

## Serum lipid profile in patients with carcinoma of gallbladder: A hospital based study.

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### ABSTRACT:

**Background:** Carcinoma gallbladder is a highly malignant cancer which usually unfortunately gets diagnosed in late stages. Carcinoma gallbladder is a rare cancer but surprisingly the incidence of carcinoma gall bladder is high in Assam and other north eastern states. Gallstones and inflammation are the most common risk factors of carcinoma gallbladder. Dyslipidaemia is a known risk factor for the development of gallstone disease. This study was undertaken with the aim to determine the serum lipid levels in diagnosed cases of carcinoma of gall bladder and to compare serum lipid profile of patients with carcinoma of gall bladder with that of controls.

**Methodology:** A case-control study was conducted with 50 cases of carcinoma gall bladder and 50 healthy controls at Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta, Assam from the period 2018 to 2022. Serum lipid profile test including estimation of total cholesterol, high density lipoprotein cholesterol, low density lipoprotein cholesterol, and triglycerides were done at Biochemistry laboratory of the hospital using auto analyzer. The lipid values of the cases were compared with that of control using adequate statistical analysis.

**Results:**In the present study the total serum cholesterol level ,serum triglyceride and LDL were elevated in patients with carcinoma gallbladder as compared to control and the difference was found to be statistically significant ( $p < 0.05$ ). The mean serum HDL level was less in the cases as compared to the control but it was statistically not significant. Thus, in this present study it was found that carcinoma gallbladder alters the serum lipid profile significantly. Routine screening of serum lipid profile should be advocated in elderly.

**Key words:** Serum lipid profile, carcinoma gallbladder, gallstones, Cholesterol

### **INTRODUCTION:**

Carcinoma gallbladder is one of the highly malignant cancers which have a poor survival rate. The survival rate is poor because it is usually diagnosed in advanced stages and by this time the disease spreads rapidly to liver which is adjacent to the gallbladder. It is a rare cancer but North-eastern states especially, Assam have high incidence of gallbladder cancer [1, 2]. People of Northeastern states of India have different ethnicity and food-habits. Lifestyle habits such as tobacco use are very common in north-eastern region of India. Women in Northeastern states of India are more vulnerable group as tobacco use is very common[3]. Several factors are responsible for developing gallbladder carcinoma like patient's demography, ethnicity, gallbladder abnormalities, patient's exposures and infections. Several studies suggested that there is a close association between gallstones and gallbladder carcinoma[4, 5, 6].Specifically, cholesterol gallstones (composed mainly of cholesterol) and mixed gallstones (composed of both cholesterol and bilirubin) are most strongly associated with gallbladder cancer. Several studies have shown that the lipid level is deranged in Cholelithiasis[7, 8].

This study was undertaken to estimate the serum lipid levels in patients of gall bladder carcinoma and to compare it with that of normal healthy individuals in the same age-group.

### **OBJECTIVES OF THE STUDY:**

1. To determine the serum lipid levels in diagnosed cases of carcinoma of gall bladder.

2. To compare serum lipid profile of patients with carcinoma of gall bladder with that of healthy individuals.

### **METHODOLOGY:**

Study design: Case-control study with adequate statistical analysis.

The study was undertaken with 50 diagnosed cases of carcinoma of gall bladder and 50 healthy individuals who were chosen as control. The study was undertaken at Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta, Assam from the period 2018 to 2022.

#### Inclusion criteria:

50 patients who were diagnosed as having carcinoma gall bladder were chosen as cases. Histopathologically confirmed cases of carcinoma gallbladder were only chosen for the study. 50 healthy subjects not having gallstones, endocrine and metabolic diseases like diabetes, thyroid disorders, metabolic syndrome, familial hypercholesterolemia etc. were chosen as control. The age and gender were matched for the cases and controls.

#### Exclusion Criteria:

Subjects having gallstones, endocrine and metabolic disorders which may influence lipid levels like diabetes, thyroid disorders metabolic syndrome, familial hypercholesterolemia etc. were excluded from the study.

#### Method of study:

50 cases of carcinoma gallbladder confirmed by clinicians and histopathological biopsy report admitted in Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta were chosen as cases. 50 healthy subjects not having carcinoma gallbladder or diseases which may derange lipid levels were chosen as subjects.

The study protocol was approved by the Institutional Ethics committee of Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta, Assam.

Subjects chosen were all adult in the age group (40-80) years and included both genders. The subjects were provided written informed consent. Their basic demographic profiles as well as anthropometric measurements like height, weight, and body mass index were recorded. Detailed medical history of the subjects and controls were taken and any subject having diseases or conditions which might affect the serum lipid profile was excluded from the study. Cases were in the age group (40-80) years, so, controls were also selected from the same age group.

Serum lipid profile test included estimation of total cholesterol, high density lipoprotein cholesterol, low density lipoprotein cholesterol, and triglycerides.

For lipid profile tests, 5cc of fasting blood sample was collected under proper aseptic and antiseptic measures. The serum lipid estimation was done in the Biochemistry laboratory of our hospital and was performed by using Vitros 5600 auto-analyzer.

#### Data collection and statistical analysis:

Demographic variables of the subjects like name, age, sex ,religion, occupation, address and anthropometric measurements including weight, height, body mass index were recorded. The serum lipid values (which included total cholesterol, high density lipoprotein cholesterol, low density lipoprotein cholesterol and triglycerides)obtained of each subject were recorded as number and were arranged in tables. The serum lipid values of the cases were compared with that of the control group.Data collected were analyzed using Statistical Package for Social Science (SPSS, version 22) for Windows.

The results were expressed as mean $\pm$ SD. Independent t- test was used to compare the data between cases and control. A p value less than 0.05 was considered statistically significant.

#### **RESULTS:**

Total 100 subjects were included in the study. The physical parameters are given below in table 1.

Out of the 50 cases, there were 36 females and 14 males. In the control group also, there were 36 females and 14 males.

Cases were in the age group (40-80) years as gall bladder carcinoma mostly occurs after fourth and fifth decades of life .So, subjects in control group were also in the same age group. The mean age was 59 years in cases and 57 years in controls.

Mean BMI of the cases was found to be (27.35±4.87) and that of control group was (23.79±3.19). Thus, the mean BMI is little higher in cases than the controls.

**TABLE 1: DISTRIBUTION OF AGE AND PHYSICAL PARAMETERS OF TOTAL STUDY POPULATION**

Parameter	Case		Control	
	Mean	± SD	Mean	± SD
Age	59.8	5.8	57.38	4.67
Height(cm)	157.38	8.35	158.68	7.53
Weight(kg)	65.38	10.05	62.57	9.99
BMI(kg/ m <sup>2</sup> )	27.35	4.87	23.79	3.19

The serum lipid profile of the cases and controls are given below in table 2.

**TABLE 2: SERUM LIPID PROFILE IN CASES AND CONTROL**

Serum lipid	Ca Gallbladder patients mean ±SD (mg/dl)	Control Mean ±SD (mg/dl)	P value
Total cholesterol	225.18± 26.56	203.74 ± 15.98	< 0.05
Triglycerides	180.16 ± 21.85	145.28 ± 17.04	< 0.05
(LDL-C)	148.14± 19.86	101± 16.02	< 0.05

(HDL-C)	$57.24 \pm 6.43$	$59.18 \pm 5.74$	0.115
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In this study it was found that the mean serum total cholesterol, serum triglyceride and serum LDL were elevated in patients with carcinoma gallbladder as compared to control. Independent t- test was used to compare the data between cases and control and the difference was found to be statistically significant ( $p < 0.05$ ).

The serum HDL level was less in the cases as compared to the control but the difference was not found to be statistically significant .Thus, the lipid profile of patients of gallbladder carcinoma is greatly altered as compared to controls.

### **DISCUSSION:**

In the present study, data from 50 patients of carcinoma of gallbladder were collected. Out of 50 cases, 36 were female and 14 males which shows that carcinoma of gallbladder is more common in females. In the study conducted by Nissar Hussain Hamdani, Sumyra Khurshid Qadri et al,[10], it was found that gallbladder cancer is two to six times more common in women than men.

The mean age of subjects with gallbladder carcinoma is  $59.8 \pm 5.8$  years. In western population the median carcinoma of gallbladder occurs in late sixties or Seventies [11, 12] but in this study it was found that gall bladder cancer occurs in this region more in late fifties or early sixties.

In the present study, the serum total cholesterol, triglyceride and LDL were elevated in patients with carcinoma gallbladder as compared to control sand the difference was found to be statistically significant ( $p < 0.05$ ). The serum HDL level was less in the cases as compared to the controls but the difference is not statistically significant.

In the study done by Gabriella Andreotti, Jinbo Chen, Yu-Tang Gao, et al, they observed that high levels of total cholesterol, triglycerides, LDL and apo B, and low levels of HDL and apo A, which are characteristic of

hyperlipidemia, were associated with excess risks of biliary tract cancers [5]. In this present study it was observed that the serum total cholesterol, triglyceride and LDL were elevated in patients with carcinoma gallbladder. The mean value of HDL was low in carcinoma patients than the control but it was not statistically significant.

Gallstones were noticed to be associated with carcinoma gallbladder in different studies [4, 5, 6]. Gallstones by causing direct mechanical injury of the mucosa of gallbladder during contraction of gall bladder especially when the stones are large and irregular may promote chronic cholecystitis which may lead to carcinoma in the long run. Chronic inflammation results in mutagenesis especially of the p-53 pathway in India [13].

From various studies it has been seen that the serum lipid profiles are deranged in patients of cholelithiasis [7,8]. That might be one reason why the serum cholesterol, triglycerides and LDL of the patients of carcinoma gallbladder was found to be more in comparison to the controls.

This study was conducted with less number of cases. Further studies has to be carried out to derive association between serum lipids and carcinoma gallbladder.

### **CONCLUSION:**

The serum total cholesterol, triglyceride and LDL were elevated in patients with carcinoma gallbladder as compared to control. The difference in serum HDL level was not statistically significant. Thus, it can be concluded that the serum lipid profile is greatly affected in carcinoma of gallbladder. Elevated serum lipid profile in symptomatic patients i.e., patients coming with symptoms of cholecystitis should be taken seriously. Appropriate treatment should be given to such patients so, that carcinoma of gallbladder may be prevented. Routine serum lipid estimation along with ultrasonography of abdomen should be advised to elderly patients, especially females so that carcinoma gall bladder can be detected early.

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