

EFFICACY OF LIVER FUNCTION TEST IN PATIENTS WITH SYMPTOMATIC GALL STONE DISEASE

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ABSTRACT

Background: Cholelithiasis is a common clinical problem in surgical practice all over the world. Liver function tests (LFT's) are routinely performed in patients undergoing cholecystectomy for symptomatic gall stones.

Objective: To evaluate the effectiveness of routine LFTs in patients with symptomatic gall stones attending Shridev Suman Subharti Medical College attached with Dr. K.K. Bhatnagar Memorial Subharti Hospital, Dehradun, Uttarakhand, India

Material and Methods: The present prospective observational study was conducted from December 2016 to November 2017 in the Dept. of Surgery in collaboration with Dept. of Biochemistry at Shridev Suman Subharti Medical College attached with Dr. K.K. Bhatnagar Memorial Subharti Hospital, Dehradun, Uttarakhand, India. All patients clinically diagnosed with symptomatic cholelithiasis were included in the study. Patients with past and present history of jaundice, pancreatitis, cholangitis and abnormal calibre common bile duct on ultrasonography (more than 8mm) were excluded from the study. Data regarding relevant history, clinical examination findings, LFT's and ultrasound examination findings were analyzed and noted in pre-designed proforma.

Results: Study composed of 120 patients comprising 100(83.33%) female and 20(16.67%) male with the mean age of 45±25 years. Out of 120 patients, 85(70.83%) presented as chronic calculous cholecystitis, 29(24.17%) as biliary colic and 6(5.00%) with acute calculous cholecystitis. The LFT's were within normal range in 107(89.16%) patient, which labeled as group A. In group A, 80(74.76%) patients were presented as chronic calculous cholecystitis, 24 (22.42%) as biliary colic and 3(2.8%) as acute calculous cholecystitis. The levels of LFT's were found abnormal in 13 patients (8.33%) which is labeled as group B. In group B, clinical presentation of 2 (40.00%) patients were as chronic calculous cholecystitis, 8(30.00%) patients as biliary colic & 3(30.00%) patients as acute calculous cholecystitis. Parameters of LFTs, Bilirubin were elevated in 2, AST in 3 and ALP in 8 patients. All patients from either group had normal Common Bile Duct (CBD) caliber on preoperative ultrasound examination and per operatively (in open surgery), no CBD dilatation or palpable calculi.

Conclusion: Routine LFT's in preoperative assessment of symptomatic cholelithiasis usually reveals normal findings and is not recommended as a good predictive marker for the detection of silent CBD calculi.

Keywords: Cholelithiasis, Choledocholithiasis, Common bile duct (CBD), LFT, Cholecystectomy, Laparoscopic

Introduction

Cholelithiasis is common clinical problem in surgical practice over the world with continuously escalating incidence (1,2). The therapeutic gold standard for treatment of symptomatic cholelithiasis is laparoscopic cholecystectomy (3-4). The presence of common bile duct stones (CBDS), makes the procedure much more complicated and time-consuming. Preoperative awareness of CBDS enables

better planning and facilitates the allocation of the necessary resources. In areas where more complicated procedures are centralized to units at which the optimal competence and equipment are available, it may be possible to avoid the need to perform surgery for CBDS at units that are not prepared for this procedure if the presence or absence of CBDS is known in advance. The management of concomitant silent (asymptomatic) CBD calculi in laparoscopic era is a debatable issue (5-

6). The reported incidence of silent CBD calculi is between 15–20% (7-8). Therefore preoperative work up include a confident exclusion of probability of silent choledocholithiasis by various means like detailed history including history of jaundice, pancreatitis, cholangitis, any derangement in LFT's and status of common bile duct on ultrasound (9–13). It has become routine practice to refer patients for LFT in every patient undergoing cholecystectomy for symptomatic cholelithiasis. No prospective, non-selected, population-based studies on the ability of ALP and bilirubin to predict CBDS have been performed. Most studies have focused on patient groups with a high risk for CBDS, a history of previous acute biliary pancreatitis, jaundice, cholangitis or elevated liver function tests (14). Patients with uncomplicated cholelithiasis or simple biliary colic typically have normal laboratory test results. Laboratory testing is generally not necessary unless cholecystitis is a concern. Asymptomatic gallstones are often found incidentally on plain radiographs, abdominal sonograms, or computed tomography (CT) scans for workup of other processes.

The EASL Clinical Practice Guidelines (CPG) on the prevention, diagnosis and therapy of gallstones aim to provide current recommendations on the following issues:

1. Prevention of gallstones
2. Diagnosis of gallbladder stones
3. Medical therapy of gallbladder stones
4. Surgical therapy of gallbladder stones
5. Diagnosis of bile duct stones
6. Endoscopic and surgical therapy of bile duct stones
7. Diagnosis and therapy of intrahepatic stones
8. Therapy of gallstones during pregnancy

Cholelithiasis is a common problem in west as well as in developing nations and its incidence is continuously rising. It has become routine to order LFT's in every patient undergoing cholecystectomy for symptomatic cholelithiasis. In view of these present clinical & laboratory practices, prospective, observational study was designed to evaluate the effectiveness of routine LFT's in patients with uncomplicated symptomatic cholelithiasis.

MATERIAL AND METHODS

The present prospective observational study was conducted in the Dept. of Surgery in collaboration

with Dept. of Biochemistry at Shridev Suman Subharti Medical College attached with Dr. K.K. Bhatnagar Memorial Subharti Hospital, Dehradun, Uttarakhand, India from December 2016 to November 2017. The study was undertaken after getting institution clearance from Institutional Ethics Committee. All patients who presented with symptomatic cholelithiasis during this period were included in the study. Exclusion criteria for this study were the patients having previous history of jaundice, clinical jaundice at the time of presentation, history of pancreatitis, cholangitis and common bile duct diameter more than 8 mm on ultrasound. Routine preoperative investigations including complete blood picture, RFT, blood sugar, x-ray chest, ECG, screening for HIV, Hepatitis B and C and urine analysis along with LFT and ultrasound abdomen were performed. The LFT included total bilirubin, direct bilirubin (conjugated), indirect bilirubin (unconjugated), Aspartate aminotransferase (AST), Alanine aminotransferase (ALT) and alkaline phosphatase (ALP). Abnormal laboratory results were defined as total bilirubin exceeding 1.2 mg/dl, direct bilirubin (conjugated) exceeding 0.3mg/dl, indirect bilirubin (unconjugated) exceeding 0.7mg/dl, AST exceeding 35 U/L, ALT exceeding 40 U/L and alkaline phosphatase exceeding 112 U/L. Patients with normal LFT's were placed in group A and with deranged LFT's in group B. Cholecystectomies were performed laparoscopically in 107 (89.16%) and by open surgery in 13 (10.83%) patients. Operative finding especially in relation to Common Bile Duct (CBD) size at open surgery were recorded. Data analysis was undertaken by using SPSS-21 statistical package.

OBSERVATION AND RESULTS

Total 120 patients were included in the present prospective study, of which 100(83.33%) were female and 20(16.67%) were male with mean age 45 years (range 20–70 years). Out of 120 patients, 85(70.83%) patients diagnosed as chronic calculous cholecystitis, 29(24.17%) patients diagnosed with biliary colic & only 6(5.00%) patients diagnosed with acute calculous cholecystitis. None of these patients in either group had dilated CBD and/or calculi on preoperative ultrasonography and at open cholecystectomy. Patients had been followed up for three months with no further manifestation (follow up rate was 65%).

Table 1: Pattern of LFT's in different presentations of Cholelithiasis (n=120)

Presentation	No. of patients n=120	Normal LFT's (Group A) n=110 (91.67%)	Deranged LFT's (Group B) n=10 (8.33%)
Chronic calculus cholecystitis	85(70.83%)	80(74.76%)	2(40.15.3800%)
Biliary colic	29(24.17%)	24(22.42%)	8(61.53%)
Acute calculus cholecystitis	6(5.00%)	3(2.8%)	3(23.07%)

Those patients with LFT's within normal range were 107 (89.16%) included in Group A. Out of these 107 patients, 80 (74.76%) were those who presented as chronic calculous cholecystitis, 24 (22.42%) patients presented with biliary colic and 3 (2.8%) patients presented as acute calculous cholecystitis. Those patients with deranged LFT's were 13 (8.33%) included in Group B. In this group, 2 (15.38%) patients were diagnosed as chronic calculous cholecystitis, 8(61.53%) patients as biliary colic & 3(23.07%) patients were of acute calculous cholecystitis.

Table 2: Pattern of derangements in LFT's in Group B (n=13)

Deranged variables of LFT's	No. of Patients (%)	Mean value
Elevated Total Bilirubin	2 (15.38%)	1.80 mg/dl
Elevated AST	3 (23.07%)	78.60 U/L
Elevated alkaline phosphatase	8 (61.53%)	190.40 U/L

Table no 2 showing bilirubin was found elevated in 2(15.38%) patients the level of which is 1.80mg/dl, the increased level of AST and ALP reported in 3(23.07%), 8 (61.53%) patients and the mean level of which is 78.60U/L and 190.40 U/L respectively.

Table 3: Patients with deranged presentations in LFT's.

Presentation	No. of Patients	Number of patients with deranged LFT's (%)
Chronic calculus cholecystitis	85	2 (2.35%)
Biliary colic	29	8 (27.58%)
Acute calculus cholecystitis	6	3(50%)

DISCUSSION AND CONCLUSION

Gall stone disease is worldwide health problem specifically of adult population (2) with considerable variation in its geographical as well as regional prevalence. Its mean prevalence in Europe is 18.5% with highest prevalence in Sweden (38%) & lowest prevalence in Ireland (5%). In UK, USA and Australia the prevalence ranges from 15 to 25%. Pima Indian tribe of Arizona has the highest prevalence with female 49% and 73% respectively. Prevalence of gall stones is below 1% in Africa (1). The gold standard for the treatment of gall stone disease is laparoscopic cholecystectomy (4-5). The presence of silent common bile duct stones is emerging as a matter of concern in laparoscopic era as uncertainty exists regarding its simultaneous management (6-7). Preoperative exclusion of associated silent choledocholithiasis is a pre-requisite for a successful

outcome of cholecystectomy(9,15) because persistence of CBD calculi, negative CBD exploration or any other procedure like endoscopic retrograde cholangio-pancreography (ERCP), result in an increase in morbidity and expenses (7,16). Therefore, a confident exclusion of CBD calculi pre and per-operatively is desirable. To achieve this, multiple techniques like routine preoperative LFT's analysis (6,17), repeat ultrasound(18), Per-operative cholangiography, ERCP (8,14) or Magnetic Resonance Cholangio-Pancreography(MRCP) (19-20) are used. Intra-operative ultrasonography is helpful in diagnosis of CBD calculi. It is safe, has shorter examination time and ease of administration as compare to intra operative cholangiography(21) but currently this facility is not widely available in present health care system. The long list of investigations makes the diagnostic pathway complex and expensive but good clinical history(9,11) and CBD size

on ultrasound (22-23) have been worked out as best predictor of choledocholithiasis. There are number of international and national studies regarding elective cholecystectomy where LFT's were routinely performed in order to exclude CBD calculi but hardly any study has discussed this aspect in their results and discussion except one study from Ireland mentioned that LFT's themselves have very limited value in the detection of CBD stone(2) and study from USA mentioned that good history, physical examination and ultrasound abdomen are far more superior than routine use of LFT's(9). The components of LFT's, ALP appear to be a better indicator of CBD stones than bilirubin. But, both; bilirubin and ALP are statistically insignificant indicators (13). However, when results of abnormal LFT's are clubbed with abnormal sonographic findings, it has better predictive value (10, 24). It is evident from our observation and survey of literature that in the absence of clinical jaundice, LFT's are often within normal range (5,7). However, in cases of acute cholecystitis without clinical jaundice, some degree of abnormalities in LFTs are present but in these cases the level of bilirubin is usually not very high, usually reported up to 2 mg/dl because severity of inflammation does not influence the LFT's parameters and this is comparable with the present study findings(25). In present study, frequency of deranged LFT's is higher in acute calculus cholecystitis in 2 patients, biliary colic in 8 patients and chronic calculus cholecystitis in 3 patients showed in table-3. This is in accordance with the findings of a study, that in elective situation, in the absence of clinical jaundice LFT's are usually within normal range and its elimination from diagnostic workup does not compromise the patient outcome (26). Silent choledocholithiasis diagnosed preoperatively need to be managed by ERCP and duct clearance before surgery however if it is found post operatively, clinical experience and literature review suggest that the frequency of subsequent symptoms and complications are very low and in the order of 2 to 3% and up to 1/3rd of these patients clear their ducts spontaneously after surgery, therefore it is reasonable to manage silent choledocholithiasis expectantly in the short-term post-operatively (8). On the basis of present study findings we conclude that in pre-operative assessment of uncomplicated symptomatic cholelithiasis, a routine LFT's analysis reveals normal result and hence it is not effective predictive marker for silent choledocholithiasis.

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