

ORIGINAL ARTICLE

Assessment of LFTs in patients undergoing Cholecystectomy

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Background: Gallbladder diseases commonly manifest as gallstones and gallbladder cancer. Gallstones constitute a significant health problem in developed societies. So current study was undertaken using various LFTs, to further explore the incidence and significance of LFT changes in hepatic function due to CO₂ pneumoperitoneum following laparoscopic cholecystectomy. **Materials & methods:** The present study included assessment of 50 patients undergoing laparoscopic cholecystectomy. After that all patients got their pre-anaesthetic check-up and underwent laparoscopic cholecystectomy under constant intraperitoneal pressure (12mm Hg) subsequently. Laparoscopic cholecystectomy was done in all the patients. Postoperative assessment of LFTs was done in all the patients. On discharge all patients were asked to follow up in surgery OPD on 7th postoperative day and the liver function tests with parameters included in the study were repeated as mentioned earlier. All the results were analyzed by SPSS software version. **Results:** We observed a significant rise in the mean AST levels at 24 hours postoperatively while comparing it to the preoperative values (**P- value < 0.05**), followed by significant decrease within 10 days postoperatively to reach preoperative range (**P- value < 0.05**). **Conclusion:** Laparoscopic cholecystectomy should be done in otherwise healthy patients and special care should be taken while performing laparoscopic surgery in patients with compromised liver function.

Key words: Cholecystectomy, Gallstones, Laparoscopic

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INTRODUCTION

Gallbladder diseases commonly manifest as gallstones and gallbladder cancer. Gallstones constitute a significant health problem in developed societies.¹In a previous study, investigation was done on patients who had laparoscopic cholecystectomy. Sixty-seven patients with normal results of preoperative liver function test were entered into the study. Blood was collected 24 hours after laparoscopic cholecystectomy, and AST, ALT, ALP, and bilirubin levels were measured. A mean 1.8-fold increase in AST occurred in 73% of patients; 82% showed a 2.2-fold increase in ALT. A statistically nonsignificant increase was noted in 53% of patients, and in 14% of patients bilirubin levels were increased. In many patients a significant increase in AST and ALT levels occurred after laparoscopic cholecystectomy, but they returned to normal values within 72 hours. The cause of this is unclear, and these elevations appear to have no clinical significance.²⁻⁴As above said no single or multiple tests can accurately tell the status of liver function but the use of several tests comes out to be more sensitive in detecting any abnormality in the same. So current study

was undertaken using various LFTs, to further explore the incidence and significance of LFT changes in hepatic function due to CO₂ pneumoperitoneum following laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted in the department of general surgery and included assessment of 50 patients undergoing laparoscopic cholecystectomy. A detailed work up of all the patients enrolled in the study i.e detailed history, a thorough Clinical Examination was performed, followed by routine investigations including CBC (complete blood count), FBS (fasting blood sugar)/RBS (random blood sugar), PTI (prothrombin time index)/INR (international normalized ratio), RFTs (renal function tests), LFTs (liver function tests), Urine Routine, Serum Electrolytes, Viral Markers, Chest X Ray, Ultrasound Abdomen. After that all patients got their pre-anaesthetic check-up and underwent laparoscopic cholecystectomy under constant intraperitoneal pressure (12mm Hg) subsequently. Laparoscopic cholecystectomy was done in all the patients. Postoperative assessment of LFTs was done in all the patients. On discharge all

patients were asked to follow up in surgery OPD on 7th postoperative day and the liver function tests with parameters included in the study were repeated as mentioned earlier. All the results were analyzed by SPSS software version.

RESULTS

In the present study, we evaluated a total of 50 subjects, out of which 20 subjects were of less than 40 years of age while the remaining 30 were more than 40 years of age. Out of 50, 20 subjects were males while remaining 30 were females. We observed a significant rise in the mean AST levels at 24 hours postoperatively while comparing it to the preoperative values (**P- value < 0.05**), followed by significant decrease within 10 days postoperatively to reach preoperative range (**P- value < 0.05**). A significant rise in the mean ALT levels at 24 hours postoperatively was observed in comparison to preoperative values (**P- value < 0.05**), followed by significant decrease within 10 days postoperatively to reach preoperative range (**P- value < 0.05**).

DISCUSSION

The sensitivity of LFTs in detecting obstructions in bile flow has been found to be greater than 90%. Any increase in their values is always a matter of concern for the clinician and warrants further investigation to determine the underlying pathology. AST and ALT are generally

considered a measure of hepatocellular function. ALP levels are increased during obstruction of the biliary duct system; bilirubin levels can increase due to haemolysis or obstruction of the flow of bile. Very high levels of serum transaminases can also be suggestive of common bile duct (CBD) stones.⁵⁻⁹In the present study, we evaluated a total of 100 patients undergoing LC. We observed significant rise in the mean AST levels of the patients after 24 hours of the LC, which subsequently returned to near pre-operative values (**P- value < 0.05**). Previous authors also reported similar alterations in the serum AST and ALT levels on the first postoperative day, in patients undergoing LC.⁷ Similar results have also been reported by previous authors, who observed similar rise and fall in mean serum AST and AST values post-operatively in patients undergoing LC.¹⁰We observed a significant rise in the total and direct bilirubin values after 24 hours of surgery which returned near to its pre-operative levels within 72 hours of surgery, the results of which were found to be statistically significant (**P- value < 0.05**). However; we didn't observe any significant alteration in the mean ALP levels in post-operative period, in comparison to the pre-operative values (**P- value > 0.05**). Our results were in concordance with the results obtained by previous authors who also didn't report any significant alterations in the mean ALP levels post-operatively in patients undergoing LC.^{11,12}

Table 1: Distribution of subjects according to age group

Age group (years)	Frequency	Percent
Less than 40	20	40.0
More than 40	30	60.0
Total	100	100.0

Table 2: Comparison of mean AST values at various time intervals

Comparison	P- value
Pre-operative VS Post- operative at 24 hr.	0.04
Pre-operative VS Post- operative at 72 hr.	
Pre-operative VS Post- operative on 10 th day.	
Post- operative at 24 hr. VS Post- operative at 72 hr.	
Post- operative at 24 hr. VS Post- operative on 10 th day.	
Post- operative at 72 hr. VS Post- operative on 10 th day.	

Table 3: Comparison of mean ALT values at various time intervals

Comparison	P- value
Pre-operative VS Post- operative at 24 hr.	0.001
Pre-operative VS Post- operative at 72 hr.	
Pre-operative VS Post- operative 7 th day.	
Post- operative at 24 hr. VS Post- operative at 72 hr.	
Post- operative at 24 hr. VS Post- operative on 7 th day.	
Post- operative at 72 hr. VS Post- operative on 7 th day.	

Table 4: Comparison of mean Total Bilirubin values at various time intervals

Comparison	P- value
Pre-operative VS Post- operative at 24 hr.	0.001
Pre-operative VS Post- operative at 72 hr.	
Pre-operative VS Post- operative 10 th day.	
Post- operative at 24 hr. VS Post- operative at 72 hr.	
Post- operative at 24 hr. VS Post- operative on 10 th day.	
Post- operative at 72 hr. VS Post- operative on 10 th day.	

Unexplained elevation in liver function parameters has been reported in up to 80% of patients undergoing laparoscopic cholecystectomy. Various studies have also revealed the similar findings with alteration of liver function tests following LC. These changes noted are usually transitory in nature. That is they become normal after one to three days of surgery.^{13, 14}

As demonstrated by previous literature, Low pressure LC minimizes adverse hemodynamic effects on hepatic function, a low-pressure pneumoperitoneum should be considered for patients with compromised liver function, particularly those undergoing prolonged laparoscopic surgery.¹⁵

The alterations in the LFT after LC in our study are transient and self-limited, and are not associated with any apparent clinical implication. Under the light of above mentioned results, we therefore advocate that routine assessment of liver function tests after laparoscopic surgery in patients with pre-operative normal liver function tests seems unnecessary.

CONCLUSION

Laparoscopic cholecystectomy should be done in otherwise healthy patients and special care should be taken while performing laparoscopic surgery in patients with compromised liver function.

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