

Frequency of dyslipidaemia in patients with plaque psoriasis in Lady Reading Hospital Peshawar, Khyber Pakhtunkhwa

Zia ul Haq, Mehran khan, Ambreen Afridi, Naimat Ullah

Department of Dermatology, Gajju Khan Medical College, Swabi.

Abstract

Objective To determine the frequency of dyslipidaemia in patients with plaque psoriasis in Lady Reading hospital Peshawar Khyber Pakhtunkhwa.

Methods This cross sectional study was carried out in the department of Dermatology lady reading hospital Peshawar Khyber Pakhtunkhwa from 1st February 2018 to 30th July 2018. All eligible patients who presented with chronic plaque psoriasis were enrolled in the study through consecutive non probability sampling.

Results In our study 99 participants were included, 60 males and 39 females with the mean age 37.76±11.10 years. Dyslipidaemia was present in 30.3% of patients with 8.1percent patients showing high triglycerides. Low Density Lipoprotein was high in 3% patients and 25.3% showed high total cholesterol.

Conclusion Patients with plaque psoriasis may have dyslipidaemia. Chances of having dyslipidaemia in psoriatic patients increases with increased duration of disease. More robust screening techniques should be used to detect these at an early stage.

Key words

Plaque psoriasis, dyslipidaemia.

Introduction

Psoriasis is a common chronic inflammatory disease of the skin.¹ It affects 3% of population worldwide.² Clinical hallmarks of psoriasis consist of erythematous plaques covered by silvery scaling and a chronic recurrent course.³

It is a T cell mediated autoimmune disease with genetic and environmental influences with super expression of pro inflammatory Th1 cytokines with a relative deficiency of Th2 cytokines.^{5,6} Risk factors for the disease include stress,

infections, and certain medications (lithium, beta blockers, NSAIDS, steroids withdrawal and anti-malarial).^{7,8} Chronic Plaque Psoriasis is typically symmetrical and bilaterally distributed on extensor prominences, scalp and essentially all body parts, associated with itching.⁹ 10 to 20% patients of Psoriasis have nails involvement and less than 10% have joints involvement.^{10,11} It is a disease with unpredictable course, prone to flare up and remission, affecting both males and females equally.¹² Patients with moderate to severe psoriasis have significant risk for developing cardiac disease due to the inflammatory nature of the disease causing inflammatory changes in the coronary arteries.^{13,14} In addition Psoriasis may also confer an independent risk of myocardial infarction.¹⁵ Moreover dyslipidaemia itself is a

Address for correspondence

Dr. Zia ul Haq, Assistant professor,
Department of Dermatology,
Gajju Khan Medical College, Swabi.
Ph: 03005914796
Email: drziaulhaq266@gmail.com

major risk factor for myocardial infarction, heart failure and stroke.¹⁶⁻¹⁸

Our study is designed to determine the frequency of dyslipidaemia in patients of chronic plaque psoriasis. As mentioned above, the patients with deranged levels of lipid profile are at increased risk of developing cardio vascular complications leading to myocardial infarction, stroke, heart failure and ultimately leading to premature death. This study will give us local evidence of magnitude of dyslipidaemia in patients attending the dermatology OPD of one of the largest hospital of the province. On the basis of this study it is recommended that an adequate and continuous therapeutic control of psoriasis should be established from the beginning to reduce morbidity and mortality related to cardiovascular complications. The results of this study should also be included in educational concepts on psoriasis so as to underline the importance of screening for dyslipidaemia.

Methods

This descriptive cross sectional study was carried out in the department of Dermatology, Lady Reading Hospital, Peshawar Khyber Pakhtunkhwa from 01-02-2018 to 30-07-2018. Sample size was 99 using 95% confidence level and 7% margin of error, under WHO software for sample size calculation, using consecutive (non-probability) sampling technique.

All patients with either gender having age between 15-65 years with chronic plaque psoriasis were included in the study. Patients already diagnosed as having ischemic heart disease, hypertension with B. P \geq 140/90 mmHg, diabetes with FBS \geq 126 mg/dl and a positive family history of dyslipidaemia were excluded from the study.

Patients who presented to dermatology unit Lady Reading Hospital Peshawar through OPD, diagnosed as plaque psoriasis on the basis of history and examination (inflamed reddish plaques covered by silvery scales, predominantly on elbows, knees, scalp and trunk) fulfilling the inclusion criteria, were included in the study. After getting approval from hospital research and ethical committee, informed written consent was obtained from every patient. Demographic data like age, sex, address was obtained. All patients were advised to come after a 12 hour overnight fast, 5ml of blood was obtained under aseptic conditions and was sent to the laboratory for estimation of dyslipidaemia in the form of cholesterol, LDL, HDL and triglycerides. All the investigations were done by a single expert pathologist having at least 5 years' experience. A pre designed proforma was used that comprised of demographic data and frequency of dyslipidemia.

The data was analyzed in SPSS version 23. Descriptive statistics like mean \pm standard deviation were calculated for age and duration of disease. Frequency and percentages were calculated for sex, high cholesterol, high triglycerides, high LDL, low HDL and dyslipidaemia. Dyslipidaemia was stratified among the age, sex and duration of disease to see the effect modifiers after applying chi square test. All the results were presented as tables and figures.

Results

The mean age of our sample was 37.76 years with a standard deviation of 11.10 with a minimum age of 18 years and maximum age of 65 years in our study. We divided the patients in 2 different age groups i.e. > 15 to 40 years and >40 to 65 years (**Table 1**). Out of 99, there were 60 males and 39 females (**Table 1**).

Table 1 Duration of disease/ age-wise distribution of participants

Gender	Frequency	Percent	Age		Mean	Std. Dev.	Disease duration		Mean	Std. Dev.
			Min	Max			Min	Max		
Male	60	60.6	18.00	65.00	39.97	12.15				
Female	39	39.4	18.00	57.00	34.39	8.33	1	25	9.61	5.2
Total	99	100.0	18.00	65.00	37.77	11.11				

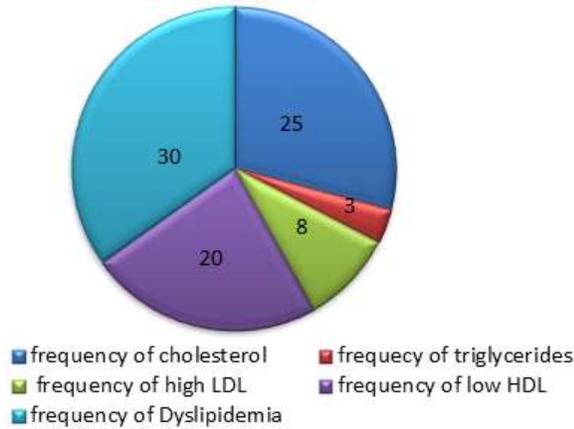


Figure 1 Showing frequencies of cholesterol

Table 2 Age groups wise stratification of dyslipidemia

Dyslipidaemia	Age group (years)		Total	P-Value
	15-40	>40-65		
Yes	13	17	30	<0.001
No	54	15	69	
Total	67	32	99	

Table 3 Age groups wise stratification of dyslipidemia

Dyslipidaemia	Duration of disease		Total	P-Value
	<10 yrs.	> 10 yrs.		
Yes	10	20	30	<0.001
No	55	14	69	
Total	65	34	99	

The patients were categorized in two groups according to the duration of the disease. Those having duration of disease below 10 years of age while the other group having duration more than 10 years. Minimum duration was 1 year while maximum duration was 25 years, the mean duration was 9.61±5.180 standard deviation as shown in **Table 1**. Stratification of psoriatic patients was done on the basis of age, gender and duration of disease.

Total cholesterol was found to be higher in 25.3% of patients, triglycerides were higher in

8.1 percent of patients, low density lipoproteins was higher in 3% of patients while High density lipoprotein was deranged in 20.2 percent of patients as shown in **Figure 1**. In the total sample of enrolled patients, dyslipidaemia was present in 30.3% of patients as shown by **Figure 1**.

Among the total patients having dyslipidaemia, 19 patients were male while 11 patients were female as shown in **Table 1**. In the Age group 1, dyslipidaemia was found in 13 patients while in age group 2 it was found in 17 patients with a significant P-Value of less than 0.001 as shown in **Table 2**.

In the duration group 1, dyslipidaemia was found in 10 patients while in duration group 2 it was found in 20 patients with a significant P-Value as shown in **Table 3**.

Discussion

There is sufficient data to indicate that psoriasis should be more widely recognized as a potential risk factor for cardiovascular diseases. Various studies have been performed throughout the world to highlight the association of dyslipidaemia with psoriasis. However there is little local data available to emphasize the role of screening for dyslipidaemia in psoriatic patients. The rationale of this study was to estimate an actual figure for the frequency of dyslipidaemia in psoriatic patients in our population and to further aid to consolidate the evidence for the presence of dyslipidaemia in psoriasis. The aim is to make screening for dyslipidaemia an essential part of workup of

psoriasis patients, making early detection and treatment of these risk factors possible and thus preventing cardiovascular complications from occurring in psoriatic patients.¹²

Dr. Doulat Rai Bajaj and colleagues in Liaquat university hospital Hyderabad conducted a study to determine the lipid abnormalities in patients with psoriasis.¹³ They observed that the prevalence of dyslipidaemia was more in males as compared to females. We saw a similar trend in our patients. The reason for the increased number of males as compared to females can be because of the fact, that males in our conservative society actively seek medical care for their disease as compared to females.¹⁴ The other might be the fact that males have additional risk factors for development of dyslipidaemia because of smoking, alcohol, stress and hormones (testosterone).¹⁴

The reason for the difference could be the fact that the mentioned study included different types of psoriasis i.e. plaque, guttate, palmoplantar and flexural psoriasis.¹⁵ In addition the duration of the disease ranged from 18 months to 10 years while in our study the minimum duration was 1 year while maximum was 25 years.¹⁶ This observation highlights the association of prolonged duration of psoriasis and the consequent increased prevalence of dyslipidaemia. Prolonged duration means increased oxidative stress, prolonged inflammation and long duration of cumulative exposure to multiple risk factors for the development of dyslipidaemia, which is evident by the increased frequency of dyslipidaemia in duration group 2 in our study having a duration of disease above 10 years. Severity of psoriasis was not classified in both the studies.^{17,18}

Jacob Dreier and colleagues from Israel conducted a population based study to evaluate the association between dyslipidaemia and

psoriasis.¹⁹ The study included 10,669 psoriasis patients. They observed that the prevalence of dyslipidaemia was significantly higher in psoriatic patients. Overall dyslipidaemia was diagnosed among 57.1% of cases while in our study it was found in 30.3% of cases. The reason for the observed difference in the percentage could be the large sample size in the mentioned study, in our study it was only 99 patients. In addition their patients were diagnosed more frequently with other diseases associated with dyslipidaemia such as smoking, diabetes, obesity and hypothyroidism. In our study these comorbidities were not evaluated. The association remained significant even after controlling for confounders.²⁰ All of the Individual components of dyslipidaemia were also deranged as in our study. i.e. serum cholesterol were found higher in 14.7% of patients, in our study it was elevated in 25.3%, LDL was elevated in 40% while in our study it was high in 3%, TG was elevated in 15.9%, in our study in 8.1%, HDL was deranged in 24.9% while in our study it was deranged in 20.2%.²¹

Another reason for the higher prevalence of dyslipidaemia in the observed study may be the fact that psoriatic patients were older with a mean age of 57.8, which correlates positively with the observed increased prevalence of dyslipidaemia in our study in the age group 2 having patients above the age of 40 years.²² In our study the mean age was 37.76. Similar trend was observed regarding the number of male patients in both the studies i.e. males were more in number as compared to females in both the studies.²³

Another study was conducted by Jayakar Thomas and colleagues in the department of skin and STD in Sree Balaji medical college and hospital Chennai India with almost similar sample size as in our study.²³ They enrolled 100 patients of psoriasis to study the association of

psoriasis with various comorbid conditions including dyslipidaemia.²⁴

Overall lipid abnormalities were seen in 4% of patients in the mentioned study. In our study it was found in 30.3% of patients. The observed difference could be the fact that 45% of their patients had palmoplantar psoriasis. In our study all the patients were having chronic plaque psoriasis. Another reason is that maximum number of their patients, that is 60%, were having disease duration of 1 to 5 years, while in our study the range was from 1 to 25 years and increased duration means increased prevalence of dyslipidaemia.²⁵

The reasons for dyslipidaemia in psoriasis may be multiple. The structural and functional changes in digestive tract, immune mechanisms involving IL-624 and tumor necrosis factor, and C-reactive proteins and cellular oxidative stress may be responsible for altered lipid metabolism²⁴. There is increased prevalence of coronary artery disease in our population. It is expected to rise further by Th1 mediated diseases like psoriasis. Thus in consensus with previous studies, this study also shows an increased prevalence of lipid abnormalities in psoriasis. This information fact may suggest an increase in the already existing high prevalence of cardiovascular events in our population.²⁵ Hence, early screening is advisable and treatment of hyperlipidemia in psoriasis to prevent atherosclerosis and its complications. Though, the study had a small sample size. However it may form a base for a larger future study.²⁶

Conclusion

Patients with plaque psoriasis can have dyslipidaemia. Chances of dyslipidaemia in psoriatic patients increase with increased duration of disease. On the basis of this study it

is recommended that an adequate and continuous therapeutic control of psoriasis should be established from the beginning to reduce morbidity and mortality related to cardiovascular complications. The results of this study should also be included in educational concepts on psoriasis so as to underline the importance of screening for dyslipidaemia. It is suggested that clinician should pay more attention to screen for the cardiovascular risk factors while dealing with patients presenting with psoriasis.

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