LETTERS TO THE EDITOR

Gall bladder motility after endoscopic sphincterotomy

EDITOR,—We read with interest the article by Sugiyama and Atomi (*Gut* 1996;39:856-9) on the effect of endoscopic sphincterotomy (ES) on gall bladder motility. These authors have proved conclusively that ES causes a significant improvement in gall bladder motility in humans. We have assessed gall bladder motility in patients who underwent ES for common bile duct (CBD) stones and compared these with patients with gall bladder calculi but without CBD stones. We found significantly lower fasting and residual gall bladder volumes in the patients who had undergone ES, indicating reduced filling after ES.¹ However, the ejection fraction and the rate constant of gall bladder emptying in these patients was increased significantly, suggesting increased gall bladder emptying. In another study² we found a significant decrease in fasting volume (mean (SD) 18.3 (8.5) v 13.9 (7.3) ml), residual volume (12.0 (8.0) v 4.4 (3.2) ml) and an increase in the ejection fraction (54.3 (9.8) v 83.5 (5.4)) after ES, suggesting decreased stasis and increased gall bladder emptying.

In Sugiyama and Atomi's study, all patients in whom gall bladder motility was assessed before ES had CBD stones; all stones were extracted before the motility studies were repeated. The major problem in this study is in differentiating between the effects of the CBD stones and the sphincterotomy itself. Fasting and residual volumes and maximum contraction were significantly different before and after ES. However, when one looks at these parameters in normal controls, it is clear that abnormal values before ES tend to normalise after ES, especially in patients with primary CBD stones. This strongly suggests that CBD stones adversely affect gall bladder motility. Common bile duct stones hinder gall bladder emptying by obstructing the lower CBD. In our study the patients had dilated CBD and some had multiple/large CBD stones, indicating significant obstruction. We circumvented this problem by including patients without significant CBD obstruction as reflected by normal serum bilirubin, a normal CBD diameter on cholangiography, and single/small CBD stones.³ Therefore, we believe that in this study improvement in gall bladder motility could be due to both ES and removal of the stones.

In Sugiyama and Atomi's study healthy volunteers were used as controls rather than patients with gallstones but without CBD stones. If gall bladder volumes and maximum contraction in patients with CBD stones were the same as in those with gallstones but without CBD stones, then one could conclude that the presence of CBD stones did not affect gall bladder emptying.

Patients with gallstones have small, contracted gall bladders because of associated chronic cholecystitis. However, in Sugiyama and Atomi's study fasting gall bladder volume was the same in patients with both gall- and CBD stones as in those with primary CBD

stones. Abnormal motility is not expected in the latter. Of the patients with both gall- and CBD stones, six of 15 patients had pigmented stones and would probably have had normal gall bladder motility. Behar and colleagues have shown that gall bladder muscle contractility is normal in patients with pigmented stones in comparison with patients with cholesterol stones who have reduced gall bladder muscle contractility.⁴ It is not clear whether Sugiyama and Atomi assessed gall bladder motility in a blinded fashion.

Sugiyama and Atomi mention that thickening of gall bladder wall after ES is due to reduced fasting volume. How a reduction in fasting volume can lead to thickening of the gall bladder wall is not clear. After ES, bactobilia occurs and duodenal contents can enter the gall bladder, which may lead to regurgitation cholecystitis and thickening of the gall bladder wall.⁵

Improvement in gall bladder motility after ES is due to abolition of papillary resistance. With division of the papilla, resistance is lost immediately and CBD pressure equalises to the duodenal pressure.⁶ This leads to a rapid improvement in gall bladder emptying as demonstrated by Sugiyama and Atomi on day 7 after ES. However why gall bladder emptying continued to improve for three months after ES was not explained. Despite a significant reduction in the size of the ES over five years, there was no evidence of a gradual decline after the initial improvement in gall bladder motility.

B C SHARMA
K SINGH

Department of Gastroenterology,
Postgraduate Institute of Medical Education and
Research,
Chandigarh 160 012, India

R K DHIMAN
Department of Hepatology

Correspondence to: Dr B C Sharma, 591, Sector 2, Panchkula, Haryana, India.

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Reply

EDITOR,—We appreciate the comments raised by Sharma *et al* about our paper. We agree that improvement in gall bladder motility after endoscopic sphincterotomy could be due to both decreased resistance of the terminal common bile duct and clearance of CBD stones, as we described in the discussion. We have found that patients with cholecystocholedocholithiasis have a lower maximum contraction than those with gallstones but without CBD stones (unpublished data). Therefore, the presence of the CBD stones

seems to affect gall bladder emptying. In our study, gall bladder function tests were carried out in a non-blinded manner.

Patients with severe cholecystitis have a small gall bladder. However, the patients had no or mild cholecystitis and a larger fasting gall bladder volume than normal controls.¹ Some patients with primary CBD stones may have mild cholecystitis or bile stasis, which may affect gall bladder motility. The brown pigmented stones in our study were composed of calcium bilirubinate and were different from black pigmented stones which mainly contain unconjugated bilirubin.^{2,3} Brown pigmented stones cause cholecystitis and gall bladder dysfunction.⁴

The gall bladder wall thickens as the gall bladder empties. Therefore, mild thickening of the gall bladder wall after sphincterotomy seems to be caused partly by the reduced fasting volume of the gall bladder. Regurgitation cholecystitis may also cause wall thickening, as Sharma *et al* state.

Improvement in gall bladder motility reached a plateau three months after sphincterotomy. Initial improvement seems to have been caused by decreased resistance of the terminal duct and stone clearance, as mentioned earlier. Further improvement after three months cannot be fully explained but may result partly from changes in bile composition.⁵

M SUGIYAMA
Y ATOMI

The First Department of Surgery,
Kyorin University School of Medicine,
6-20-2 Shinkawa,
Mitaka, Tokyo 181, Japan

Correspondence to: Dr Sugiyama.

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Specificity of small bowel biopsy findings in coeliac disease

EDITOR,—I read Dr Metcalf's recent commentary (*Gut* 1998;42:9-10) on the association between coeliac disease and primary biliary cirrhosis, with much enthusiasm. Her editorial was both succinct and insightful. My concern relates to the author's suggestion that for coeliac disease, "endoscopic small bowel biopsy is specific." Unfortunately, this statement is incorrect. Specifically, a mucosal lesion identical to or closely resembling coeliac disease may be seen in patients with tropical sprue, lymphoma of the small bowel, Zollinger-Ellison syndrome, Crohn's disease, bacterial overgrowth in the small intestine, as well as multiple other disorders.¹ It is for this reason that it has been stressed that the histological appearance of the mucosa in coeliac disease is not specific, and alone cannot be considered diagnostic of this disorder. Importantly, in addition to a biopsy specimen