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Original Article

Prevalence of smoking, alcohol, and comorbid conditions in psoriasis

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Abstract

Background Numerous studies suggest a link between cigarette smoking and alcohol. Psoriasis is associated with comorbid conditions like diabetes, hypertension, and metabolic syndromes which have a major impact on severely affected patients.

Objective To study and assess frequency of smoking, alcohol, and comorbid conditions in patients of psoriasis.

Patients and methods One hundred and four psoriatic patients fulfilling the inclusion criteria, were included in the study. Detailed medical history and examination of the patients with particular emphasis on the onset, distribution, and nature of psoriasis was carried out. History of smoking and alcohol intake was specifically looked for along with known history of other medical ailments. Diagnosis of psoriasis was clinical.

Results Out of 104 patients 58% were males and 42% were females. Mean age was 34.8+14.71 years. Most of the patients had generalized type of plaque psoriasis. Among all, 26.9% were smokers. History of alcohol intake was found only in 2.9% of patients. Comorbid diseases noted were hypertension and diabetes present in 11.6% and 5.8%, respectively. 3.9% were positive for hepatitis C virus.

Conclusion In our study, smoking was associated with severity of disease and mean PASI scores directly correlated with the number of pack years. Data regarding alcohol are still scanty and larger number of patients is required to establish or refute an association. Comorbidities in psoriasis may need careful assessment and early treatment.

Key words
Psoriasis, smoking, alcohol, comorbid conditions.

Introduction

Psoriasis is a chronic, inflammatory disease which may be caused by the interplay of multiple genes, the immune system and environmental factors.[1] It exerts significant impact on quality of life and poses lifelong physical, psychological and economical burden.[2] The pathophysiology of psoriasis includes enhanced antigen presentation by dendritic cells and their presentation to T-cells with resultant T cell activation, and increased release of type 1 (TH1) cytokines by these cells. These include interferon, interleukin 2 and tumor necrosis factor alpha (TNF α). These cytokines induce inflammatory changes in epidermis producing thick scaly red plaques and in some patients, arthritis.[3]

Numerous studies suggest a link between cigarette smoking and psoriasis severity. Cigarette smoke contains many potentially toxic materials e.g. nicotine, reactive oxygen species,

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nitric oxide, peroxynitrite and free radicals of organic compounds, which may affect the immunopathogenesis of psoriasis. These toxins act by activating T cells leading to overproduction of pro-inflammatory cytokines e.g. TNF-α, interleukin (IL-2, IL-6, IL-8 and interferon-γ.[4] Nicotinic cholinergic receptors have been demonstrated on keratinocytes, the epidermal cells that stimulate calcium influx and accelerate cell differentiation, they can also control keratinocyte adhesion and upward migration in the epidermis. The effect of nicotine could be mediated by the alpha 3 and alpha 7 containing nicotinic receptors visualized on keratinocytes by immunostaining. Long-term incubation with nicotine upregulated alpha 7 and downregulated alpha 3 expression. Thus, nicotine exerts inhibitory effects on keratinocyte migration, and Ca^{2+} serves as a second messenger in the signaling pathway. This suggests a biologic explanation for the association between smoking and psoriasis.[5]

There is sufficient evidence that aggravation of psoriasis is associated significantly with alcohol intake.[6-9] In addition to environmental factors, there are many reports suggestive of increased prevalence of cardiovascular morbidity and mortality in patients with psoriasis. It may be due to the chronic inflammatory disease process itself or to confounding factors such as tobacco smoking, obesity and sedentary life styles.[2,3] Various recent studies report association of diabetes and other cardiovascular diseases (hypertension, heart failure or ischemic heart disease or hyperlipidemia) to the severe form of psoriasis.[9,17,22] To evaluate these issues, we studied the prevalence of smoking, alcohol and comorbid conditions in patients of psoriasis.

Patients and methods

This study was carried out in the Department of Dermatology, Allama Iqbal Medical College/Jinnah Hospital Lahore, from December 2008 to December 2009. One hundred and four subjects fulfilling the inclusion criteria, were included in the study. All the clinically diagnosed cases of psoriasis were subjected to a detailed medical history and physical examination. Psoriasis area severity index (PASI) score was calculated in each patient. The history of smoking, alcohol and other comorbid conditions was specifically looked for. Data on smoking included duration and number of cigarette packs per day. Pack years were calculated by multiplying number of packs per day with the years of smoking. Details of medications and known history of other medical ailments was also noted. All the information was collected on a structured proforma.

Data were entered in SPSS version 16.0. Numerical variables like age and PASI score, duration of smoking, pack years were presented as mean and standard deviation. Frequency tabulation and percentage was calculated for nominal variables like smoking, alcohol, and presence and absence of comorbid conditions.

Results

A total of 104 patients were included in the study. The age range was from 8-70 years and mean age was 34.8±14.7 years. 68.3% of patients were ≤40 years of age and those ≥40 years were 37.7%. Male patients were 58% while females were 42%. Chronic plaque psoriasis (generalized) was encountered in majority of the patients i.e. 51 %.

73.1 % were nonsmokers and 26.9% were smokers. Mean PASI score of subject was 25.3±13.92. Mean PASI score in smokers was 28.4±11.97 and in nonsmokers it was 24.16±14.47. We observed a direct increase of

Table 1 Pack years and mean PASI Score in smokers (n=28)

Pack years	*Number of patients*	*Mean PASI score*
1-2	4 (3.8%)	24.75
2-5	5 (4.8%)	27.77
5-10	6 (5.8%)	28.84
10-20	13 (12.5%)	33.30

Table 2 Co morbid conditions (n=22).

Comorbidities	*N (%)*
No disease	75 (72.1)
Hypertension	12 (11.6)
Diabetes mellitus	6 (5.8)
HCV	4 (3.9)

PASI score with increase in the number of pack years (**Table 1**). 60.7% smokers had generalized plaque type psoriasis and 39.3% had localized variety.

History of alcohol intake was found only in 2.9% of patients. Mean PASI score in these patients was 22.6.

A total of 21.15% of patients had some comorbidity in our study. **Table 2** enlists the comorbid conditions seen in our patients. Hypertension was seen in 11.6% of patients. Diabetes was present in 5.8% of patients and hepatitis C virus was found in 3.86% of patients. In hypertensive patients mean PASI score was 28.85 while in diabetic patients it was 34.16.

Discussion

Cigarette smoking is a risk factor for many chronic diseases including psoriasis. Our study also supports the evidence that smoking seems to be a risk factor for psoriasis. Herron and Hinckley[2] found that smoking appears to have a role in the onset of psoriasis. Several other studies report the link between smoking and psoriasis.[8,9,10] Poikolainen *et al*.[11,12] supported the association between psoriasis and smoking in two separate studies in 1993 and 1999, respectively. They found that patients who smoked more than a pack of cigarette (20 cigarette) daily had greater risk of severe psoriasis compared with those who smoked ten cigarettes or less per day.[2,13]

Similar association was found in European population.[8,14] Naldi *et al*.[14] have explored the impact of smoking on psoriasis in Italian population. Another multicenter, case-control study reported an increased risk of psoriasis among smokers and ex-smokers, compared with the subjects who never smoked.[8] A large scale study conducted in Boston, USA found that among those psoriatic patients who used to smoke had more severe disease. Even passive smoking during childhood or pregnancy was associated with an increased risk of psoriasis.[4] Huerta *et al*.[9] discovered smoking to be an independent risk factor for psoriasis. It has long been known that smoking induces functional and morphological changes in polymorphonuclear leucocytes and it may cause an exaggerated release of chemotactic factors including IL-4, IL-1,TNFα, transforming growth factor β (TGFβ) which has been associated with psoriasis severity.[15,16] In our study smoking seems to be directly associated with severity of disease.

Alcohol is a risk factor for aggravation of psoriasis in young and middle aged men[1,11] and it makes treatment less effective.[5] Poikolainen *et al*.[12] found that excess mortality may be related to coupled effect of alcohol intake and smoking among psoriatic patients.

Various studies from abroad show association of alcohol with psoriasis flare up, however in our part of world people either do not consume alcohol or do not give true history of alcohol intake because of social and religious reasons. Therefore, we could find only three patients with

history of alcohol intake and were unable to assess its relation with the disease severity.

Psoriasis appears to be a multifactorial disease therefore numerous studies and surveys have been conducted to determine other disease associations in psoriasis as a mean of better understanding the pathogenesis of diseases. Ayala and Ayala in Italy supported the association of psoriasis with different disorders including Crohn's disease, anxiety, depression, abdominal obesity, hypertension, diabetes, cardiovascular disease and stroke.[18] Psoriasis was found to be linked with chronic obstructive pulmonary disease in few other studies.[19,20] Al-Mutairi *et al*. from Kuwait supported the prevalence of inflammatory arthritis, coronary heart disease, obesity, diabetes, hypertension, metabolic syndrome, chronic obstructive pulmonary disease and cancer in patients with moderate and severe psoriasis.[17] Inflammation is a risk factor for high blood pressure and may also contribute to insulin resistance, a pre-diabetic stage where the body does not respond to glucose regulating hormone insulin.[21] The statistical data shows that the genetic predisposition to develop diabetes and obesity is related to psoriasis.[22] Psoriasis and its comorbidities share a common etiological linkage, it is hypothesized that proinflammatory cytokines contribute to dyslipidemias, atherogenesis, peripheral insulin resistance, type II diabetes, hypertension etc.[23] Many researchers reported a strong association of psoriasis with diabetes, hypertension and hyperlipidemia.[3,21,24]

This study shows a possible link between hypertension, diabetes and psoriasis. However, association of hepatitis C patients with psoriasis is insignificant due to its high prevalence (3.0%) in Pakistan.

Conclusion

Smoking seems to be associated with severity of disease and mean PASI scores are directly related to the number of pack years. Furthermore psoriasis also appears to be linked with diabetes and hypertension.

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