Original Article

Alteration in Preoperative and Post-Operative Liver Functional Test in Gall Stone Patients- A Clinical Study

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Abstract

Background: Alterations in serum lipid profile are known to occur in patients undergoing laparoscopic cholecystectomy. The present study was conducted to detect the alteration in preoperative and post-operative liver functional test in gall stone patients. **Subjects and Methods:** The present study was conducted on 126 patients of gall bladder stones of both genders. In all the patients, pre-operative assessment of liver function test such as SGOT (aspartate aminotransferase), SGPT (alanine aminotransferase), total bilirubin (TB), direct bilirubin (DB) and alkaline phosphatase (ALP) was performed. Patients underwent laproscopic cholecystectomy. **Results:** Out of 126 patients, males were 44 and females were 82. Preoperatively SGOT level was 22.08 U/L which increased to 80.4 U/L post operatively. SGPT level increased from 25.16 U/L to 82.8 U/L post operatively, total Bilirubin level increased from 0.92 to 1.64 U/L post operatively. DB increased from 0.38 to 0.56 U/L post operatively. Alkaline phosphatase level decreased from 65.42 to 64.26 U/L post operatively. The difference was significant (P< 0.05). **Conclusion:** There was alteration in aspartate aminotransferase, alanine aminotransferase, total bilirubin, direct bilirubin and alkaline phosphatase level in patients undergoing laproscopic cholecystectomy.

Keywords: Bilirubin, Cholecystectomy, liver function

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Introduction

The open cholecystectomy has been replaced by laparoscopic cholecystectomy (LC) as a gold standard for treatment of gall stones. Laparoscopic cholecystectomy is considered to be a safe procedure as compared to open cholecystectomy in regards of metabolic, hormonal and immunological changes. In laparoscopic cholecystectomy, carbon dioxide gas is used for insufflation into peritoneum. The carboxy peritoneum which is used to create space in laparoscopic cholecystectomy is kept at pressure of 10-15mm of Hg.[1]
The etiology of gallbladder disease is basically associated with a poorly functioning gallbladder and superconcentrated bile. Normally, the gallbladder empties its contents in response to physiologic changes associated with digestion (cholecystokinin, vagal input from antral distension, migrating myoelectric complex).[2]

The commonly used tests are Serum Bilirubin (S Bil), Alanine Aminotransferase (ALT), Aspartate Aminotransferase (AST), Alkaline Phosphatase (ALP). These enzymes normally concentrated in liver are also present in low concentration in plasma. The plasma concentration of these enzymes is determined by rate of release from liver cells and plasma clearance. Studies from the past literature have shown significant alterations in the liver functional tests (LFT) in patients undergoing LC.3 Alterations in serum lipid profile are known to occur in patients undergoing laparoscopic cholecystectomy. If Bilirubin levels are used as predictors, test results must be obtained a few weeks before surgery so that the cholecystectomy patient can be referred to the optimal unit in order to ensure the presence of appropriate equipment and to plan the time required for the procedure.4 The present study was conducted to detect the alteration in preoperative and post operative liver functional test in gall stone patients.

Subjects and Methods

The present study was conducted in the department of general surgery. It comprised of 126 patients of gall bladder stones of both genders. All were informed regarding the study and written consent was obtained.

Patient information such as name, age, gender etc. was recorded. In all the patients, pre-operative assessment of liver function test such as SGOT (aspartate aminotransferase), SGPT (alanine aminotransferase), total bilirubin (TB), direct bilirubin (DB) and alkaline phosphatase (ALP) was performed. Patients underwent laproscopic cholecystectomy. All the values were evaluated postoperatively. Results thus obtained were subjected to statistical analysis. P value less

than 0.05 was considered significant.

Results

Table 1: Gender Distribution.

Total- 126		
Gender	**Females**	**Males**
Number	44	82

[Table 1] shows that out of 126 patients, males were 44 and females were 82.

Table 2: Comparison of liver function test pre and post operatively

LFT	Pre operatively	Post operatively	P value
SGOT	22.08	80.4	0.01
SGPT	25.16	82.8	0.05
Total bilirubin	0.92	1.64	0.02
Direct bilirubin	0.38	0.56	0.01
Alkaline phosphatase	65.42	64.26	0.51

[Table 2] shows that preoperatively SGOT level was 22.08 U/L which increased to 80.4 U/L post operatively. SGPT level increased from 25.16 U/L to 82.8 U/L post operatively, total Bilirubin level increased from 0.92 to 1.64 U/L post operatively. DB increased from 0.38 to 0.56 U/L post operatively. Alkaline phosphatase level decreased from 65.42 to 64.26 U/L post operatively. The difference was significant (P< 0.05).

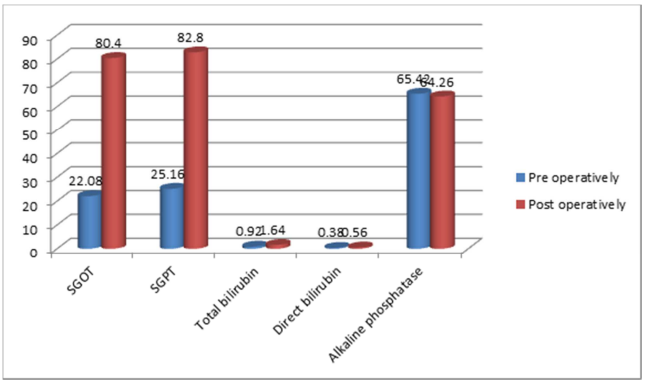

Figure 1: Comparison of liver function test pre and post operatively

Discussion

One of the commonest abdominal surgical procedures performed these days is Cholecystectomy. It involves laparoscopic removal in patients in which cholecystectomy is primary indication. Current investigations are being carried out for exploring the lesser invasive techniques like single incision LC. The liver function tests provide quantitative assessment of liver function but cannot differentiate between causes of liver diseases. However liver function tests are used to determine the presence of liver disease, diagnosis of liver diseases and monitoring of liver diseases.[5] Pre operative and Post operative analysis of these tests can detect any alteration in liver functions following laparoscopic cholecystectomy. Several studies have shown alterations in liver function tests after laparoscopic cholecystectomy. These studies have attributed changes in liver function tests to hepatocellular damage due to carboxy peritoneum, liver manipulation, use of cautery, general anaesthesia and hepatic artery injury.[6] The present study was conducted to detect the alteration in preoperative and post operative liver functional test in gall stone patients.

In present study there were 44 males and 82 females. Kaldor et al,[7] in their study included a total of 200 subjects, out of which 154 were females and 46 were males. Significant results were obtained while comparing the mean SGOT, SGPT, TB and DB levels in patients undergoing LC at pre-operative and post-operative time. However, while comparing the mean AP values, non- significant results were obtained. The overall increase in the mean SGOT, SGPT, TB and DB values was seen in 95 %, 93 %, 73 % and 70% subjects respectively.

We observed that preoperatively SGOT level was 22.08 U/L which increased to 80.4 U/L post operatively. SGPT level increased from 25.16 U/L to 82.8 U/L post operatively, total Bilirubin level increased from 0.92 to 1.64 U/L post operatively. DB increased from 0.38 to 0.56 U/L post operatively. Alkaline phosphatase level decreased from 65.42 to 64.26 U/L post operatively.

Al-Luwaizia et al,[8] in their study serum bilirubin levels were measured in all the patients preoperatively. Laparoscopic cholecystectomy under constant intraperitoneal pressure (12mm Hg) subsequently was performed in all the patients. Both direct and indirect bilirubin was again estimated after 3 days of surgery to monitor the changes occurring in the liver function. The mean preoperative total bilirubin values were 0.82 mg/dl, while mean value on 3rd day postoperatively were found to be 0.89 mg/dl. Authors didn't observe any significant difference while comparing the preoperative and postoperative bilirubin values.

Sakorafas et al,[9] in their study, total serum bilirubin measured pre operative and post operative were compared, there was no significant change in the serum bilirubin levels. The serum AST levels were compared in preoperative and postoperative period and there was significant increase in level of serum AST. The serum ALT levels comparison between preoperative and postoperative values has shown significant change. The difference in serum alkaline phosphatase levels was also non significant.

Conclusion

There was alteration in aspartate aminotransferase, alanine aminotransferase, total bilirubin, direct bilirubin and alkaline phosphatase level in patients undergoing laproscopic cholecystectomy.

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