

AN ANALYSIS OF SERUM AMYLASE LEVEL IN CHOLELITHIASIS PATIENTS

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Abstract

Background: 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.

Methods: Hospital based case control study conducted at Department of Biochemistry with close collaboration of Department of General Surgery, S. P. Medical College and associated group of PBM Hospital, Bikaner, Rajasthan.

Results: The insignificant serum amylase level difference in case group (47.80± 21.24) as compares to control group (45.97± 16.38).

Conclusion: In this study comparison of amylase between case and controls group showed that the levels of amylase in cholelithiasis patients were higher than that of the control group, but there was no significant variation in amylase.

Keywords: Amylase, cholelithiasis, Gallstone disease (GSD).

Introduction

The Presence of stones in the gallbladder is referred to as cholelithiasis (from the Greek: chol-, "bile" + lith-, "stone" + iasis-, "process").¹ Gallstone disease is a chronic recurrent hepatobiliary disease, the basis for which is the impaired metabolism of cholesterol, bilirubin and bile acids, which is characterized by the formation of gallstones in the gallbladder, hepatic bile duct or common bile duct.²

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%.^{3,4}

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.⁵

Material and Method

Study Design: Hospital based case control study.

Study Duration: 12 months

Study Place: Department of Biochemistry with close collaboration of Department of General Surgery, S. P. Medical College and associated group of PBM Hospital, Bikaner, Rajasthan.

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.

Medcalc statistical software was used for sample size.

Mean cholesterol level in patients with gall stone=178.44, SD=43.21 and mean cholesterol in patients without gall stone=168.06, SD=35.25 according to Singh RR et al (2018)

Alpha -5%

Beta -20%

Power of study- 80%

Data loss-5 %

$$n = (Z_{\alpha/2} + Z_{\beta})^2 * 2 * \sigma^2 / d^2$$

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.

OBSERVATION**Table 1:** Distribution of the cases according to gender-

GROUP	MALE		FEMALE		TOTAL		p-VALUE
	No	Percentage	No	Percentage	No	Percentage	
CASES	18	36.00%	32	64.00%	50	100%	0.7256
CONTROL	20	40.00%	30	60.00%	50	100%	

This table shows gender wise distributions of both control and case groups. Both groups comprise 100 subjects in each. In Case group male are 18 and female are 32 out of 50 cases. In control group male are 20 and female are 30 out of 50 cases. Gender differences between both the groups were found statistically insignificant. ($p>0.05$)

This table shows insignificant gender difference in case group as compare to control group

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: Clinical profile of cases (n=50)

Clinical profile	No of patients	Percentage
Pain abdomen	42	84.00
Nausea	26	52.00
Vomiting	26	52.00
Jaundice	18	36.00
Fatigue	11	22.00

84.00% patients were present with pain abdomen followed by 52.00% patients were present with nausea and vomiting.

Table 4: 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 Hospital based case control study was carried at Department of Biochemistry with close collaboration of Department of General surgery, S. P. Medical College and associated group of PBM Hospital, Bikaner, Rajasthan.

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 .

Battacharya et al⁶ showed 71.4% were female; 28.6% were male. Similar sex preponderance in the favor of females were observed by Tamhankar et al.⁷ Novacek⁸ 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 female⁹ and Thamil Selvi et al showed 20.5% males and 79.5% females were patients of cholelithiasis.¹⁰

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. No literature available regarding serum amylase.

Conclusion

In this study comparison of amylase between case and controls group showed that the levels of amylase in cholelithiasis patients were higher than that of the control group, but there was no significant variation in amylase.

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