

ROLE OF LIVER FUNCTION TESTS IN SYMPTOMATIC CHOLELITHIASIS

Lubna Habib, Masoom Raza Mirza, Muhammad Ali Channa, Wajahat Hussain Wasty*

Department of Surgery, Hamdard College of Medicine & Dentistry/Hamdard University Hospital, *Ziauddin Medical University, Karachi, Pakistan

Background: 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. **Objective:** To evaluate the usefulness of routine Liver Function Tests (LFT's) in patients with symptomatic cholelithiasis. **Methods:** This prospective descriptive study was conducted from August 2006 to July 2007 at Department of Surgery, Hamdard University Hospital and other private hospitals. All patients presenting with symptomatic cholelithiasis with no past and present history of jaundice, pancreatitis, cholangitis and normal calibre common bile duct on ultrasonography. The relevant data regarding history, clinical examination, LFT's and ultrasound findings were recorded and analysed. **Results:** Out of 124 patients, 102 (82.25%) were female and 22 (17.74%) were male with the mean age 43 years (range 20 to 76 years). Majority of patients, 110 (88.71%) presented as chronic calculous cholecystitis, 12 (9.68%) as acute calculous cholecystitis and 2 (1.61%) with biliary colic. In 108 (87.10%) patients, labelled as group A, LFT's were within normal range. In this group most of the patients, 103 (95.37%) were those who presented as chronic calculous cholecystitis. Rest of the 5 patients (4.63%) with normal LFT's were those who presented as acute calculous cholecystitis. In 16 patients (12.90%), labelled as group B, LFT's were found deranged. In this group 7 (43.75%) patients presented as acute calculous cholecystitis, 7 (43.75%) as chronic calculous cholecystitis and 2 (12.5%) with biliary colic. Bilirubin was found elevated in 2, AST in 4 and alkaline phosphatase in all patients. None of these patients in either group had dilated CBD on preoperative ultrasound examination and per operatively (in open surgery) CBD dilatation or palpable stones were not found. **Conclusion:** A routine LFT's in preoperative assessment of uncomplicated symptomatic cholelithiasis usually comes out normal and it is not a good predictive marker for the detection of silent CBD calculi.

Keywords: Cholelithiasis, Gall stones, Choledocholithiasis, Common bile duct, Liver function test, Cholecystectomy, Laparoscopic, Symptomatic, Uncomplicated

INTRODUCTION

Cholelithiasis is a common problem in west as well as in developing nations and its incidence is continuously rising.^{1,2} Laparoscopic cholecystectomy has become a therapeutic gold standard in symptomatic cholelithiasis³⁻⁶, but the management of concomitant silent (asymptomatic) choledocholithiasis in laparoscopic era is a matter of debate^{4,7,8}. The reported incidence of silent choledocholithiasis is between 15-20%^{1,7,9} 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.^{2,4,5,7,10-13}

It has become routine to order LFT's in every patient undergoing cholecystectomy for symptomatic cholelithiasis.¹⁴⁻¹⁶ Therefore this study was designed to evaluate the usefulness of routine LFT's in patients with uncomplicated cholelithiasis.

PATIENTS AND METHODS

This prospective descriptive study was conducted in the department of surgery at Hamdard University Hospital and other private hospitals from August

2006 to July 2007. All patients who presented with symptomatic cholelithiasis during this period were included in the study. Patients with previous history of jaundice, clinically jaundiced at the time of presentation, history of pancreatitis, cholangitis and common bile duct diameter more than 7 mm on ultrasound were not included in the study. Routine preoperative investigations including complete blood picture, blood sugar, screening for Hepatitis B and C and urine analysis along with liver function test and ultrasound abdomen were performed. Liver function test included total bilirubin, direct bilirubin, Aspartate aminotransferase (AST), Alanine aminotransferase (ALT), and alkaline phosphatase. Abnormal laboratory values were defined as total bilirubin exceeding 1.0 mg/dl, AST exceeding 36 U/dl, ALT exceeding 40 U/dl and alkaline phosphatase exceeding 104 U/dl.

Patients with normal LFT's were placed in group A and with deranged LFT's in group B. Cholecystectomies were performed laparoscopically in 107 (86.29%) and by open surgery in 17 (13.70%) patients. Operative finding especially in relation to CBD at open surgery were recorded. Data analysis was done using SPSS-11.

RESULTS

Out of 124 patients, 102 (82.25%) were female and 22 (17.74%) were male with mean age 43 years (range 20–76 years). Majority of the patients, 110 (88.71%) presented as chronic calculous cholecystitis, 12 patients (9.68%) presented as acute calculous cholecystitis, and only 2 patients (1.61%) with biliary colic. In Group A, 108 (87.10%) were included with LFT's within normal range. Among these 108 patients, 103 (95.37%) were those who presented as chronic calculous cholecystitis and 5 (4.63%) as acute calculous cholecystitis. In Group B, 16 patients (12.90%) were included with deranged LFT's. In this group, 7 patients (43.75%) were diagnosed as acute calculous cholecystitis, 7 patients (43.75%) as chronic calculous cholecystitis and 2 (12.5%) were of biliary colic (Table-1). Bilirubin was found elevated in 2 (12.5%), AST in 4 (25%) and alkaline phosphatase in all patients (Table-2). 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 63%).

Table-1: Pattern of LFT's in different presentations of Cholelithiasis n=124

Presentation	No. of patients	Normal LFT's (Group A) n=108 (87.10)	Deranged LFT's (Group B) n=16 (12.90)
Chronic calculus cholecystitis	110 (88.71%)	103 (95.37%)	7 (43.75%)
Acute calculus cholecystitis	12 (9.68%)	5 (4.63%)	7 (43.75%)
Biliary colic	2 (1.61%)	00	2 (12.5%)

Table-2: Pattern of derangements in LFT's in Group B

Deranged variables of LFT's	No. of Patients (%)	Mean value
Elevated Bilirubin	2 (12.5%)	1.75 mg/dl
Elevated AST	4 (25%)	49.4 U/L
Elevated alkaline phosphatase	16 (100%)	346.75 U/L

DISCUSSION

Cholelithiasis is a major health problem world wide, particularly in adult population.² There is a considerable geographical and regional variation in its prevalence. The current mean prevalence in Europe is 18.5% with lowest being reported from Ireland 5% and highest from Sweden 38%. In the UK, USA and Australia the prevalence rate vary from 15 to 25%. The highest prevalence is found in the Pima Indian tribe of Arizona with total and female prevalence rate of 49% and 73% respectively. Gall stones are rare in Africa, below 1%.¹

Laparoscopic cholecystectomy has become a gold standard for the treatment of gall stone disease³⁻⁶ but at the same time the presence of silent common bile

duct stones is emerging as a matter of concern in laparoscopic era because uncertainty exists regarding its simultaneous management^{4,7,8}.

A pre requisite for a successful out come of cholecystectomy is the preoperative exclusion of associated silent choledocholithiasis^{5,14} because persistence of CBD calculi, negative CBD exploration or any other procedure like Endoscopic Retrograde Cholangio-Pancreography (ERCP), is related to an increase in morbidity and expenses^{4,7,17}. Therefore surgeons desire a confident exclusion of CBD calculi pre and peroperatively. To achieve this, different methods are being in use like routine preoperative LFT's analysis^{3,8,15,18,19}, repeat ultrasound²⁰, per operative cholangiography, ERCP^{2,4,9,14,17} or Magnetic Resonance Cholangio-Pancreography (MRCP)^{21,22}. Intra operative ultrasonography, if available is safe, having shorter examination time and ease of administration as compare to intra operative cholangiography²³ but currently this facility is not widely available in our health care system.

This long list of investigations makes the diagnostic pathway complex and expensive but good clinical history^{5,11} and CBD size on ultrasound^{4,5,7,12,24} have been worked out as best predictor of choledocholithiasis. There are number of international and national studies in which LFT's were routinely ordered before elective cholecystectomy perhaps 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 stones² and another study from USA mentioned that good history, physical examination and ultrasound abdomen are far more superior than routine use of LFT's⁵. Among the components of LFT's alkaline phosphatase appears to be a better indicator of CBD stones than bilirubin but neither bilirubin nor alkaline phosphatase in themselves are statistically significant indicators¹³ however altered liver function test when combined with abnormal sonographic results have predictive value.^{10,17,25} Our observation and review of literature is evident that in the absence of clinical jaundice LFT's are usually within normal range^{5,7} however there is a degree of disturbance present in cases of acute cholecystitis in the absence of clinical jaundice but in these cases the level of bilirubin is usually not very high, usually seen up to 2 mg/dl because severity of inflammation does not influence the LFT's parameters and this is comparable with the our results.¹⁹ In our study, frequency of deranged LFT's is higher in acute calculus cholecystitis and biliary colic than chronic calculus cholecystitis (Table-1) and this is in accordance with the statement 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.

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 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, there fore it is reasonable to manage silent choledocholithiasis expectantly in the short term post operately.⁸

CONCLUSION

A routine LFT's analysis in pre-operative assessment of uncomplicated symptomatic cholelithiasis usually comes out normal and it is not a good predictive marker for silent CBD calculi.

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Address for Correspondence:

Dr. Lubna Habib, Assistant Professor, Department of Surgery, Hamdard College of Medicine & Dentistry, Hamdard University Hospital, M. A. Jinnah Road, Karachi-74400. Tel: +92-21-32788161-2.
Email: drlubnahabib@yahoo.com