

Liver disease in a district hospital remote from a transplant centre: a study of admissions and deaths

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Abstract

The profile of liver disease admissions and associated deaths in a district general hospital was studied to determine whether patients with end stage liver disease are appropriately referred for consideration of liver transplantation. Admission details were provided by the Office of Population Censuses and Surveys (OPCS) and their accuracy was assessed by case note analysis. According to OPCS, 77 patients with liver disease were admitted on 113 occasions between 1 January 1987 and 31 December 1989. The case notes of 74 (96%) were retrieved and examined. Only 64 (86%) had primary liver disease. Twenty four (31%) died of liver failure. Alcohol was the aetiological agent in two thirds. According to accepted criteria, 11 patients were suitable for liver transplant assessment but only three had been referred to a transplant centre. Of the remaining eight, five died during the study period. Two of the three patients referred died without transplantation; one underwent transplant and survived. There is discrepancy between OPCS data and true disease aetiologies, with approximately 40% under reporting of alcoholic liver disease. If this population is representative of the situation nationally, substantial numbers of patients with end stage liver disease might benefit from liver transplantation, but are not referred to a centre.

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Liver transplantation has been gaining increasing support as a means of treating chronic end stage liver disease^{1,2} and fulminant hepatic failure.³ Improved survival and excellent rehabilitation subsequent to liver transplantation⁴ have led to rapid and considerable expansion of the transplant programme in the United Kingdom and elsewhere.

Indications for liver transplantation have changed. For example, long term results in patients with cholangiocarcinoma⁵ and hepatitis B infection^{6,7} have been disappointing, because of a high rate of disease recurrence. In contrast, selected patients with alcoholic liver disease frequently fare well and are likely to represent an increasing population of transplant candidates.⁸ The guidelines are now more precisely defined and have been described in detail elsewhere.^{2,9-11}

It has proved difficult to determine how many patients in the UK might benefit from liver transplantation. This information is of great importance in planning national transplant services. One method of assessing need is to use mortality statistics collected by the Office of Population Censuses and Surveys (OPCS). However, even if the ascribed causes of death are

correct, these data do not indicate those patients who are potential transplant candidates.

To try to decide how many patients might be suitable for transplantation, an audit was performed of admissions to a district general hospital of patients with end stage liver disease. This also enabled us to examine the accuracy of OPCS data concerning the diagnosis of liver disease.

Methods

The hospital was selected because it is remote from a transplant centre and its geographical location dictates that virtually all medical emergencies and outpatient referrals are sent there. The hospital has four consultant physicians, one with a special interest in gastroenterology. The area served by the hospital, situated in South Wales, has a static population of 180 000, comprising both urban and rural communities.

After permission had been obtained for access to medical records, the OPCS provided details of all admissions to this hospital with various liver diseases (diagnoses listed in Table I) for the three years from 1 January 1987 (the most recent dates available).

Case records were retrieved and examined to establish if these patients would have been suitable for transplant assessment,^{2,9-11} either on the basis of poor quality of life or expected survival, in the absence of transplantation, of less than one year. Clinical indications included encephalopathy, recurrent variceal haemorrhage unresponsive to therapy, repeated episodes of bacterial peritonitis or intractable ascites. Bio-

TABLE I Spectrum of liver disease admissions requested via Office of Population Censuses and Surveys (OPCS): January 1987-December 1989

ICD*	Description
571.0	Alcoholic fatty liver
571.1	Acute alcoholic hepatitis
571.2	Alcoholic cirrhosis of liver
571.3	Alcoholic liver disease
453.0	Budd-Chiari syndrome
570.0	Acute/subacute liver necrosis
571.4	Chronic hepatitis
571.5	Cirrhosis, no mention of alcohol
571.6	Biliary cirrhosis
571.8	Chronic non-alcoholic liver disease
571.9	Unspecified non-alcoholic liver disease
572.2	Hepatic coma
572.3	Portal hypertension
572.4	Hepatorenal syndrome
572.8	Other sequelae of liver disease
573.0	Other diseases of liver
573.1	Viral hepatitis
573.9	Unspecified disease of liver
576.1	Cholangitis
155.0	Malignant neoplasm of liver

The OPCS provided details of all admissions whose discharge coding included any of these diagnoses.

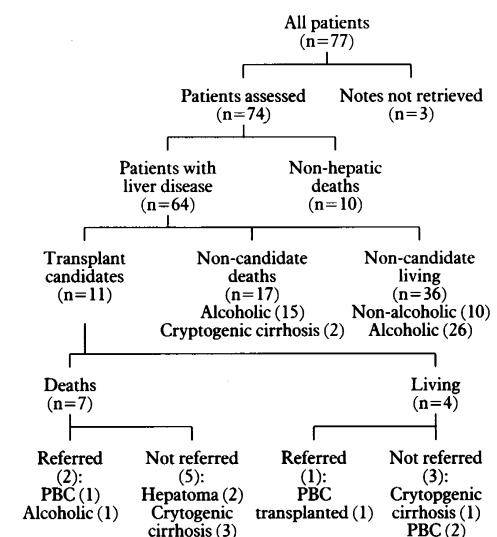
*ICD=international classification of disease.

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The distribution of patients listed by the Office of Population censuses and surveys

chemical parameters included a serum albumin concentration of less than 25 g/l in non-cholestatic cirrhosis, or a bilirubin value of 180 µmol/l in cholestatic liver disease. In alcoholic liver disease, transplant assessment was considered appropriate in the case of sustained abstinence following medical advice. Notes were scrutinised for evidence that these criteria had been fulfilled.

In addition, the accuracy of individual OPCS recorded diagnoses was reviewed.

Results

The OPCS data showed that 77 patients had been admitted because of liver disease on a total of 113 occasions during the study period. All but three sets of case notes (96%) were retrieved. The OPCS diagnoses for the three patients with untraced records were cholangitis (1), alcoholic liver disease (1), and pancreatic carcinoma with hepatorenal syndrome (1). The latter two patients had died.

The remaining 74 sets of case records were reviewed (Figure). These patients were not necessarily under the care of the consultant with an interest in gastroenterology. Sixty four (86%) could be clearly categorised as suffering from liver disease. The remaining 10 patients (14%) seemed to have suffered primarily from non-hepatic disease (carcinomatosis (4), congestive cardiac failure (1), cholelithiasis (2), and septicaemia (3)). All 10 patients died.

Table II shows the disease aetiologies of those 64 patients with liver disease. During the study

TABLE III Comparison between OPCS diagnoses and actual diagnosis from case notes for all admissions

Year	Alcohol related admissions		Non-alcohol related admissions	
	OPCS	Notes	OPCS	Notes
1987	20	33	21	8
1988	7	17	28	18
1989	15	22	19	12
Total	42	72	68	38

period, 24 (38%) of these died. Alcohol was the cause of liver disease in 16 (67%) of the 24 who died and in 26 (65%) of the 40 patients still alive at the end of the study.

Table III shows the numbers of admissions for alcohol related disease according to the OPCS data and compares these with the diagnoses in the case notes. The OPCS recorded that 42 of 110 (38%) admissions were alcohol related whereas review of the notes showed figures of 72 (65%). Conversely, OPCS recorded that 68 admissions were not related to alcohol and review of notes showed that only 38 (35%) admissions fell into this category. The same pattern of misclassification was present for each year studied. In 50% of the misclassified cases the error was to have recorded alcoholic cirrhosis (international classification of disease coding (ICD) 571.2) as ICD 571.5 (cirrhosis – no mention of alcohol). The other erroneous or incomplete classifications were 571.6 (3%), 571.9 (17%), 572.2 (10%), 572.8 (10%), 573.9 (7%), and 155.0 (3%) (see the figure for codings).

According to our criteria for transplantation, 11 potential transplant candidates were identified from detailed study of case notes (Figure). Of these, seven had died and four were living. Of the seven who were dead, two had been referred for consideration of liver transplantation. One had severe acute alcoholic hepatitis and had continued to drink despite medical advice to the contrary. He did not therefore undergo transplant. The second had primary biliary cirrhosis and died from a variceal bleed while under review. Of the five potential transplant candidates who had not been referred and who had died, two suffered hepatocellular carcinoma (diagnosed during routine monitoring in both instances, one with no further imaging, one with imaging showing tumour localised to the liver) and three had cryptogenic cirrhosis (one of these three patients was referred to a regional unit but not to a transplant unit). Of the four transplant candidates who were alive at the end of the study period, one with primary biliary cirrhosis had been referred and had received a liver transplant. Of the three patients not referred, one had cryptogenic cirrhosis and two had primary biliary cirrhosis. The reasons for non-referral were not given in the notes.

Fifty three patients were not considered to be potential transplant candidates. Seventeen of these had died – 15 with alcoholic liver disease (14 not abstinent, one abstinent patient in whom coexistent disease excluded transplantation), and two patients aged 73 and 86 years with cryptogenic cirrhosis were not fit for transplantation. Of the 36 patients who were alive at the end of the study period and who were not considered for liver transplant, 26 had alcoholic liver disease

TABLE II Aetiologies of liver disease admissions and deaths

Deaths (n=24)		Living (n=40)	
Cause	No	Cause	No
Alcoholic liver disease	16	Alcoholic liver disease	26
Primary biliary cirrhosis	1	Primary biliary cirrhosis	6*
Hepatocellular carcinoma	2	Deranged liver function tests	3
Cryptogenic cirrhosis	5	Cryptogenic cirrhosis	1
		Paracetamol overdose	2
		Acute hepatitis B	1
		Primary sclerosing cholangitis	1

*One transplanted.

TABLE IV OPCS Liver disease deaths: England and Wales

ICD	Liver disease deaths 1980-88								
	1980	1981	1982	1983	1984	1985	1986	1987	1988
571.0	75	73	62	61	59	61	56	55	65
571.1	54	50	52	42	59	57	64	76	83
571.2	601	634	637	696	677	620	588	603	645
571.3	62	65	69	89	171	298	345	413	406
Alcoholic liver disease deaths total	792	822	820	888	966	1036	1053	1147	1199
Non-alcoholic liver disease deaths total	1683	1656	1581	1495	1558	1795	1710	1739	1851

ICD=international classification of disease.

(25 not abstinent, one abstinent, but with ischaemic heart disease) and three had primary biliary cirrhosis (in two of these advanced disease was manifest but one had additional psychiatric disease and one advanced cardiopulmonary disease). Three patients had abnormal liver function tests, two had ingested non-fatal paracetamol overdoses, one had acute hepatitis B infection, and one had early primary sclerosing cholangitis.

Discussion

We found that although up to 11 (17%) patients admitted with liver disease to a district general hospital over a three year period might reasonably have been considered for liver transplantation, only three (5%) were actually referred.

The only significant change in criteria for transplantation during the study period was the greater acceptance of alcoholic liver disease as an indication. None of the patients with alcoholic liver disease who were not referred fulfilled the current criteria, however, since they were not abstinent.

Longterm survival in patients who undergo transplantation for hepatocellular carcinoma tends to be shorter than in patients transplanted for cirrhosis, because of disease recurrence. It is noted that the diagnosis in two of the patients who died was hepatocellular carcinoma and it may be that referral of these patients was precluded because of this. However, liver transplantation for hepatocellular carcinoma still has a place in carefully selected patients.

There are inevitable difficulties inherent in a study of this nature. The number of case notes assessed may underestimate the actual number of patients with liver disease, since recognition of cases is dependent upon admissions being classified within the OPCS codes searched, and patients misclassified would not be identified. Some patients with chronic liver disease may have been followed up as outpatients and may not have been admitted to hospital during the study period and, thus, these too would not have been identified. Conversely, patients considered to be appropriate candidates but not referred for transplant, may have had detailed discussion with their physician and declined referral, without mention of this in the case notes. Despite the above difficulties, our results suggest that a significant proportion of potential transplant

candidates is not being referred for transplant assessment.

If this population is representative of the UK nationally, a substantial number of patients dying from end stage liver disease is being denied the option of liver transplantation because they are not referred for assessment.

OPCS data recording alcoholic liver disease seem to be very inaccurate. In the three year period under review, 72 admissions resulted from alcoholic liver disease, yet only 42 were recorded as such. OPCS data record only 35% of deaths from liver disease in Wales as being alcohol related, yet in our district hospital sample 67% proved to be related to alcohol. It seems likely that there is a similar under recording of alcoholic liver disease in the United Kingdom as a whole. Table III shows the proportions of cases of alcoholic and non-alcoholic liver disease recorded. An apparent rise (almost exclusively in the category ICD 571.3) in alcoholic liver disease has taken place since 1984, probably reflecting a change in legislation. Since July 1984, death from alcoholism has not had to be reported to the coroner.¹² We suggest that there is still widespread under reporting of alcoholic liver disease, with the greater rather than the lesser proportion of chronic liver disease deaths being alcohol related. The inaccuracy of OPCS data almost certainly reflects inadequate disease coding in hospitals.

In conclusion, this study highlights the fact that some patients are not being referred for consideration of liver transplantation when this might be life saving. It is important that gastroenterologists have a clear knowledge of the criteria for transplant assessment. OPCS data have been shown to represent inaccurately the distribution of alcoholic liver disease. Greater emphasis should be placed on clinical coding detail.

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