Hospital Topics

Liver biopsy as a day-case procedure: selection and complications in 200 consecutive patients

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Summary and conclusions

The selection of 200 consecutive patients who underwent liver biopsy as a day-case procedure and subsequent complications were reviewed. In 59 patients a diagnosis of cirrhosis was confirmed by histological examination. Six patients developed minor complications attributable to the procedure and had to stay longer in hospital, and another returned with abdominal pain the evening after the biopsy.

With careful selection of patients, liver biopsy may be safely undertaken on a day-case basis.

Introduction

In Great Britain, liver biopsy has always been regarded as an inpatient procedure, requiring 24-hour bed rest and observation.[1] Recent reports from the United States, however, have suggested that in many patients liver biopsy may be safely undertaken on a day-case basis,[2] with obvious advantages for the patient and savings in hospital costs.

We review the safety of such an approach in a series of 200 consecutive patients who underwent liver biopsy as a day-case procedure between 1977 and 1979.

Patients and methods

All patients were assessed by a member of this unit in the outpatient clinic, when blood was taken for a one-stage prothrombin time and platelet count. The results of these tests were checked before arrangements were finalised with the patient, who was considered to be eligible for the day-case procedure only when the prothrombin time was prolonged by under four seconds and the platelet count was greater $80 \times 10^9/l$ (80 000/mm^3). Because of the increased risk of haemorrhage deeply jaundiced patients and those with other evidence of hepatocellular failure were excluded, as were those with a small liver (liver edge not palpable and breadth of dullness on percussion three intercostal spaces or less) or easily detectable ascites. Other absolute contraindications were suspected hydatid disease, liver abscess, or cholangitis.

The procedure was carried out in a four-bedded day-case ward soon after the patient's arrival at 8 30 am, to permit eight hours' bed rest and observation afterwards. The needle used was the Tru-cut (Travenol) modification of the Vim-Silverman needle, with the standard intercostal approach to the right lobe of the liver.[3] Blood pressure and pulse readings were taken at 30-minute intervals and the temperature at four hours and before discharge. Patients were advised to be accompanied home, not to travel more than 10 miles, and to avoid exertion the following day. They were given the name of the on-call house physician should any complication arise after leaving hospital.

If hypotension and tachycardia, or persistent pain, occurred during the observation period the patient was transferred to an adjacent ward; patients were also kept in overnight as an extra precaution if more than two punctures had been required to obtain an adequate specimen.

Patients found suitable for a day-case procedure could be divided into four main diagnostic subgroups: those with chronic active hepatitis undergoing follow-up assessment, reflecting one of the specialist interests of this unit; those with suspected underlying liver disease from high ingestion of ethanol; those with unexplained abnormalities in liver function tests; and those with hepatomegaly.

TABLE I—*Relation between initial diagnostic grouping and liver biopsy assessment*

	Follow-up in chronic active hepatitis (n = 20)	Suspected alcoholic liver disease (n = 79)	Unexplained abnormal liver function tests (n = 89)	Hepatomegaly (n = 12)
Patients without cirrhosis				
Alcoholic liver disease		66	1	0
Chronic active hepatitis	4		1	0
Chronic persistent hepatitis			15	
Resolving acute hepatitis			22	2
Miscellaneous (including tumour)			25	5
Patients with cirrhosis				
Alcoholic liver disease		13		0
Chronic active hepatitis	16		21	3
Cryptogenic			4	2

Results

Altogether 164 male and 36 female patients aged 14-72 years were reviewed. The prothrombin time was normal in 51 and prolonged by one second in 63, two seconds in 50, and three seconds in 36. Comparison of histological diagnosis with initial grouping showed that 30 of the patients found to have cirrhosis were from the group with

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TABLE II—*Nature of complications encountered and relevant data on patients*

Age (years)	Sex	Histological assessment	Prothrombin time (seconds prolonged)	Platelet count ($\times 10^9$/l)	Complication	Duration of hospital stay (days)
65	F	Fatty liver, alcoholic aetiology	0	140	Right pleuritic chest pain and effusion	5
37	M	Fatty liver, alcoholic aetiology	2	120	Abdominal pain. Hypotension and tachycardia	3
45	M	Chronic active hepatitis with cirrhosis	0	105	Abdominal pain and fall in haemoglobin (3 g/dl)	3
44	M	Alcoholic liver disease with fibrosis and inflammation	0	150	Right shoulder pain	1
60	M	Alcoholic liver disease with fibrosis	0	140	Pneumothorax	3
39	M	Chronic active hepatitis, not cirrhotic	1	82	Recurrence of pain after leaving hospital and fall in haemoglobin (3 g/dl)	1

previously unexplained abnormalities in liver function tests or hepatomegaly (table I). In all patients in whom alcohol-induced liver disease had been suspected histology showed some changes compatible with this diagnosis, with micronodular cirrhosis in 13 of the 80 patients and various combinations of fatty infiltration, central fibrosis, and acute alcoholic hepatitis in the remainder. In the group with unexplained abnormalities in liver function tests chronic active hepatitis was the most common single diagnosis in those found to have cirrhosis, whereas in the absence of cirrhosis resolving acute and chronic persistent hepatitis represented the main diagnostic categories. A large miscellaneous category included two patients from the group with unexplained hepatomegaly in whom a malignancy was identified, which had not been suspected before the biopsy.

COMPLICATIONS

Seven patients (3·5%) could not be discharged, six because of complications directly attributable to the procedure (table II) and one as a precaution because three punctures had been required to obtain an adequate specimen. None of the complications in the six patients was serious. One had persistent shoulder pain that settled spontaneously; in two the lung was punctured, with a small pneumothorax in one and pleural effusion in the other; and three patients had evidence of bleeding, which in two was reflected by a fall in haemoglobin concentration of 2-3 g/dl with associated abdominal pain but no change in observations, while the third developed hypotension and tachycardia requiring a two-unit blood transfusion. One patient returned to hospital the same evening because of right lateral and diffuse abdominal pain. Immediately after the biopsy he had experienced some pain, which had been relieved by paracetamol. On admission the haemoglobin concentration was found to have fallen to 12 g/dl, although there was no hypotension or associated tachycardia. The pain settled over 24 hours and no transfusion was necessary.

No significant correlation may be drawn between the complications observed and any particular diagnostic group. Only one of the 59 patients with underlying cirrhosis had a complication. In the two patients whose lung was punctured the optimum site for biopsy had, in retrospect, not been used.

Discussion

Our experience shows that liver biopsy may be safely undertaken as a day-case procedure in selected patients. Only a small proportion of patients (3·0%) had complications requiring them to remain in hospital after the biopsy, and in no instance were there serious problems.

Reservations about carrying out liver biopsy as a day-case procedure are based on the premises that complications may arise from early mobilisation and that they may occur outside the period of observation, which could lead to serious consequences. Of seven cases of haemorrhage occurring after inpatient liver biopsy in this unit between 1973 and 1979 (out of 4000 cases), two were detected after eight hours' observation, but in both pain had persisted after the procedure and preceded the onset of hypotension and tachycardia. Haemobilia characteristically occurs several days or even weeks later[4] and is likely to be no greater hazard with the day-case than the standard 24-hour-admission procedure. Patients certainly need to be warned to return to hospital if pain recurs, as in one case in the present series.

Previous figures for morbidity and mortality have come from series of liver biopsies carried out as an inpatient procedure. Lindner[5] reported a 0·014% mortality in 79 000 liver biopsies and Terry[6] a serious complication rate of 0·32% in 7900. A 4·6% complication rate (excluding mild pain) in 352 biopsies described by Klatskin and Yesner[7] attains more closely the criterion of "complication" used in our series. The only other large series reported of patients undergoing biopsy as day cases comprised 829 patients at one centre in the United States between 1972 and 1976.[2] Patients with underlying cirrhosis or a prothrombin time prolonged by as much as seven seconds were included and no distinction was made between the possible type of disease considered for day-case or inpatient biopsies. The bed-rest and observation period after biopsy was limited to three hours. Of the 829 patients, 7·6% developed complications (including mild pain) and 5·3% were required to stay in hospital. The authors concluded that as many as 90% of patients requiring liver biopsy could undergo the procedure as day cases. In our unit, however, this figure remains at about 10%: although this is largely due to the stricter selection criteria used, it also reflects the necessity for other inpatient investigations in many of the patients who might otherwise be managed as day cases.

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What is the safest treatment for bilharzia in a jaundiced person?

The treatment of bilharzia (schistosomiasis) is rarely urgent unless disease of the central nervous system is suspected. Liver damage due to *Schistosoma mansoni* or *S japonicum* is unlikely to be improved by antischistosomal drugs. As a general rule treatment should be postponed until the jaundice has improved. After improvement of liver function, praziquantel 40 mg/kg body weight as a single oral dose is effective and non-toxic for all varieties of schistosomiasis; oxamniquine as a single oral dose of 15 mg/kg for *S mansoni* may also be used (in southern Africa some strains are rather resistant and 15 mg/kg twice daily for two days may be needed); metrifonate 10 mg/kg body weight on three occasions at two-week intervals may be used for *S haematobium*. Stibocaptate, niridazole, and hycanthone must not be used in a patient with present or recent liver damage.

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