particular double contrast technique employed¹ is quick, no more time-consuming than the conventional method, well tolerated by the patient, and admirably suited for use in a hard-pressed district hospital radiology department. In fact, the conventional barium meal technique should by now have died a natural death.

Implicit in radiological endoscopic comparisons of this type is the assumption that endoscopy is the final arbiter. Nevertheless, the endoscopist is not infallible, but endoscopic error is unlikely to be greater than 2 to 3%. An obvious implication of the increased accuracy of the double contrast technique is to release the endoscopist from an obligation to examine every patient with x-ray negative dyspepsia, allowing him to concentrate on the investigation of radiological abnormalities which need visual or histological confirmation—in other words, to adopt the role of sophisticated trouble-shooter.³

In conclusion, if a double contrast barium meal performed by an experienced radiologist has not shown any abnormality, an alternative explanation for the patient's dyspeptic symptoms should be sought unless other clinical pointers suggest upper gastrointestinal tract disease. Hence endoscopy, albeit with its minimal morbidity and mortality, would usually assume third rather than second place in the sequence of investigations.

I am grateful to Dr W G Scott-Harden and Dr T G Girdwood, consultant radiologists, for their enthusiastic co-operation during this study.

¹ Scott-Harden, W G, *British Journal of Radiology*, 1973, **46**, 153.

² Cotton, P B, *British Medical Journal*, 1973, **2**, 161.

³ Scott-Harden, W G, *British Journal of Radiology*, 1976, **49**, 658.

(Accepted 25 March 1977)

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Liver biopsy in "difficult" jaundice

In a small proportion of patients with jaundice the cause cannot be resolved from the history and the results of clinical examination and simple investigations alone. Liver biopsy is one way of making a diagnosis, but has been criticised on the grounds of difficulty in differentiating extrahepatic from intrahepatic cholestasis and because of possible danger in jaundiced patients. We set out to assess the accuracy and complications of biopsy in patients with "difficult" jaundice.

Patients and results

There were 156 patients with "difficult" jaundice in whom liver biopsy had been performed during 1959-75. We confined results to the four common groups of infective hepatitis, drug jaundice, malignant obstruction, and gallstones. Percutaneous biopsy had been attempted in 136 patients with three failures, the remainder being surgical specimens. Generally accepted histological criteria for intrahepatic and extrahepatic obstruction were used,^{1 2} and each biopsy was placed in one of three categories according to the final diagnosis: (1) "correct"; (2) "incorrect" where the biopsy suggested intrahepatic cholestasis and the eventual diagnosis was extrahepatic or vice versa; and (3) "unhelpful" where the histology was equivocal or non-specific.

Infective hepatitis (23 patients). Twenty biopsies (87%) were "correct." Of these, four were surgical specimens and two patients died postoperatively

from hepatic failure. Percutaneous biopsy was "incorrect" in one patient and "unhelpful" in two others. All eventually recovered without operation. There were no complications following biopsy.

Drug jaundice (20 patients). The 14 "correct" biopsies (70%) included three surgical specimens taken from patients who subsequently recovered. Three of the percutaneous biopsies were "incorrect": two patients recovered before laparotomy but the third died of postoperative hepatic failure. Biopsy was "unhelpful" in one patient. If two patients in whom biopsy failed are excluded the diagnostic success rate becomes 77%. There were no complications.

Malignant obstruction (49 patients). The tumours affected pancreas (21), common bile duct (11), common hepatic duct (9), ampulla of Vater (5), gall bladder (2), and duodenum (1). Apart from one lymphoma all were carcinomas. Eight biopsies were taken at operation. Interpretation was "incorrect" in three percutaneous and one surgical biopsy and was "unhelpful" in a further five. Large duct obstruction was therefore correctly identified in 40 patients (81%). Two patients with carcinoma of pancreas developed biliary peritonitis after percutaneous biopsy and eventually died.

Gallstones (64 patients). There were 52 "correct" biopsies (82%), five being operative specimens. An "incorrect" diagnosis was made in six instances (two surgical) and there were five "unhelpful" biopsies, of which three were operative. No tissue was obtained from one patient and another developed mild cholangitis following percutaneous biopsy.

Discussion

Biopsy was "correct" in 81% of 156 patients with "difficult" jaundice. This is probably comparable in accuracy with most other types of investigation. Morris *et al*³ have recently challenged the belief that percutaneous biopsy is dangerous in patients with large duct obstruction. They had no deaths in 125 patients, though one developed biliary peritonitis and there were seven minor complications. We had two fatalities after percutaneous biopsy in 100 patients with large duct obstruction. Both had malignant disease, and there were no serious complications in patients with gallstones or intrahepatic cholestasis. The risks have to be set against the hazards of operating inadvertently on patients with intrahepatic cholestasis; in the present series two such patients died postoperatively of liver failure.

Facilities for liver biopsy are easily provided and must include full haematological investigation, which is particularly important in jaundiced patients. Other techniques, such as endoscopic retrograde cholangiopancreatography and percutaneous transhepatic cholangiography, are more complicated and expensive and may themselves be hazardous. Grey scale ultrasonography is not yet generally available but could well become the initial investigation of choice. Nevertheless, none of these more recent techniques is infallible. Although histological interpretation requires skill, we still regard percutaneous biopsy as a valuable diagnostic aid in patients with "difficult" jaundice.

This study could not have been undertaken without the co-operation of many colleagues and for this we are grateful.

¹ Shorter, R G, Paton, A, and Pinniger, J L, *Quarterly Journal of Medicine*, 1959, **28**, 43.

² Scheuer, P J, *Liver Biopsy Interpretation*, 2nd edn. London, Baillière Tindall, 1973.

³ Morris, J S, *et al*, *Gastroenterology*, 1975, **68**, 750.

(Accepted 3 May 1977)

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