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Is day case liver biopsy underutilised?

A C Douds, A E A Joseph, C Finlayson, J D Maxwell

Abstract

Day case liver biopsies are rarely performed nationally but have been routine practice in selected patients in our hospital since 1989. We have audited our experience of this procedure to compare its safety, and efficacy with inpatient biopsy and assess patient acceptability. Audit data were collected retrospectively on liver biopsies performed at a teaching hospital over 42 months. Acceptability of day case biopsy was assessed by a questionnaire. A total of 182 of 546 biopsies were day cases (33%). The specimen quality was similar in both groups. The overall complication rate did not significantly differ between the two groups (2·7% day case *v* 3·3% inpatients). There were no deaths or episodes of haemorrhage in the day cases but one patient developed a pneumothorax. Some 91% of those who had a day case biopsy were satisfied with the procedure. Day case liver biopsy is safe, effective, and acceptable in selected patients.

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Percutaneous liver biopsy as a day case procedure was first described in the United States in 1978 but despite large studies suggesting its safety[1] it would seem to be underutilised in the United Kingdom. A recent national audit of liver biopsies showed that less than 5% were performed as day case procedures.[2] We have routinely undertaken outpatient liver biopsies since 1989 and thought it timely to audit this clinical practice to assess safety, efficacy, and patient acceptability.

Methods

Liver biopsies performed at St George's Hospital between November 1989 and March 1993 were retrospectively reviewed. The case notes were analysed for: age, sex, indication, day case or non-day case, biopsy technique, core size, and complications.

Patient selection

Patients were selected for day case biopsy according to the following criteria: (a) low risk of complications – no ascites, encephalopathy, coagulopathy (prothrombin time prolonged by less than four seconds), and platelets greater than 100×10^9/l; (b) a reliable relative, partner or friend stayed at patient's home overnight following biopsy; (c) proximity to the hospital (within 15 minutes by car or ambulance); (d) patient had access to a telephone.

All patients had a liver ultrasound before biopsy. After biopsy in the day case unit the patient was asked to lie on their right side and pulse and blood pressure were monitored every 15 minutes for seven hours by nursing staff. The patient was assessed for analgesic requirements throughout this time, examined by the house physician before discharge, and given a post-biopsy advice and side effects leaflet.

Over eight months a questionnaire was given to consecutive patients having a day case biopsy to assess whether they preferred to have their biopsy as an inpatient or as a day case procedure. Patients completed the questionnaire anonymously after their biopsy.

All other liver biopsies performed in the hospital during the 42 month period were defined as inpatient biopsies.

Results

A total of 546 liver biopsies were performed over 42 months and 182 of these as day case procedures (33%). Some 453 case notes (83%) were retrieved for analysis. All 182 of the day case biopsy notes were obtained for review. Ninety three case notes (17%) were unobtainable. Table I summarises the demographic data, indications, biopsy techniques, core length, and complication rates. There was no significant difference in overall or individual complications between the day case and inpatient groups. Table II gives details of complications.

Patient acceptability

Forty four consecutive patients fully completed the patient questionnaire. Forty (91%) stated a preference for liver biopsy as a day case procedure. Four patients would have preferred to be

TABLE I *Characteristics of liver biopsy patients*

	No of subjects (%)	
	Day case	*Non-day case*
Demographics		
Total	182	271
Male (%)	110 (60)	139 (51)
Female (%)	72 (40)	132 (49)
Mean age (range)	46 (20–78)*	57 (0–90)
Indications		
Suspected chronic liver disease (%)	171 (90)*	117 (43)
Suspected malignancy (%)	7 (5)*	124 (46)
Other (%)	4 (5)	30 (11)
Biopsy techniques		
Needle (%)	168 (92)*	107 (39)
U/S or CT guidance (%)	14 (8)*	120 (44)
Operative	0*	44 (16)
Core obtained (%)	181 (99)†	271 (100)
Core length (mm)	16	14
Complications (%)	5 (2·7)	9 (3·3)

*Significantly different from non-day case group ($p<0.0001$); U/S=ultrasound; CT=computerised axial tomography; †no core obtained in one day case biopsy despite four passes, therefore patient had ultrasound guided biopsy.

Departments of Gastroenterology
A C Douds
J D Maxwell

Radiology
A E A Joseph

and Histopathology
C Finlayson

St George's Hospital and Medical School, Cranmer Terrace, London

Correspondence to:
Dr J D Maxwell, Department of Gastroenterology, St George's Hospital Medical School, Cranmer Terrace, London SW17 0RE.

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TABLE II *Characteristics of complications in day case and inpatient liver biopsies*

Age	*Sex*	*Day case*	*Indication*	*Prothrombin time (seconds prolonged)*	*Platelets ($\times 10^9$/l)*	*Histology*	*Complication*
71	F	Yes	Chronic liver disease	0	322	Primary biliary cirrhosis	Pneumothorax
57	F	Yes	Chronic liver disease	0	174	Chronic active hepatitis	Abdominal pain
57	M	Yes	Chronic liver disease	0	196	Steatosis	Abdominal pain
41	F	Yes	Chronic liver disease	2	107	Alcholic liver cirrhosis	Delirium tremens
61	F	Yes	Chronic liver disease	1	148	Alcholic liver cirrhosis	Delirium tremens
85	M	No	Malignancy	0	348	Small cell carcinoma	Haemorrhage, haemoglobin fell by 2 g/dl, no transfusion
21	F	No	Chronic liver disease	0	156	Chronic active hepatitis	Haemorrhage, transfused 2 units
79	F	No	Chronic liver disease	0	320	Chronic active hepatitis cirrhosis	Haemorrhage, transfused and embolisation but died
63	M	No	Malignancy	0	581	Metastatic adenocarcinoma	Haemorrhage, transfused 4 units
47	M	No	Chronic liver disease	0	180	Normal	Abdominal pain
51	M	No	Malignancy	0	363	Cholestasis	Abdominal pain
41	F	No	Chronic liver disease	1	186	Fibrosis	Abdominal pain
35	F	No	Chronic liver disease	0	194	Normal	Abdominal pain
84	F	No	Chronic liver disease	0	211	Primary biliary cirrhosis	Abdominal pain

admitted after biopsy as they were anxious about possible complications.

Discussion

This audit shows that day case liver biopsy in selected patients is a safe procedure in keeping with the results of previous studies.[3–6] The selection criteria we used for day case biopsy were based on guidelines issued by the American Gastroenterological Association in 1989[7] and seemed to be good predictors of a low complication rate. Only 2·2% of patients in the day case group required admission for suspected complications and all were discharged the following day with no serious sequelae. One patient in the day case group developed a pneumothorax. This was not detected at the time of discharge but only when the patient returned to the hospital three days later. In the inpatient group one death was recorded but there was no significant difference in total or individual complication rates between the two groups. Serious complication rates following inpatient liver biopsy have ranged from 0·1–4·6%,[8] which is comparable to our experience. Investigators have previously observed that complications, particularly haemorrhage, following liver biopsy most often occur within the first four to six hours.[8] It is rare for complications to occur after this time although case reports exist of haemorrhage occurring 14 days post-biopsy.[9] Our protocol includes close nursing observations for seven hours post-biopsy, which we feel is an optimal time to detect possible complications although other studies have advocated observation periods as short as three to six hours.[1 5 6]

Increasing the use of day case procedures is an important aspect of improving the cost-effectiveness of health care. Our experience confirms that day case liver biopsy is a feasible option and that most patients prefer the convenience of having liver biopsy as a day case procedure. The disparity between the current low national rate, less than 5%, and our own practice, greater than 30%, suggests that there is considerable scope for increasing the use of day case liver biopsy in the United Kingdom, with the potential for large cost savings.

In summary day case liver biopsy is safe, effective, and acceptable to patients. It is presently underutilised in the United Kingdom and we advocate its increased use in selected patients who require percutaneous liver biopsy.

Copies of the full report of this paper may be obtained from Dr A C Douds, Department of Gastroenterology, St George's Hospital Medical School, Cranmer Terrace, London SW17 0RE.

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