ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com
Journal DOI: 10.21474/IJAR01

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

To assess the frequency of hyperlipidemia in patients with psoriasis and compare its levels with healthy controls in an outpatient of a tertiary care hospital.

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Manuscript Info

Manuscript History:

Received: 12 May 2016
Final Accepted: 19 June 2016
Published Online: July 2016

Key words:
Hyperlipidemia, Psoriasis, Body surface area, cholesterol.

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Abstract

Objective of the study: To assess the frequency of hyperlipidemia in adult patients with psoriasis attending dermatology outpatient of a tertiary care hospital.

To compare the lipid levels of patient with Psoriasis and healthy volunteers attending the OPD for other conditions.

Methods: This was a case control study enrolled patient suffering from Psoriasis for one year and conducted in Dow University Hospital. 100 subjects were enrolled in the study by using convenient sampling, after ensuring inclusion, exclusion criteria and giving informed consent. Statistical analysis was carried out using SPSS-16 to calculate frequency and percentages. Subjects with no known association of lipid metabolism and negative family history of Psoriasis enrolled as healthy controls.

Results: Out of 100, 50% were females and 50% were males with psoriasis and in control group 52% were females and 48% were males. Subjects with different psoriatic variants enrolled to assess hyperlipidemia while in control group patient with skin conditions other than Psoriasis or healthy people were enrolled, 39 subjects reported positive family history, subjects with duration of Psoriasis from minimum time recorded 3 months and maximum 18 years, subjects with different sites of involvement enrolled, 47 subjects reported Nail Involvement, 23 patient reported Joint Involvement and 54 patient reported Scalp Involvement, 51 reported mild and 49 reported moderate BSA involvement.

Lipid profile differed in subjects with psoriasis when compared with control group. In this study after statistical analysis the results found to be:

Cholesterol: mean value of 181 mg/dL for Psoriatics and in Health controls a mean value of 127 mg/dL.

LDL: Psoriatics had a mean value was 106mg/dL and in Healthy controls mean value was 74 mg/dL.

HDL: A mean value of 45 mg/dL for Psoriatic subjects and mean value of 42 mg/dL in healthy controls.

TGS: The mean value of 123mg/dl in Psoriatics while controls had mean value of 94 mg/dL.

Conclusions: Hyperlipidemia is a modest finding in psoriasis than control group. It is considered as a risk factor for other co-morbidities like cardiovascular diseases in patients with Psoriasis. Awareness among physicians regarding this problem may help in prevention of serious consequences.

Introduction:-

Psoriasis is a chronic inflammatory disease of still unknown etiology, with a prevalence of 1-3% [(1)], with predominantly cutaneous manifestations as infiltrative erythemato-squamous papules and plaques, but also with systemic involvement. [(2)]

Psoriasis is an autoimmune disease that causes raised, red, scaly patches to appear on the skin. It typically affects extensors though it can appear on any site. Some people report that psoriasis is itchy, and stings. The exact causes of psoriasis is not known, the immune system and genetics play major roles in its development. The skin cells in people with psoriasis grow at an abnormally fast rate, which causes the buildup of psoriatic lesions. The major types of Psoriasis includes Plaque, Guttate, Inverse, Pustular, Erythrodermic[(3)].

Hyperlipidemia is characterized by elevated concentrations of circulating lipids, increasing the risk of atherosclerosis and other serious conditions. Specific classes of hyperlipidemia include hyperlipoproteinemia, elevated very low-density lipoprotein (VLDL) and low-density lipoprotein (LDL) levels, hypercholesterolemia (elevated cholesterol levels), and hypertriglyceridemia (elevated triglyceride levels)[(4,5)].Hyperlipidemia is typically asymptomatic and is frequently detected during routine screening.

These associated diseases and co morbidities tend to worsen the burden of disease, as well as, reduce the quality of life indices in an otherwise benign skin disorder.[(6)] and is said to reduces the life expectancy of these patients by approximately 4 years.[(7,2)]Quality of life can be improved with controlling the hyperlipdemia.Burden of cardiovascular co morbidity may be controlled by controlling the hyperlipidemia. Very little work has been done on this aspect in Pakistan; hence, this study will be conducted in order to establish a relation between hyperlipidemia and psoriasis in our region.

The lipid profile gives information about total cholesterol, LDL, HDL and TGs. A blood test called a lipoprotein panel can measure these levels. Before the test, a fast is required for 12 hours [(8)].

Cholesterol:-

Total Cholesterol Level	**Total Cholesterol Category**
Less than 200 mg/dL	Desirable
200–239 mg/dL	Borderline High
240 mg/dL and higher	High

LDL:-

LDL Cholesterol Level	**LDL Cholesterol Category**
Less than 100 mg/dL	Optimal
100–129 mg/dL	Near optimal/above optimal
130–159 mg/dL	Borderline High
160–189 mg/dL	High
190 mg/dL and higher	Very High

HDL:-

HDL Cholesterol Level	**HDL Cholesterol Category**
Less than 40 mg/dL	A major risk factor
40–59 mg/dL	The higher, the better
60 mg/dL and higher	Considered protective

TGs:-

TGs Level	**TGs Category**
Less than 150 mg/dL	Desirable
150–199 mg/dL	Borderline High
200 mg/dL and higher	High

Study Design:-

A total of 100 subjects (by openepi method) enrolled in the study over a period of 1 year from January 2015 till December 2015. Subjects with (< 30% BSA) to moderate (30-50% BSA) psoriasis according to rule of nine and on topical therapy enrolled in study. Both genders with different types of psoriasis considered to be eligible in the study. Subjects with severe Psoriasis, on systemic therapy, children, pregnant and lactating mothers were excluded. Subjects on retinoids, diuretics or any other medicine known to affect lipid metabolism and who are already on lipid lowering drugs, with history of alcohol intake, smoking and with Diabetes mellitus, Hypertension, Asthma, hypo/hyperthyroid, Chronic Renal Failure, Chronic Liver Disease or Ischemic Heart Disease were excluded. Healthy workers and subjects with no known association of lipid metabolism and negative family history of Psoriasis enrolled as controls.

Methodology:-

A case control study of psoriatic patients attending outpatient clinic of dermatology at Dow University Hospital was conducted. 100 subjects with Psoriasis and 100 subjects having skin disorder other than Psoriasis as control group fulfilling the inclusion criteria and giving informed consent were enrolled. A Detailed history including personal data, present complaints, past, family, personal and treatment history was taken followed by physical examination and recorded on a pre-designed questionnaire. Lab test for fasting lipid profile was performed. The blood sample for lipid profile was collected after 14 hour fast to assess the lipid profile in psoriasis subjects and control group.
Ethical considerations were observed. The information from patient was kept anonymous and details about study were explained to both groups. Written consent was taken. Those not consenting were excluded after providing appropriate treatment.

Patients were assessed as mild (<30% BSA), moderate (30-50% BSA), and severe (>50% BSA) according to rule of nine, method used in calculating body surface area involved in burns and psoriasis, whereby values of 9% or 18% of surface area are assigned to specific regions in the adult as follows: Head and neck, 9%; anterior thorax, 18%; posterior thorax, 18%; arms, 9% each; legs, 18% each; and perineum, 1%[9].
The results obtained were being compared with control group. Statistical analysis will be carried out using SPSS-16 to calculate frequency and percentages.

Results::-

Out of 100, 50% were males and 50% were females with different psoriatic condition and 48% were females and 52% were males in healthy controls.

Patient with different psoriatic conditions were enrolled in the study explained in Chart 1a and Healthy controls with different skin condition like Eczema, Pigmentation and healthy workers explained in Chart 1b.
From the data the duration of Psoriasis recorded had different time ranges from a minimum time recorded 3 months and maximum 18 years.

Out of 100 subjects, 61subjects have Negative Family History and 39subjects have Positive Family History.
The subjects enrolled in the study with different psoriatic conditions have different sites of involvement. Some subjects had single or more sites involved, explained in (Table 1)

Out of 100 subjects, 47%subjects had Nail involvement, 23%subjects had Joint involvement, 54% subjects had Scalp involvement, 51 subjects had mild and 49 subjects had moderate body surface area involvement in Psoriasis.
The Lipid profile explained in Chart 2 included LDL, Cholesterol, HDL and TGs, which tends to differ in subjects with psoriasis when compared with control group. After statistical analysis mean value of cholesterol, LDL,HDL and TGs between Psoriatic patients and control group recorded in (Table 2).
After running Chi-square test the P- value obtained for Cholesterol was 0.073, for LDL was 0.8472, for TGs was 0.432 and for HDL was 0.358 and the alpha (significant) value was 0.05 in subjects with Psoriasis, so the P value found to be greater than the alpha value which means that Psoriasis and Hyperlipidemia are independent.
When we compare Hyperlipidemia between Psoriasis Subjects and Control group, the P- Value obtained was 0.0001 and the Alpha value was 0.05 which means that Lipid Profile is different in both group and Hyperlipidemia was more closely found to be associated in Subjects with Psoriasis.

Discussion:-

Several studies demonstrate an association of psoriasis and dyslipidemia[1]. A study of psoriatic patients attending an outpatient hospital based clinic in compared to healthy controls from the community demonstrated poorer plasma lipid profiles (total cholesterol, triglycerides, LDL, and HDL) for the psoriasis patients[10].

Individuals with psoriasis have been found to have increased blood levels of elevated LDL, TGs and low level of HDL [11]. In this study, we examined the risk of Hyperlipidemia among individuals with psoriasis and controls. Controls were subjects newly diagnosed as having other dermatological conditions other than Psoriasis.

In this study we compared the prevalence of hyperlipidemia between psoriatic subjects and control individuals.Compared with control subjects, psoriatic subjects had modest high LDL, TGs and Cholesterol levels and low levels of HDL and a remarkably greater prevalence of asymptomatic hyperlipidemia when compared to control group. In addition, several cross-sectional studies using varying populations and analytic approaches have found an association between psoriasis and an increased prevalence of diagnoses of hyperlipidemia [11, 12, 13]and in this study hyperlipidemia found more closely in subjects with Psoriasis rather than healthy controls, although several studies failed to find consistent results of psoriasis and hyperlipidemia so, it is considered as a risk factor in subjects with psoriasis[14, 15, 16].

In this study modest increase in lipid profile were seen in subjects with psoriasis and another study demonstrated only modest increases in total cholesterol and lipoprotein in psoriasis subjects when controlling for age, gender, smoking, exercise, alcohol use, %BSA, and systolic blood pressure these are considered as risk factors for Psoriasis [17]. As expected, both men and women psoriatic had hyperlipidemia than did their counterparts in a control group.

The rate of occurrence of Psoriasis in male and female is same that's why we enrolled both. Some studies showed that a low-fat diet improved psoriasis. Others indicated a decreased risk of psoriasis associated with intake of cholesterol-lowering drugs and increased lactate dehydrogenase level and diminished Psoriasis Area and Severity index score, i.e., reduced cutaneous lesion in psoriasis[18].

Research is still ongoing as to the cause of psoriasis, but according to the National Psoriasis Foundation, around 10 percent of people inherit one or more of the genes that could lead to it, but only 2 to 3 percent of people get the disease[19]. There is documented evidence to the belief that stressful life events may represent risk factors for the onset of psoriasis i.e. family history could be consider as a risk factor for Psoriasis [20].

The risk factors of cardiovascular disease appear to be more common in patients with psoriasis compared with the general population. A case-control study was conducted with psoriasis patients and a matched cohort of non-psoriasis patients. Psoriasis patients were significantly more likely to have cardiovascular co morbidities, including hypertension, hypercholesterolemia, and diabetes, compared with non psoriasis patients. In a cross-sectional study, Gisondi reported that among patients from an Italian dermatology clinic, psoriasis patients not on systemic medications had a higher prevalence of metabolic syndrome [21].

Subjects with Psoriasis were found to have an associated elevation of the lipid profile when compared with control group. Patients with extensive involvement of the skin and moderate to severe involvement of BSA tended to have a higher incidence of hyperlipidemia[22]. High serum lipid level is significantly more common in psoriasis. This fact may be responsible for higher prevalence of cardiovascular accident in psoriatic patients. It may be useful to do early screening and treatment of hyperlipidaemia in psoriasis to prevent the atherosclerosis and its complications [22]. In this study after statistical analysis the maximum values and mean values tended to persist high in subjects with Psoriasis than control groups. It is controversial whether changes in lipid composition are primary events or secondary to psoriasis[23]. Abnormalities of plasma lipids are likely to play an important role in the increased risk of atherosclerosis, as patients with psoriasis seem to have an increased morbidity and mortality from cardiovascular events [24]. Our results showed that there was modest increased of lipid level in psoriatic patients in comparison to controls. This is in agreement with the results obtained by Kural et al ,Akhyani et al, Tekin et al and Vahliquist et al. As they all found significant increase in plasma level of triglyceride, LDL, total cholesterol in psoriatic patients in comparison to controls and correlated positively with psoriasis severity[25].

The reasons for the changes in lipid metabolism in Psoriasis subjects have not been satisfactorily explained in the literature. However, they may be related to some abnormalities of the digestive system which takes part in decomposition, modification and synthesis of lipids. In Psoriasis Patients structural and functional abnormalities have been found in nearly all segments of the digestive system [(26)].

Conclusion:-

Hyperlipidemia is a modest finding in psoriasis than control group. It is considered as a risk factor for other co-morbidities like cardiovascular diseases in patients with Psoriasis. Awareness among physicians regarding this problem may help in prevention of serious consequences.

Funding : no source of funding for the original study on which the present article is based.

Charts:-

Chart 1a (Psoriasis):-

Psoriatic Condition	**No. of Subjects**
Annular	4
Elephantine	6
Flexural	2
Guttate	9
Inverse	3
Inverse + Plaque	2
Palmoplantar	9
Palmoplantar + Plaque	4
PalmoplantarKeratoderma	2
Palmoplantar, pustular	2
Plaque	47
Pustular	3
Scalp	1
Sebo Psoriasis	6

Chart 1b (Healthy Controls):-

Health Control Conditions	**No. of Contols**
Acne	14
Hair Disorders	9
Eczema	18
Corn	8
Folliculitis	5
Melasma	17
Healthy Worker	13
Nevus of OTA	2
wart	1
Tinea	13

Chart 2 (Lipid Profile):-

Lipid Profile	**Desirable**		**High**		**Very High**	
	No. of Psoriasis Subjects	**No. of Control**	**No. of Psoriasis Subjects**	**No. of Control**	**No. of Psoriasis Subjects**	**No. of Control**
Cholesterol	69	96	17	3	14	1
LDL	49	98	50	1	1	0
TGS	72	91	18	8	10	1
HDL	62	9	0	46	38	45

Table 1:-

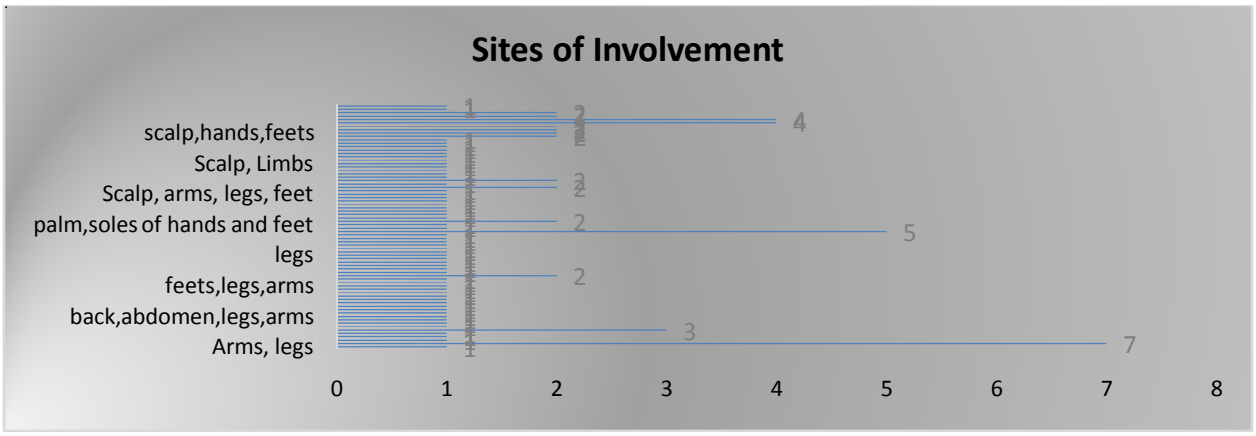


Table 2:-

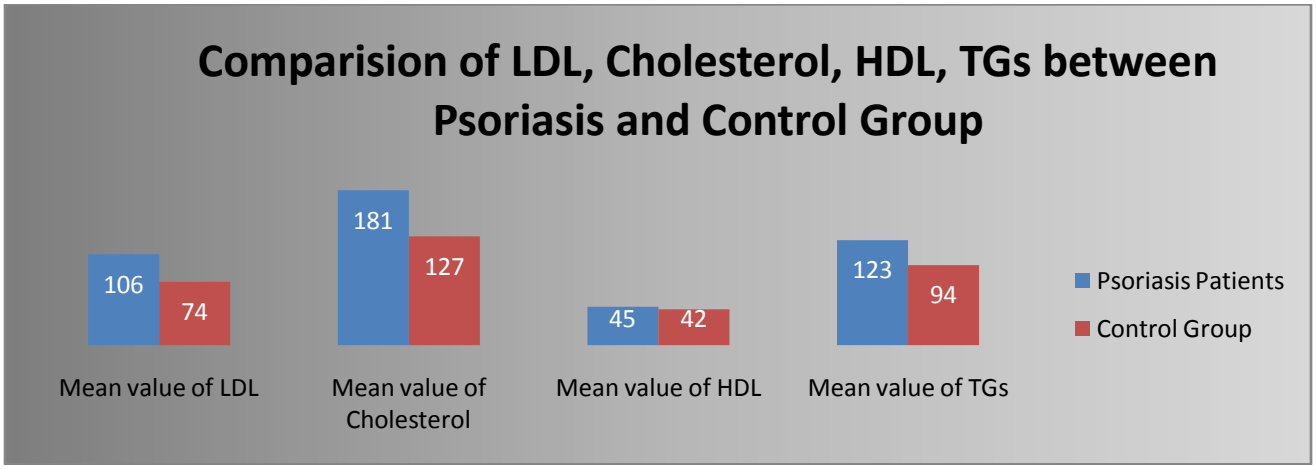
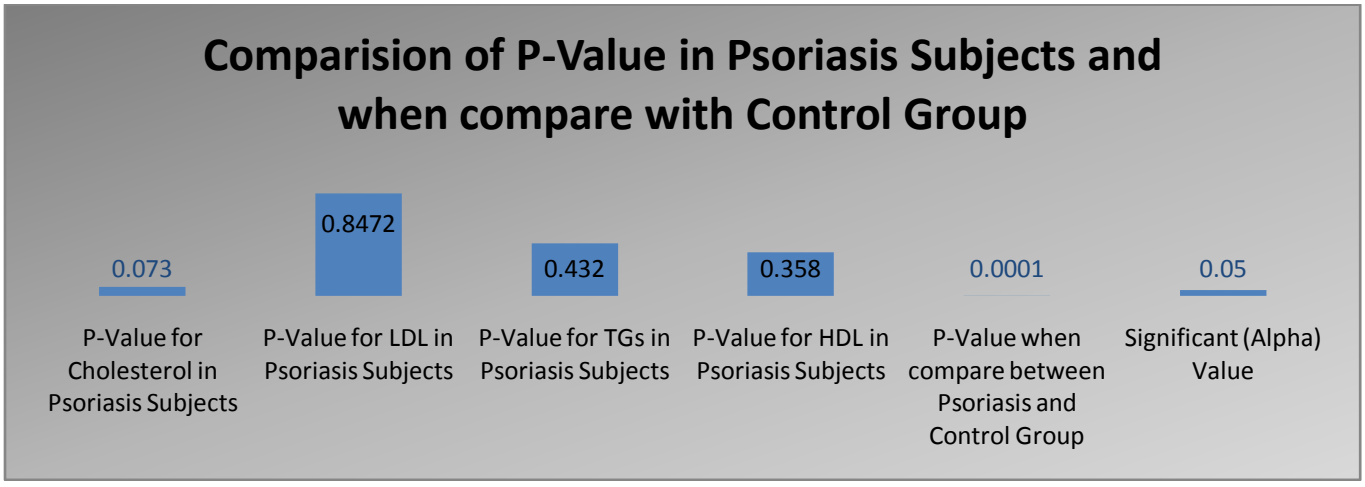


Table 3:-



References:-

1. Azfar RS, Gelfaud JM. Psoriasis and metabolic disease: epidemiology and pathophysiology. CurrOpinRheumatol. 2008; 20(4):416-22.
2. Rotaru M, Psoriasis and Associated Cardio-Metabolic Comorbidities.ActaMedicaTransilvanica.March 2015;20(1):76-79.
3. About Psoriasis. National Psoriasis Foundation. https://www.psoriasis.org/about-psoriasis
4. Goldstein JL, Hobbs HH, Brown, MS. Familial Hypercholesterolemia. The Metabolic and Molecular Bases of Inherited Disease. 2001: 2863-2913.
5. Illingworth DR, Duell PB, Connor WE. Disorders of lipid metabolism.Endocrinology and Metabolism. 1995:1315-1403.
6. Ejaz A, Suhail M, Iftikhar A. Psoriasis in Pakistani population: Associations, comorbidities, and hematological profile. Journal of Pakistan Association of Dermatologists 2013; 23 (1):42-46.
7. Gelfand JM, Troxel AB, Lewis JD, Kurd SK, Shin DB, Wang X, et al. The risk of mortality in patients with psoriasis: results from a population based study. Arch Dermatol. 2007; 143:1493-9.
8. How is Blood Cholesterol Diagnosed. NIH: National Heart, Lung and Blood Institute. http://www.nhlbi.nih.gov/health/health-topics/topics/hbc/diagnosis.
9. Definition: 'Rule Of Nines' http://www.medilexicon.com/medicaldictionary.php?t= HYPERLINK "http://www.medilexicon.com/medicaldictionary.php?t=79183"79183.
10. Tekin NS, Tekin IO, Barut F, Sipahi EY. Accumulation of oxidized low-density lipoprotein in psoriatic skin and changes of plasma lipid levels in psoriatic patients. Mediators Inflamm. 2007; 78454.
11. Cohen AD, Sherf M, Vidavsky L, Vardy DA, Shapiro J, Meyerovitch J. Association between psoriasis and the metabolic syndrome. A cross-sectional study. Dermatology. 2008; 216(2):152-5.
12. Sommer DM, Jenisch S, Suchan M, Christophers E, Weichenthal M. Increased prevalence of the metabolic syndrome in patients with moderate to severe psoriasis. Arch Dermatol Res. 2006 Dec; 298(7):321-8.
13. Cohen AD, Gilutz H, Henkin Y, Zahger D, Shapiro J, Bonneh DY, Vardy DA. Psoriasis and the metabolic syndrome. ActaDermVenereol. 2007; 87(6):506-9.
14. Farshchian M, Zamanian A, Farshchian M, Monsef AR, MahjubH.Serum lipid level in Iranian patients with psoriasis. J EurAcadDermatolVenereol. 2007 Jul; 21(6):802-5.
15. Neimann AL, Shin DB, Wang X, Margolis DJ, Troxel AB, Gelfand JM. Prevalence of cardiovascular risk factors in patients with psoriasis. J Am AcadDermatol. 2006 Nov; 55(5):829-35.
16. Neimann AL, Shin DB, Wang X, Margolis DJ, Troxel AB, Gelfand JM. Prevalence of cardiovascular risk factors in patients with psoriasis. The American Journal of the Medical Sciences. Nov 2006; 55(5): 829-835.
17. Mallbris L, Granath F, Hamsten A, Ståhle M. Psoriasis is associated with lipid abnormalities at the onset of skin disease. J Am AcadDermatol. 2006 Apr; 54(4):614-21.
18. Ghazizadeh R. Clinical Improvement in Psoriasis With Treatment of Associated Hyperlipidemia. The American Journal of the Medical Sciences. May 2011; 341(5): 394 – 398.
19. Psoriasis Risk Factors. Health line. http://www.healthline.com/health/psoriasis/risk-factors.
20. Naldi L, Peli L, Parazzini F, Carrel CF. Family history of psoriasis, stressful life events, and recent infectious disease are risk factors for a first episode of acute guttate psoriasis: results of a case-control study. J Am AcadDermatol. 2001 Mar; 44(3):433-8.
21. Wu Y , Mills D , Bala M. Psoriasis: cardiovascular risk factors and other disease comorbidities. Journal of Drugs in Dermatology: JDD. 2008 ; 7(4):373-377.
22. Akhyani M, Ehsani AH, Robati RM, Robati AM. The lipid profile in psoriasis: a controlled study. JEurAcadDermatolVenereol. 2007 Nov; 21(10):1330-2.
23. Piskin S, Gurok F, Ekuku G, Senol M. Serum lipid level in psoriasis.Yonsei Med J. 2003; 44:1.
24. Jin W, Marchadier D, and Rader DJ. Lipases and HDL metabolism .Trends EndocrinolMetab. 2002; 13 :174-178.
25. Swelam MM, Ahmed MM, AllahAhmed NA, Hussein NR, Yossef RA. The Lipid Profile In Psoriatic Patients. AAMJ. January 2010; 8 (1).
26. Pietrzak A, lecewicz- torun B, Kadzeila WG. Changes in the digestive system in patients suffering from Psoriasis. Ann UnivMariaeCruieSklodowska [Med] 1998; 53: 187 – 94.