hypopigmentation, moderate/severe scaling and regular margins. Statistically, there was no significant difference between the two sexes with respect to any of these clinical characteristics ($p>0.05$). Proportion of those having irregular shaped lesions was higher in females (51.1%) as compared to that in males (41.7%), but this difference was not significant statistically ($p=0.171$). However, significantly higher proportion of males had hyperhidrosis (51.5%) as compared to females (25.5%) ($p=0.003$) (Table 2).

DISCUSSION

The present study in general showed a difference in sociodemographic and other risk factor profile of males and females patients of pityriasis versicolor, however, the clinical profile of the two-sexes was similar and did not show a significant difference except for occurrence of hyperhidrosis which was significantly higher in males as compared to that in females. Among different sociodemographic and other risk factors, marital status, sedentary occupation, use of synthetic clothes, personal habits (tobacco/alcohol and topical oil use) were found to be significantly different between two sexes. The study also found the proportion of males to be more than two-times higher as compared to that of females in this cross-sectional hospital-based studies.

Given difference in gender-specific roles specially in societies like ours, the exposure to different risk factors and their impact on occurrence and clinical manifestations can be envisaged as a natural phenomenon, however, there are no studies evaluating the gender differences in sociodemographic and other risk factors and clinical profile of PV patients. In this context, the present study is first one to highlight this. In the present study, within the cross-section of PV patients visiting a tertiary care facility, more males as compared to females were found to be affected. The sex-ratio of the study population was 2.19. Sex-ratio in different cross-sectional studies, in general, has shown a male preponderance with its value ranging from 1.2 to 2.335-10 in different studies from India and neighbouring countries. However, there are studies that have reported a female dominance. Heidrich et al.[4] in their study at a Brazilian metropolitan hospital reported the sex ratio of the PV patients to be 0.71. Whether gender-differences depict differences in prevalence of disease or are determined by socio-demographic factors or reflect a gender-biased health services utilization pattern is a question that remains unanswered so far. Most of the studies from other developing countries having a strong patriarchal societal system have also shown a dominance of males as compared to females in hospital-based assessments. Sh. Hasan et al.[11] found a high dominance of males in their study sample with sex ratio being 2.76. However, community studies from these societies on the other hand show a female dominance12. There are few hospital-based studies from India too that have shown a dominance of females over males. In one such study, Ray et al.[13] found 56% of their patients to be females as compared to 44% males. Meera et al.[14] too in their hospital-based study found 64% of their patients as females. In view of these evidences, the high prevalence of males as compared to the females may reflect the profile of cross-section of patients in that particular study, however, it would be difficult to draw any inference regarding relative prevalence of PV in two genders in community.

In the present study, mean age of male and female patients was 27.17 and 26.70 years respectively, mean BMI was 24.06 and 24.20 kg/m2 and more than 75% patients had sedentary occupations. Among males majority of patients were unmarried (66%) whereas among females, majority of patients were married (57.4%). Compared to the present study, Heidrich et al.[4] in their study reported the median age of males and females to be slightly higher (31 years), however, similar to the present study, they also did not observe a significant difference in age profile of two sexes. Ray et al.[13] in their study though did not report the mean age of patients but found majority of males (70.6%) as well as females (70.8%) in age range 11-30 years and did not report of any significant difference in age profile of two sexes. Similar to the present study, they also found significant differences between two sexes for different risk factors, viz., use of body creams, oil, sharing of towels, and a near significant difference with respect to use of synthetic clothes. In their study, usage of body creams and synthetic clothes was higher in females as compared to that in males. In the present study, though we did not include use of body creams as a risk factor, however, with respect to use of synthetic clothes, we also found it to be significantly higher in females as compared to that in males. Although, we did not find a significant difference between two sexes with respect to practice of towel sharing but similar to their study we also found oil usage to be significantly higher in males as compared to that in females. In another study, Sharma et al.15 did not find a significant difference in proportion of males and females for patients aged upto 30 years, however, in age group 31-40 years and 51-60 years, they found significantly higher proportion of males as compared to that of females, thus showing that males tend to be at risk of PV even in higher ages as compared to that of females.

In the present study, we did not in general find a significant difference with respect to clinical profile of PV between males and females. Similar to the findings of the present study, Sharma et al.15 too failed to find a significant difference between two genders with respect to involvement of body site In another study, Banerjee et al.10 too failed to find difference in age and distribution pattern of lesions between males and females.

In the present study, significantly higher proportion of males reported with hyperhidrosis as compared to that of females. Although, hyperhidrosis does not involve level of activity, yet it may partially be associated with relatively higher proportion of patients with active occupational profile among males as compared to that in females. For other clinical variables, we did not find a significant difference between the two sexes.

The findings in general show that despite similarity in clinical profile, males and females tend to have different risk/triggering factors making them susceptible to active clinical manifestation of PV. Interestingly, while social and occupational roles of women are highly dependent on the societal norms and may change in different cultural environments yet there are not much studies elucidating the gender-specific potential risk factors for PV in different environments. The present study is an early attempt in this direction. Further studies on a larger sample size and inclusion of more potential risk factors to discriminate the gender-specific risks of PV are warranted.

CONCLUSION

There are differences in pattern of potential risk factors for PV between two sexes despite the clinical profile being similar. There is need to study the PV risk factors in specific gender contexts in different environments.

Table 1: Comparison of demographic profile and risk factors between two genders

SN	Variable/Characteristic	Male (n=103)	Female (n=47)	Statistical significance
1.	Mean age±SD (Range) in years	27.17±12.12 (9-72)	26.70±9.774 (14-57)	't'=0.230; p=0.818
2.	Mean BMI±SD (kg/m^2)	24.06±3.69	24.20±3.63	't'=0.224; p=0.823
3.	Married	35 (34.0%)	27 (57.4%)	X^2=7.329; p=0.007
4.	Sedentary occupation	78 (75.7%)	45 (95.7%)	X^2=8.761; p=0.003
5.	Urban residence	82 (79.6%)	41 (87.2%)	X^2=1.270; p=0.260
6.	Graduate or above education	27 (26.2%)	14 (29.8%)	X^2=0.208; p=0.645
7.	Positive family history	19 (18.4%)	9 (19.1%)	X^2=0.010; p=0.918
8.	Summer as risk factor	25 (24.3%)	7 (14.9%)	X^2=1.691; p=0.193
9.	Use of synthetic clothes	67 (65%)	45 (95.7%)	X^2=16.08; p<0.001
10.	Towel sharing	78 (75.7%)	33 (70.2%)	X^2=0.510; p=0.475
11.	Tobacco/alcohol use	58 (%)	2 (4.3%)	X^2=36.44; p<0.001
12.	Irregular bathing	38 (36.9%)	6 (12.8%)	X^2=9.063; p=0.003
13.	Topical oil use	87 (84.5%)	33 (70.2%)	X^2=4.098; p=0.043
14.	Previous history (Relapse episode)	29 (28.2%)	10 (21.3%)	X^2=0.794; p=0.373

Table 2: Comparison of Clinical Profile between two genders

SN	Variable/Characteristic	Male (n=103)	Female (n=47)	Statistical significance
1.	Duration of complaints >6 months	41 (39.8%)	20 (42.6%)	X^2=0.101; p=0.751
2.	Sudden onset	39 (37.9%)	21 (44.7%)	X^2=0.625; p=0.429

3.	Pruritus	18 (17.5%)	11 (23.4%)	X^2=0.727; p=0.374
4.	Site			
	Abdomen	8 (7.8%)	0	X^2=12.25; p=0.093
	Arm	1 (1.0%)	4 (8.5%)	
	Axilla	8 (7.8%)	3 (6.4%)	
	Back	11 (10.7%)	6 (12.8%)	
	Chest	35 (34.0%)	11 (23.4%)	
	Face	4 (3.9%)	3 (6.4%)	
	Neck	23 (22.3%)	15 (31.9%)	
	Shoulder	13 (12.6%)	5 (10.6%)	
5.	Distribution			
	Generalized	49 (47.6%)	17 (36.2%)	X^2=1.746; p=0.418
	Localized	21 (20.4%)	11 (23.4%)	
	Scattered	33 (32.0%)	19 (40.4%)	
6.	Morphology			
	Follicular	27 (26.2%)	11 (23.4%)	X^2=0.172; p=0.918
	Macular	45 (43.7%)	22 (46.8%)	
	Mixed (Follicular + Macular)	31 (30.1%)	14 (29.8%)	
7.	Pigmentation pattern			
	Hyper	7 (6.8%)	6 (12.8%)	X^2=1.966; p=0.374
	Hypo	91 (88.3%)	40 (85.1%)	
	Mixed	5 (4.9%)	1 (2.1%)	
8.	Moderate/Severe scaling	67 (65.0%)	25 (53.2%)	X^2=1.913; p=0.167
9.	Irregular margins	22 (21.4%)	13 (27.7%)	X^2=0.716; p=0.397
10.	Irregular shape	43 (41.7%)	24 (51.1%)	X^2=3.532; p=0.171
11.	Hyperhidrosis	53 (51.5%)	12 (25.5%)	X^2=8.833; p=0.003

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