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Rationale for routine preoperative liver function tests before elective cholecystectomy

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Preoperative work-up before elective cholecystectomy often undergoes a range of routine investigations that includes liver function tests (LFTs). There is fear of concomitant common bile duct stones (CBDs) in patients with negative ultrasonography (USG) findings, i.e. with no dilatation of bile ducts or presence of stones in it or clinical features of hepatitis or jaundice. Studies show that clinical practice of preoperative workup of routine liver function tests for every elective cholecystectomy patient is questionable, possibly because of peer pressure or defensive medicine practices or simply a 'copy-paste' from the practices of seniors.^{1,2} Preoperative blanket tests on the pretext of 'finding any abnormalities' has poor scientific merits. The preoperative LFTs for uncomplicated, elective cholecystectomy patients rarely add value and do not alter the already planned decision based on symptomatology, history, physical examination, and ultrasound diagnosis of cholelithiasis. The clinical pathway for the management in most cases remains unchanged. The practice of menu-style routine tests adds to the cost and rarely adds further useful information sufficient enough to alter the planned clinical pathway.³

The systematic review shows that serum bilirubin and alkaline phosphatase which are considered to be screening tests for the CBDs do not add more accurate information already provided by the ultrasound and was confirmed by normal findings during surgical or endoscopic exploration.⁴ Only when there is suspicion of CBDs based on history, physical examination and ultrasonography, then, there is value for further testing, including LFTs. Whether LFTs is done or not before elective cholecystectomy, it does not influence the postoperative complications, rather it increases the likelihood of further testing, for e.g., ERCPs adding to the complications and cost.¹ Studies have reported that patients who had raised LFTs underwent significantly more invasive procedures like ERCP preoperatively. However, there was no difference found between the groups of patients who had preoperative LFTs or those who had no LFTs, and also there were no significant differences observed for postoperative complications in the two groups.¹ Thus, routine LFTs to rule out ductal stone is of limited significance and are not

recommended for patients without suspected CBDs (no signs or symptoms of complicated gallstones, i.e. absence of cholangitis, jaundice), positive USG findings (dilated CBD >8 mm or presence CBDs).⁴⁻⁶

About 60% of routine 'menu' style investigations are unnecessary and can be avoided if they are ordered based on recognizable indications dictated by history and physical examinations.⁷ Menu-style investigations not only are unnecessary, but they also increase the healthcare cost, increase risks to the patients who are subjected to further unnecessary interventions, and increase complications and medico-legal risk. For example, endoscopic retrograde cholangiopancreatography (ERCP) before cholecystectomy to clear the asymptomatic small stones which in most cases usually passes spontaneously. Stones found during diagnostic imaging workup before elective cholecystectomy have been found to increase the rate of ERCPs, in many cases unnecessarily, because in most cases the smaller stones pass spontaneously.⁸ The ERCP planned for CBDs found that in 6.2% (78/1260) of cases stones had passed spontaneously during a mean duration of 5 days. The spontaneous passage was higher for asymptomatic stones, small size stones of <6 mm, and when CBD was not dilated i.e., the diameter was <10 mm.⁸

Studies do not support the routine LFTs for all the gallstone patients before elective cholecystectomy because the likelihood of finding CBDs is rare for uncomplicated gallstones in the absence of features of cholangitis, jaundice, and USG findings of dilated CBD of >8 mm in diameter or presence stones in it.^{9,10,11} The studies report the prevalence of asymptomatic stones in CBD ranges from 3% to 30%.^{11,12,13,5} In symptomatic CBDs clearance of ductal stones is required either before or during cholecystectomy. Confirmation and/or clearance of stones by preoperative ERCP session or laparoscopic cholecystectomy (LC) combined with CBD exploration and less commonly LC plus

postoperative ERCP for these asymptomatic stones is another controversial practice.

There may be the presence of stones in CBD in patients who present with acute calculous cholecystitis, yet most patients have LFTs within the normal range.¹⁴⁻¹⁸ These patients do not require further management for asymptomatic ductal stones and have little significance because it does not change the clinical pathway of planned simple cholecystectomy. The incidence of CBD stones is reported in up to 17.8% of patients with acute calculous cholecystitis.¹⁹ Significant predictors for the presence of ductal stones include elevated alanine transaminase >3 times, raised alkaline phosphatase, raised total bilirubin, and CBD diameter >6 mm. Chances of stones are high and reach 2/3rd when risk factors are present.¹⁹ The positive predictive value of raised LFTs for the presence of ductal stones is <15%.^{19,20} Furthermore, the small stones <6 mm usually pass spontaneously and do not require intervention. Thus, preoperative menu style tests to include LFTs before cholecystectomy for cholelithiasis patients have poor scientific merits and are already based on clinical symptomatology, history, physical examination, and ultrasound diagnosis of cholelithiasis. Routine LFTs not only add to the healthcare cost in uncomplicated cholelithiasis, but do not add further useful information sufficient enough to alter the clinical pathway.³

Menu-style tests do not benefit patients and rarely change the clinical pathway. Studies report that out of a total of 3462 routine preoperative investigations in 500 patients, only 5(0.14%) tests (3 CBC, 1 ECG, 1 CXR) were found abnormal.⁷ The prospective comparison of the history, physical examination, and laboratory tests for the diagnostic accuracy before laparoscopic cholecystectomy found that among 53(8.2%) patients in whom there were abnormal findings in preoperative tests only in 4(0.6%) cases, there was any influence on the planned decision already made.² The National Institute of Clinical and Health Excellence (NICE) guidelines for preoperative

tests in elective surgery adult patients (>16 years) take into account the comorbidities (non-pregnant women, non-cardiothoracic or neurosurgery) and aim to reduce unnecessary testing.²¹

The findings of abnormal tests before surgery should be evaluated in the context of their significance and whether they add value and changes required in the plan of care. Routine liver function tests for uncomplicated gall stones in which the clinical findings feature and USG findings which do not suggest stones in the common bile duct, there is no benefit from menu style tests.

In conclusion, routine menu-style pre-operative investigations including LFTs for elective cholelithiasis patients with uncomplicated gallstones are unnecessary and are a waste of health care resources.

Conflict of Interest

None

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