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An Analysis of Biochemical Marker in Cholelithiasis Patients

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Abstract

Background: The paucity of information regarding the Serum lipid profile and liver Function Tests in Cholelithiasis patients, the present study is design to investigate the relationship between the Biochemical markers and Cholelithiasis patients.

Methods: Hospital based case control study conducted on 80 Patients of gallstone and age and sex matched normal healthy person.

Results: Serum amylase level difference was insignificant in case group (47.80± 21.24) as compare to control group (45.97± 16.38).

Conclusion: In conclusion, cholelithiasis disease is associated with some biochemical abnormalities. A routine investigation of liver enzymes in preoperative assessment of uncomplicated symptomatic cholelithiasis usually comes out normal but serum lipid profile and bilirubin level shows significantly higher values.

Keywords: Cholelithiasis, Serum amylase, Gall stone

Introduction

Gallstone disease (GSD) is one of the most common gastrointestinal diseases. Gallstones represent a significant burden for health care systems worldwide and are one of the most common disorders presenting to emergency room. It was once considered a disease of western world but due to changes in food pattern, now it is becoming an increasingly common cause of morbidity, leading to hospital admission in the developing world. It is one of the most common disorders of gastrointestinal tract, affecting 10% people in western society. Its occurrence in Asian population ranges from approximately 3-15%.[1,2] Gallstones are classified by their location as intrahepatic, gallbladder (cholelithiasis) and bile duct (choledocholithiasis) stones and based on chemical composition and macroscopic appearance; gallstones are divided into two major types: cholesterol gallstone and pigment stones which sub classified to black and brown stone.[3]

Liver function test is a part of the safe and cheap routine blood biochemical tests and provides useful information for the diagnosis and management of liver dysfunction. According to Naseem, Alkaline phosphatase levels in blood have relation with the increased risk for the formation of gallstones in females versus males. [4]

Liver damage in patients with gallstones is thought to be the result of chronic extra hepatic large bile duct obstruction with or without repeated episodes of cholangitis and may ultimately progress to secondary biliary cirrhosis.[5]

Cholecystectomy is the most frequently recommended conventional treatment for symptomatic gallstones. Bile acids (ursodeoxycholic acid or chenodeoxycholic acid) are also used in some cases to dissolve radiolucent stones, but these drugs can cause gastrointestinal side effects and there is a high rate of stone recurrence after treatment is discontinued. Lithotripsy is used in some cases in conjunction with ursodeoxycholic acid for patients who have a single symptomatic non-calcified gallstone. There is evidence that dietary factors influence the risk of developing cholesterol gallstones.[6]

The paucity of information regarding the Serum lipid profile and liver Function Tests in Cholelithiasis patients, the present study is design to investigate the relationship between the Biochemical markers and Cholelithiasis patients.

Material and Method

- Study Design: Hospital based case control study.
- Study Duration: 12 months

Sample size

Sample size of 152 cases were required each group at 80% study power and alpha error 5%. It is round of 160 cases for present study expecting approx. 5% drops out.

Study population

- Case: Patients of gallstone.
- Control: Age and sex matched normal healthy person.

Inclusion criteria

- Patients of gallstone.
- Age more than 15 years.
- Willing to participate in study.

Exclusion criteria

- Patients < 15 yrs.
- Patients with DM, cardiac disease (Myocardial infarction, CHD, Angina pectoris), renal disease and others with serious illness (Perforation peritonitis, Strangulated Hernia).
- Patients with viral hepatitis (hepatitis A, hepatitis B or, hepatitis C), alcoholic liver disease, drugs related hepatitis, autoimmune hepatitis, pancreatitis.
- Patient with common bile duct obstruction.
- Patients not willing to participate in the study.

Data collection

Data of the study conducted was obtained from history and physical examination as well as the complete proforma mainly by the investigator after meeting all the inclusion criteria. Upon receiving a case fulfilling the inclusion criteria, the participants explained about the study in detail. He or she assured off full confidentiality and a written informed consent taken subsequently. On admission Fasting venous blood samples were collected under strict aseptic precautions with informed consent.

Observation

Table 1: Distribution of the cases according to gender.

Group	Male		Female		Total		P-Value
	No	Percentage	No	Percentage	No	Percentage	0.7256
Cases	55	34.37%	105	65.62%	160	100%	
Control	58	36.25%	102	63.75%	160	100%	

This table shows gender wise distributions of both control and case groups. Both groups comprise 160 subjects in each. In Case group male are 55 and female are 105 out of 160. In control group male are 58 and female are 105 out of 160. Gender differences between both the groups were found statistically insignificant. (p>0.05)

Table 2: Distribution of the Cases and Controls according their Mean age

Group	Age		P-Value
	Mean	SD	
Case	53.36	11.33	0.09364
Control	53.46	12.45	

This table shows insignificant age difference in case group (53.46 ± 12) as compare to control group (53.36 ±11.33)

Table 3: Distribution of the cases and controls according their serum amylase (IU/L)

Group	GGT (mg/dl)		p-Value
	Mean	SD	
Case	47.80	21.24	0.2724
Control	45.97	16.38	

This table shows insignificant serum amylase level difference in case group (47.80± 21.24) as compare to control group (45.97± 16.38).

Discussion

The subjects were divided into two groups on the basis of presence of cholelithiasis. One group comprised 160 patients of cholelithiasis in the case group and other had 160 healthy subjects in the control group.

Cholelithiasis is a worldwide disease and it remains to be one of the most common health problems leading to surgical intervention. This study is done to compare the serum lipid Profile and liver function test in cholelithiasis patients with controls.

In the present study, 65.6% (105 out of 160) cholelithiasis patients were females, while the rest 34.4% (55 out of 160) cases were males. This present study shows age wise statistically insignificant difference between both group and mean age of case group was 53.36 ±11.33 and control Group was 53.46 ± 12.45.

Battacharyaet al[7] showed 71.4% were female; 28.6% were male. Similar sex preponderance in the favor of females were observed by Tamhankar et al.[8]Novacek[9] showed Rates of gallstones are two to three times higher among women than men. A study carried out by Sharma showed that 30% were male and 70% were female [10]and ThamilSelvi et al showed 20.5% males and 79.5% females were patients of cholelithiasis.[11]

It's tempting to explain the increased frequency of gallstone in woman as an effect of female sex hormones on hepatic function, bile secretion and gallbladder function.[12] In contrast to earlier reports, result of studies of biliary lipids during the menstrual cycle show no effect on cholesterol saturation.[13] Bile tends to be more saturated in woman than in men and this cannot be explained by differences in body weight or age.[14] The increased number of pregnancies is associated with an increased risk of gallstones believe that the progesterone component rather than the estrogen is responsible for the changes in biliary lipids. Bile is more saturated during the second and third trimester of pregnancy.[15]The use of oral contraceptive also induces an increased risk of gallbladder disease. Oral contraceptive therapy may be associated with an increase in cholesterol saturation.[16]In present study comparison of serum amylase between case and controls group showed that the levels of serum amylase (47.80± 21.24) in cholelithiasis patients were higher than that of the control group (45.97±16.38),but there was no significant variation in serum amylase ($p > 0.05$) between case and controls group.

Conclusion

In conclusion, cholelithiasis disease is associated with some biochemical abnormalities. A routine investigation of liver enzymes in preoperative assessment of uncomplicated symptomatic cholelithiasis usually comes out normal but serum lipid profile and bilirubin level shows significantly higher values.

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