EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

SIGNIFICANCE OF LIPID PROFILE IN ACNE VULGARIS

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ABSTRACT

Introduction: Acne vulgaris is a common dermatological condition. It is a chronic inflammatory disease of pilosebaceous unit. It has a multifactorial pathogenesis that results in immune-mediated inflammation. The main aim of the study is to find out any abnormal lipid levels in acne patients. **Materials and Methods:** This is an analytical cross–sectional study conducted on 40 acne vulgaris patients and 40 age and sex matched healthy individuals. To assess their lipid profile values and compares them. **Results:** In our study we found out high TC levels in female patients and high TG levels in male patients. Over all lipid profile values are high in patients group compared to healthy individuals (p <0.05). But there are no statistically significant differences. **Conclusion:** Our results demonstrated high lipid profile values in acne patients compared to healthy individuals. It provides a new basis for further exploration of pathogenesis and treatment options.

KEYWORDS: Acne Vulgaris; Lipid Profile; Acne.

INTRODUCTION

Acne vulgaris is one of the most common skin disorders worldwide. It is a disease of pilosebaceous unit resulting from androgen induced increased sebum production, altered keratinization, inflammation, bacterial colonisation, of hair follicles on face, neck, chest, back by propionibacterium acnes[1] Peak incidence is between 14 and 17years in women and 16 - 19 years in men.[2] Sebum consists of complex mixture of lipids which includes triglycerides and free fatty acids, wax esters squalene, cholesterol esters, cholesterol.[3] Studies suggest that the emotional impact of acne is comparable to the experienced by patients with systemic diseases like diabetes.

Studies have shown that increased insulin levels can aggravate acne.[4] The part of lipid metabolism and hormonal action in polarity of sebocytes are causative factors for acne. A study suggested that increased insulin like growth factor -1 involved in acne induction or aggravation through up regulation of inflammatory biomarkers in sebaceous gland. It has been reported that serum lipid profile of acne patients differs outstandingly from that of healthy controls. Briefly this is a cross - sectional survey involving adults aged 15 and above is included.

MATERIALS AND METHODS

This study was carried out in a tertiary care hospital. This is an analytic cross sectional conducted on 80 patients out of which 40 were acne vulgaris patients and 40 were age and sex matched healthy individuals.

Exclusion Criteria

Pregnancy/lactation

- Intake of oral contraceptive or hormonal therapy.
- History of taking any medications that affect lipid metabolism or oral isotretinoin.
- Familial hypercholesterolemia
- Metabolic syndrome
- Uncontrolled diabetes
- Who are under treatment for acne
- Controls were age and sex matched healthy individuals who are willing to participate in study, not taking any medicine and having no family or personal history of acne in present or past.

After study was fully explained to subjects, individuals who the met the criteria were included in study after obtaining consent from them. Participants were examined faultlessly and clinical and dermatological information was recorded. A list was used to collect demographical, clinical & participant's data. The list consists of age, sex, gender, duration, acne severity.

Based on global acne grading system, patients are categorised into 4 groups.[5]
0 = none, 1-18 = mild, 19 -30 = moderate, 31-38 = severe, > 39 = very severe

Informed and written consent was obtained from all participants of the study.

Relevant history was recorded and detailed clinical examination of all the study participants was done. Biochemical parameters like TG, TC, HDL, LDL were recorded from all participants, for this evaluation venous samples were taken from patients and controls after a fasting duration of 12 hours. Specifically there are some differences in lipid profile between male and female subjects, so we had done two tables to compare female and male acne patients and these results were compared with those of healthy controls. Statistical analysis of the data was performed. Difference was considered significant if the obtained p - value was less than or equal to 0.05. The difference in TG, TC, HDL, LDL levels between the cases and controls were statistically studied. In both groups there were more men compared to females, differences between the patients and controls was not statistically Significant (p = 0.5).

RESULTS

In patient group 15 (37%) were female patients and 25 (62%) were male, while in controls they were 15 females and 25 males respectively. The mean age of acne patients and controls were 20 & 21 years respectively. Age of patients ranged from 15 - 37 years. In table one we had mean values and standard deviation values for TG, TC, HDL, and LDL.

Table 1: Comparison of lipid profile of male and female Subjects of patient and control groups.

| Parameters (mg/dl)	Female			Male		
	Patients (mean±SD)	Controls (mean±SD)	p-value (t-test)	Patients (mean±SD)	Controls (mean±SD)	p-value (t-test)
TG	132.6±39.43	65.07±12.64	<0.0001, HS	150.26±36.41	87.84±26.22	<0.0001, HS
TC	194.47±39.68	77.07±16.65	<0.0001, HS	188.70±29.23	128.68±26.01	<0.0001, HS
LDL	95.00±16.34	71.27±12.27	0.0001, HS	101.2±8.21	75.72±14.1	<0.0001, HS
HDL	40.93±7.44	32.33±5.05	0.0009, HS	39.44±4.57	33.6±4.77	<0.0001, HS

TG–triglycerides, TC- total cholesterol, LDL-Low-density lipoprotein cholesterol, HDL-High-density lipoprotein cholesterol, SD-Standard deviation, HS- Highly significant, Sig- Significant.

Table 2: Comparison of Lipid Profile of Patients and Controls in Two Age Groups.

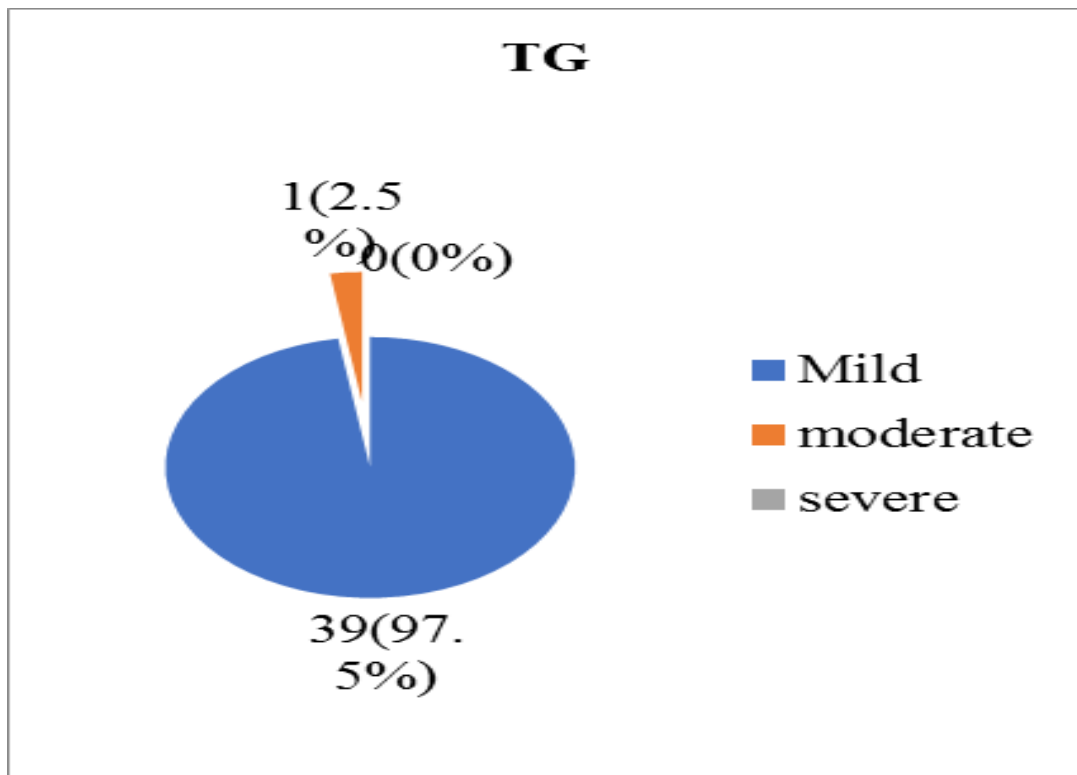| Parameters (mg/dl)	<25			≥25		
	Patients (mean±SD)	controls (mean±SD)	p-value (t-test)	Patients (mean±SD)	Controls (mean±SD)	p-value (t-test)
TG	143.02±36.73	72.72±18.26	<0.0001, HS	145.5±43.88	90.27±30.13	0.0011, Sig
TC	187.82±31.21	105.36±36.29	<0.0001, HS	200.00±38.74	115.93±29.8	<0.0001, HS
LDL	97.43±11.92	74.28±13.22	<0.0001, HS	103.2±12.25	73.67±14.3	<0.0001, HS
HDL	40.5±6.16	33.04±4.84	<0.0001, HS	38.5±4.33	33.27±5.04	0.0132, Sig

Table 3: Severity of acne lesions among patients.

ACNE grade	Frequency	%
I	14	35
II	20	50
III	4	10
IV	2	5
Total	40	100

ACNE grade

- Grade I — 14(35%)
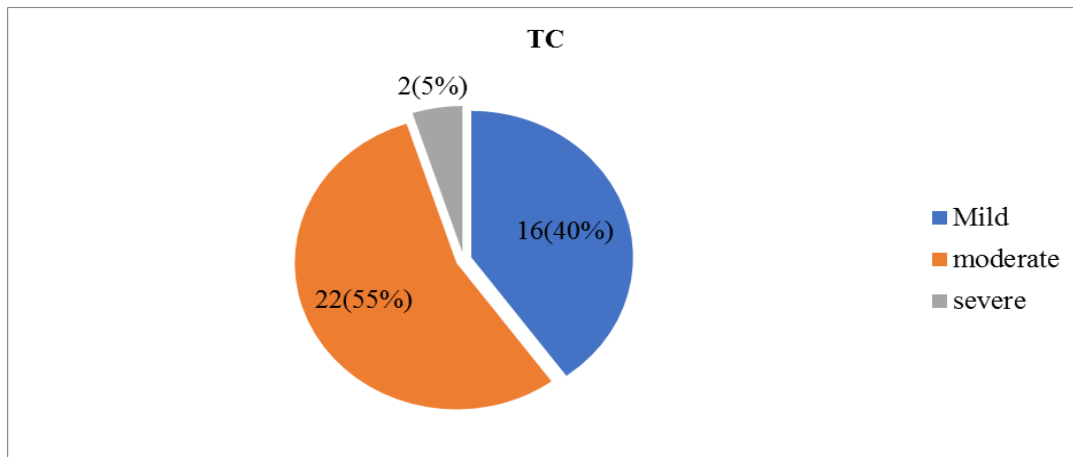- Grade II — 20(50%)
- Grde III — 4(10%)
- Grade IV — 2(5%)
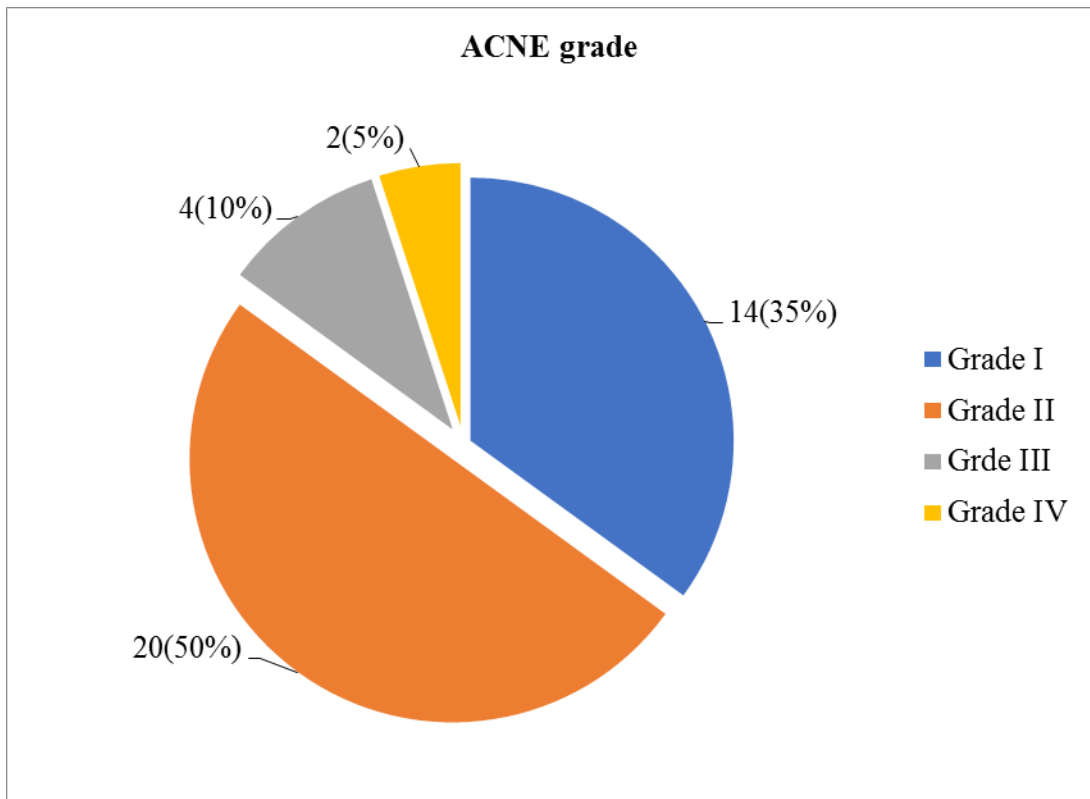
Table 4: Lipid Profile Analysis in Different Level.

Level	TG(%)	TC(%)	LDL(%)	HDL(%)
Mild	39(97.5)	16(40)	18(45)	19(47.5)
Moderate	1(2.5)	22(55)	21(52.5)	21(52.5)
Severe	0(0)	2(5)	1(2.5)	0(0)
Total	40(100)	40(100)	40(100)	40(100)

TG

1(2.5%) 0(0%)
39(97.5%)

- Mild
- moderate
- severe

TC

2(5%)

16(40%)

22(55%)

- Mild
- moderate
- severe

LDL

1(2.5%)

18(45%)

21(52.5%)

- Mild
- moderate
- severe

HDL

0

19(47.5%)

21(52.5%)

- Mild
- moderate
- severe
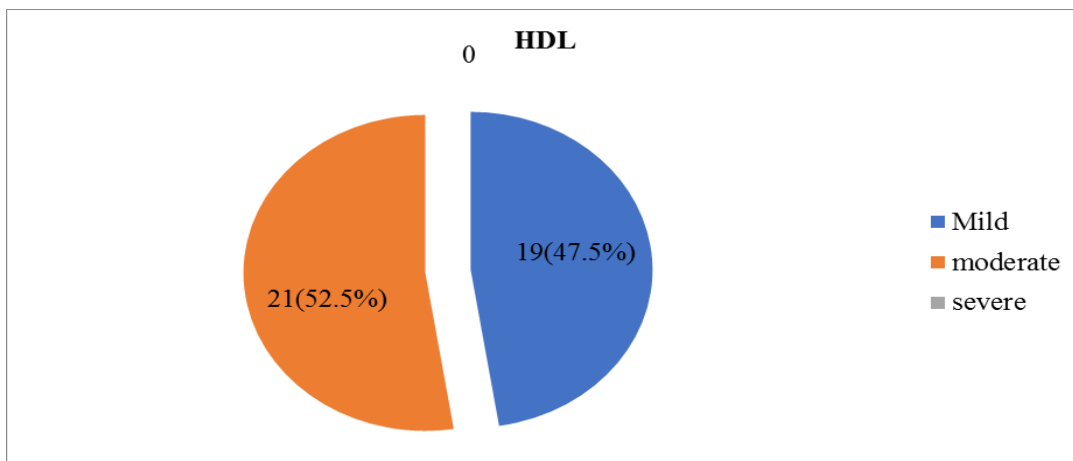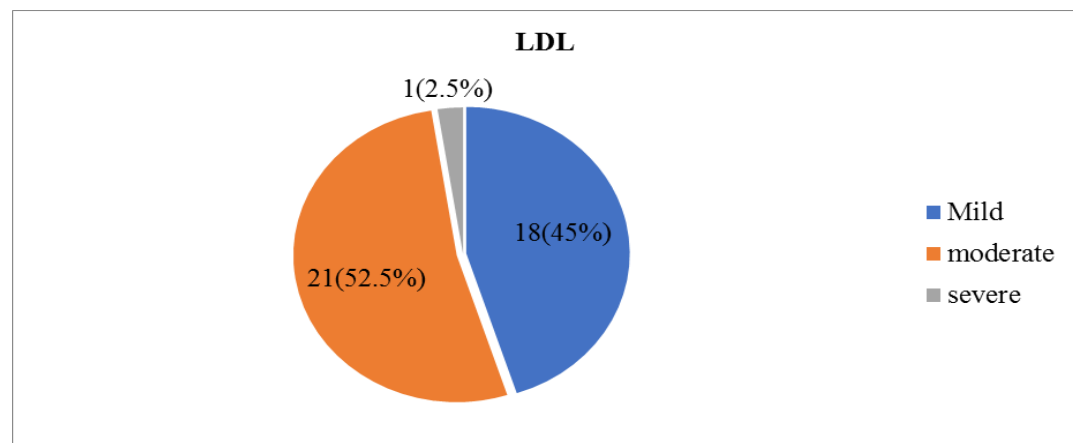
DISCUSSION

Acne vulgaris, a multifactorial condition often significant has psychosocial morbidity. Acne is caused by various factors, specially increased sebum production, follicular hyperkeratinisation, and microbial colonization by propionibacterium acnes and inflammation.[6] In our study males to female ratio was about 2:1, but not statistically significant. In our study higher cholesterol levels are seen in female patients and high triglycerides are observed in male patients. Overall lipid profile values are higher in acne vulgaris patients compared to controls. These findings suggest the need for assessing serum lipid levels during acne treatments. Cunha et al conducted a retrospective transverse study on 416 patients. In this study grade 11 acne patients are seen in 71%, which is similar to our study. Patients had elevated TC and LDL. Moreover, He said there was no significant difference between the grade of acne and patients, lipid profile, which was in agreement with our result.[7] In M sobhan et al study reported that acne patients have high cholesterol levels compared to controls.[8] In El–Akawi Z et al study done on 166 patients with acne also had disparate results. When compared to control group, no significant alterations in TC levels in patients with acne could be observed moreover, these was an expressive decrease in HDL levels and on increased LDL levels.[9] Results

obtained in our study were similar to those demonstrated in some other countries.

CONCLUSION
Based on our study it was highlighted that altered serum lipid levels were noted in patients with acne. It provides a new basis for further exploration of pathogenesis of acne and new treatment modalities.

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