serum CCK, however, is found in patients with chronic alcoholic pancreatitis and regarded as a consequence rather than the cause of the disease.

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Imaging of the common bile duct

EDITOR,—The finding by Hainsworth et al, that the combination of clinical history, liver function tests, and ultrasonography generated a negative predictive value of 91% in the age range 21–88 (unit A) (Gut 1994; 35: 991–5), implies that, in subgroups such as the elderly, characterised by a high degree of prior probability of cholecystolithiasis and cholestolithiasis, the negative predictive value of these diagnostic criteria might well be lower, because the negative predictive power is inversely correlated with the prevalence of the condition under diagnostic consideration.

With increasing age, therefore, there should be greater justification for routine imaging of the common bile duct either by ERCP or by cystic duct cholangiography, in prospective candidates for laparoscopic cholecystectomy.

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EDITOR,—We have read with great interest the study by Hainsworth et al (Gut 1994; 35: 991–5) regarding the options for managing the common bile duct in patients undergoing laparoscopic cholecystectomy. However, there are several points that need further discussion.

Firstly, the criteria for selecting patients with high risk of common bile duct stones are vaguely described. There is no precise description of what they have considered a dilated or non-dilated common bile duct on ultrasonograhic scan. Furthermore, there is no mention of serum alkaline phosphatase or serum bilirubin, or both are poor indicators of common bile duct obstruction (as described by themselves). Liver function tests, however, would be very helpful to have a more specific test in this setting, especially if γ-glutamyltransferase and aminotransferases are also raised.

Secondly, it is surprising that 12 patients were found to have a positive choangiogram in unit A, but only four patients had common bile duct stones after ERCP. To assume that stones had passed spontaneously is rather speculative. Thus, eight of 12 patients should have been considered for a non-invasive examination. Moreover, we cannot find any explanation why ERCP was delayed up to 6 days after laparoscopic cholecystectomy.

Thirdly, we believe that the risk of a false-positive choangiogram secondary to air bubbles in the common bile duct during laparoscopic cholecystectomy may be higher because the abdomin is insulated with carbon dioxide and this gas could pass through the cystic duct during the insertion of the catheter.

Fourthly, Hainsworth et al state that 'selective cholangiography misses a proportion of common bile duct stones'. Prospective validation of the randomised studies have not proved this, however, and suggest that cholangiography can be omitted in patients without indications of common bile duct disease.

Fifthly, no description of the treatment and follow up of patients in whom peroperative cholangiography failed is provided.

Sixthly, assuming that a false-result occurs in 5–9% of the cases when choangiography is used on routine basis 4 common bile duct exploration in patients without choledocholithiasis would be increased. As common bile duct exploration, either supraduodenal or endoscopic, is associated to a higher risk of complications, the unsolved question is 'Does routine cholangiography really morbidity and death rates in laparoscopic cholecystectomy?' Finally, a proper preoperative identification of patients with 'no/low' risk of choledocholithiasis in which peroperative cholangiography is not indicated 2 should be carried out by means of a clinical history, liver function tests, and ultrasonography. This policy will result in a lower incidence of false-positive choangiograms without increasing the risk of retained common bile duct stones.


Reply

EDITOR,—We are glad that our paper has stimulated discussion and debate in this controversial field. Drs Mayol and Alvarez Fernandez-Represa seek clarification of the criteria used for categorising patients into ‘high’ and ‘low’ risk groups for bile duct stones. We relied on a combination of history, liver function tests, and bile duct diameter. In our paper, we set out individual features from which a ‘very low’ or ‘high’ risk of cholelithiasis, and showed their ability to predict the presence of duct stones.

The working definition of a dilated common bile duct used in the study was a diameter greater than 8 mm. While the probability of finding duct stones rises with increasing bile duct diameter, interpretation of bile duct diameter is not a precise science. Bile duct diameter increases with advancing patients’ age. These definitions were set out in the text, and the overall sensitivity for detecting bile duct stones with ultrasonography ranges from 25–55%. 3, 4 Liver function tests are a very imprecise and non-specific way of detecting bile duct stones, which is the reason why most investi-gators have used a combination of factors to assign patients to ‘high’ and ‘low’ risk groups. We must take issue with our correspondents’ comment on the paper’s lack of interventional value. Voyles et al. 4 These authors do not cite any data on the sensitivity, specificity, and positive or negative predictive values of liver function tests in themselves. We await with interest full publication of the results from Mayol et al.

We were initially surprised too that, at the time of post-cholecystectomy ERCP, eight of 12 ducts had cleared. One of the eight had a stone block at the common bile duct. The stone was sufficiently small to be removed at ERCP but, postopera-tively, the patient developed pain and clearly the stone before ERCP was done. We believe that the other seven had stones in their bile ducts at the time of surgery for these reasons. Firstly, we used high quality C-arm image intensification, which is associated with less than one percent risk of false positivity. 5 This is dynamic and permits further flushing and assessment under vision where doubt exists. Secondly, we used 16% detection rate for bile duct stones on unit A coheres with the incidence of stones undergoing open cholecystectomy. 6 Thirdly, spontaneous passage of duct stones is well reported in the context of acute pancreatitis and our paper suggests this is also true of patients undergoing laparoscopic cholecystectomy. Laparoscopic cholecystectomy may differ from conventional cholecystectomy in the degree of manipulation of the gall bladder before the cystic duct is ligated. It is certainly possible that some stones are passed during the procedure, only to subsequently pass spontaneously.

We know of no evidence that low pressure pneumoperitoneum encourages the formation of air bubbles in the biliary tree. First principles suggest that intra-abdominal pressure would equilibrate between the peritoneal cavity and bile duct lumen across the bile duct wall, in much the same way as


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