**ORIGINAL RESEARCH**

# Evaluation of serum lipid profile among gallstone patients

[1]Dr. Sanjay Venketrao Padalwar, [2]Dr. Rahul Babasaheb Jawale, [3]Dr. Ajit Kumar Verma

[1]Assistant Professor, Department of General Medicine, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India
[2]Assistant Professor, Department of General Medicine, Rama Medical College Hospital and Research Centre, Pilukhawa, Uttar Pradesh, India
[3]Associate Professor, Occupational Therapy, Santosh Medical College, Ghaziabad, Uttar Pradesh, India

**Corresponding Author**
Dr. Rahul Babasaheb Jawale
Assistant Professor, Department of General Medicine, Rama Medical College Hospital and Research Centre, Pilukhawa, Uttar Pradesh, India

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**ABSTRACT**
**Background**: This study was conducted for evaluation of serum lipid profile among gallstone patients. **Material and methods**:In total, 100 subjects participated in this study, who were split into two groups: group 1 included 50 healthy controls and group 2 included 50 subjects with gallstones. An illustration of the results included the mean and standard deviation. Lipid profile was assessed and compared.The data was compared between the subjects and healthy persons using the Student's t-test. **Results**: In this study there were 100 subjects which were divided into 2 groups of 50 each. Group 1 comprised of 50 subjects with gallstones and Group 2 comprised of 50 controls. Serum cholesterol levels were higher among those having gallstones (172.56) as compared to controls (165.98). In contrast to the controls (189.11), individuals with gallstones (193.23) had higher serum triglyceride concentrations, and the analysis was shown to be statistically significant. There was decrease in the blood HDL levels among gallstone-afflicted participants (18.59) as compared to the control group (25.66). However, compared to the control group (130.26), it was discovered that the gallstone patients (121.36) had lower serum LDL levels. **Conclusion**: It had been concluded that serum triglyceride quantities as well as serum HDL amounts had been statistically significant among gallstone subjects as well as there existed a positive association among these parameters as well as gallstone disease.

**Keywords**: Gallstone disease, Serum lipid profile, Comparison



## INTRODUCTION

Cholecystolithiasis is a common disease worldwide.[1-4] The incidence of gallstones is 15% in America, 5.9~21.9% in Europe, 4~15% in Asia and 3~11% in China.[5-7] Current research suggests that different types of gallstones have different pathogenesis.[8-10] Research on the systematic classification of gallbladder stones may help to reveal the formation mechanism of different types of gallstones.

The traditional classification scheme classified gallstones into 3 types according to cholesterol content, including cholesterol stone (cholesterol content ≥70%), pigment stone (cholesterol content ≤30%) and mixed stone (30% ≤cholesterol content ≤70%).[11] Professor Fu et al (1984) divided gallstones into 8 types according to the profile structure and chemical components. These included radial, radial annual ring-like, rock strata-like stromatolite, cast amorphous, sand bed-like stromatolite, silt-like, black, and complex stones.[12] Among these, the radial, radial annual ring-like, and rock strata-like stromatolite stones were cholesterol stones, and the cast amorphous, sand bed-like stromatolite, and silt-like stones were pigment stones. With the application of infrared spectroscopy in recent years gallstones have been classified into cholesterol stones, pigment stones, mixed stones and other rare stones (including calcium carbonate, calcium phosphate, and fatty acid calcium stones).[13,14]

In affluent societies, most gallstones are composed primarily of cholesterol. Therefore, research of the etiology of gallstones has for long focused on the role of cholesterol metabolism in the pathogenesis of gallstones. A key role is usually assigned to the cholesterol saturation of biliary bile, as determined by the balance between the concentrations of cholesterol and its solubilizers, especially bile salts. Researchers seeking to link the pathogenetic role of biliary cholesterol with risk factors for gallstones have published data about the relation between serum

cholesterol levels and the occurrence of gallstones[15-19], as well as data about the effect of dietary cholesterol intake on bile cholesterol saturation.[20]This study was conducted for evaluation of serum lipid profile among gallstone patients.

## MATERIAL AND METHODS

In total, 100 subjects participated in this study, who were split into two groups: group 1 included 50 healthy controls and group 2 included 50 subjects with gallstones. Participants in the current study ranged in age from 20 to 70 years old and had gallstone disease. Using ultrasonography, gallstones were identified as moving echoes with acoustic shadows within the gallbladder. The study excluded individuals with liver cirrhosis, hemolytic disorders, terminal ileal resection, acalculous gallbladder disease on ultrasonography, and antihyperlipidemic medication users. Every patient provided written informed consent. Serum levels of HDL, LDLs, triglycerides, and cholesterol were measured in blood samples taken from both patients and controls. Every outcome was documented on a proforma. SPSS software was used for evaluation of level of significance.

## RESULTS

**Table 1: group-wise distribution of subjects.**

| Groups | Number of subjects | Percentage |
|---|---|---|
| Group 1 (Gallstones) | 50 | 50% |
| Group 2 (Controls) | 50 | 50% |
| Total | 100 | 100% |

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**Table 2: showing mean value of lipid profile in diseased group as well as the control group.**

| Lipid parameters | Disease mean values | Control group mean values | P value |
|---|---|---|---|
| **Cholesterol** | 172.56 | 165.98 | 0.513 |
| **Triglyceride** | 193.23 | 189.11 | 0.008 |
| **LDL** | 121.36 | 130.26 | 0.451 |
| **HDL** | 18.59 | 25.66 | 0.001 |

Serum cholesterol levels were higher among those having gallstones (172.56) as compared to controls (165.98). In contrast to the controls (189.11), individuals with gallstones (193.23) had higher serum triglyceride concentrations, and the analysis was shown to be statistically significant. There was decrease in the blood HDL levels among gallstone-afflicted participants (18.59) as compared to the control group (25.66). However, compared to the control group (130.26), it was discovered that the gallstone patients (121.36) had lower serum LDL levels.

## DISCUSSION

Gallstone disease is a worldwide medical problem, but the incidence rates show substantial geographical variation, with the lowest rates reported in African populations. Publications in English language on gallstones which were obtained from reprint requests and PubMed database formed the basis for this paper. Data extracted from these sources included authors, country, year of publication, age and sex of patients, pathogenesis, risk factors for development of gallstones, racial distribution, presenting symptoms, complications and treatment.[21]

Gallstones occur worldwide, however it is commonest among North American Indians and Hispanics but low in Asian and African populations. High biliary protein and lipid concentrations are risk factors for the formation of gallstones, while gallbladder sludge is thought to be the usual precursor of gallstones. Biliary calcium concentration plays a part in bilirubin precipitation and gallstone calcification.[21]

Treatment of gallstones should be reserved for those with symptomatic disease, while prophylactic cholecystectomy is recommended for specific groups like children, those with sickle cell disease and those undergoing weight-loss surgical treatments. Treatment should be undertaken for a little percentage of patients with gallstones, as majority of those who harbor them never develop symptoms. The group that should undergo cholecystectomy include those with symptomatic gallstones, sickle cell disease patients with gall stones, and patients with morbid obesity who are undergoing laparotomy for other reasons.[21]This study was conducted for evaluation of serum lipid profile among gallstone patients**.**

In this study there were 100 subjects which were divided into 2 groups of 50 each. Group 1 comprised of 50 subjects with gallstones and Group 2 comprised of 50 controls. Serum cholesterol levels were higher among those having gallstones (172.56) as compared to controls (165.98). In contrast to the controls (189.11), individuals with gallstones (193.23) had higher serum triglyceride concentrations, and the analysis was shown to be statistically significant. There was decrease in the blood HDL levels among gallstone-afflicted participants (18.59) as compared to the control group (25.66). However, compared to the control group (130.26), it was discovered that the gallstone patients (121.36) had lower serum LDL

levels.Thijs C et al[22]assessed the role of serum lipids in the etiology of cholesterol gallstones and pigment gallstones. The study included 250 cases with surgically or ultrasonographically confirmed cholecystolithiasis and 526 hospital control patients. The highest gallstone risk was found at low high-density cholesterol levels and high triglyceride levels. An additional weakly negative association was found between total cholesterol level and gallstone risk. These findings were similar for cholesterol gallstones and pigment gallstones. The association between body mass index and gallstone risk disappeared after adjustment for serum lipids in a multivariate analysis. This study confirms previous reports on the association between gallstone risk and serum lipids. The similarity between cholesterol and pigment gallstones with regard to their association with serum lipids indicates that these types of gallstones share more causal factors than previously suggested. The absence of an effect of body mass index independent from serum lipids (as shown by the multivariate analysis) suggests that serum lipids are more closely linked to the pathogenesis of gallstones than obesity.Saraya A et al assessed One hundred and thirty five patients with gallstones along with eighty nine matched controls to look for any association with hyperlipidemias. Plasma cholesterol and triglycerides were estimated by colorimetric methods and lipoproteins were classified according to Beaumont's classification. Male to female ratio in gallstone patients was 1:3. Mean plasma cholesterol and triglyceride values were higher in male gallstones patients as compared to controls (166.40 +/- 54.21 vs 40.26 +/- 32.80 mg/dl, p <0.01 and 182.65 +/- 84.49 vs 133.18 +/- 52.37 mg/dl, p <0.01 respectively). In female gallstone patients, on the other hand, only plasma triglyceride levels were raised as compared to control (182.65 +/- 84.49 vs 133.18 +/- 52.32 mg/dl, p <0.01). Prevalence of type IIb and type IV was 24.32% and 29.72% in male gallstone patients and 13.2 and 39.70% respectively in female gallstone patients. Thus, more than half of their gallstone patients had hyperlipidemia, the commonest types amongst them being type IIb and type IV.

## CONCLUSION

It had been concluded that serum triglyceride quantities as well as serum HDL amounts had been statistically significant among gallstone subjects as well as there existed a positive association among these parameters as well as gallstone disease

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