

PAPERS AND SHORT REPORTS

A 20-year prospective study of cirrhosis

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Abstract

A total of 512 people from a defined population in west Birmingham served by a district general hospital were found to have cirrhosis in the period 1959-76. The annual incidence rose from 5.6 per 100 000 to a peak of 15.3 per 100 000 in 1974. This was due to an increase in the incidence of alcoholic cirrhosis, which in the last six years accounted for two-thirds of cases. The proportion of patients with decompensated cirrhosis when first seen (65%) did not alter during the 18 years. This was reflected in a death rate of 78% among the 468 patients traced up to the end of 1978. Liver failure, hepatoma, and gastrointestinal haemorrhage accounted for almost three-quarters of the deaths. The proportion of patients who survived for five years was 36% for alcoholic cirrhosis, 14% for cryptogenic cirrhosis, and 60% for chronic active hepatitis, and these figures too remained constant throughout the 18 years. Modern methods of treatment for decompensated cirrhosis did not improve prognosis and only abstinence in patients with alcoholic cirrhosis had a beneficial effect on survival.

Since alcoholic cirrhosis is now the most common form of the disease it is important to recognise those at risk and to encourage abstinence; also, more efforts are needed to identify the causes of cryptogenic cirrhosis. Whatever the cause, cirrhosis needs to be diagnosed before decompensation occurs, if treatment is to have any effect.

Introduction

Cirrhosis of the liver is a major cause of death in many parts of the world, and although still relatively uncommon in Britain, there has been a steady increase in mortality over the last 25 years.^{1 2} We have been studying the causes and natural history of cirrhosis in west Birmingham since 1959, and our results represent information obtained over 18 years. Because two previous reports have appeared^{3 4} we have divided our findings into three six-year periods for purposes of comparison.

Patients and methods

From 1959 to 1976 465 adults with cirrhosis, resident in west Birmingham, were admitted to Dudley Road Hospital, the district general hospital. Thirty-two patients in the corresponding geriatric and psychiatric hospitals were found to have cirrhosis, and a further 15 cases were discovered as a result of coroner's necropsies.

To ensure as complete ascertainment as possible, we asked colleagues to notify us of any patient with cirrhosis under their care. Each year hospital diagnostic indexes and (from 1968) computer diagnostic print-outs prepared by the regional health authority, as well as necropsy files kept by the pathology laboratory, were checked. All death certificates and postmortem reports held at the Birmingham Coroner's Court were examined. Inquiries were made of local general practitioners who used the hospitals for patients with known cirrhosis on their lists, but no patient who satisfied our diagnostic criteria had been diagnosed by them without referral to hospital.

All patients were seen personally, except those who died suddenly or in whom cirrhosis was an incidental finding at necropsy. Patients under the age of 15 and those who lived outside the catchment area of the hospitals were excluded, as were those previously diagnosed at other hospitals. Efforts were made to follow all patients until death or to 31 December 1978, when the study was terminated; 91% of patients were finally traced. Details of alcohol consumption were recorded at each visit, and confirmed by relatives if possible; in later years blood alcohol concentrations and γ -glutamyltransferase activity were also measured.

To calculate the annual incidence of cirrhosis yearly figures for the population served by the hospitals were obtained from hospital management committee reports and the regional health authority's Hospital Activity Analysis. The age structure of the population was derived from census figures supplied by the City of Birmingham statistics division.

The diagnosis of cirrhosis was based on liver biopsy appearances in 270 patients and on postmortem findings in a further 185 (89% in all). The remaining 57 were accepted on the basis of clinical evidence

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and biochemical findings. Alcoholic cirrhosis was diagnosed if patients admitted habitually drinking more than 80 g alcohol daily (equivalent to five pints of beer, a bottle of wine, two-thirds of a bottle of sherry, or a third of a bottle of spirits), if there was corroboration from relatives, and if the histological appearances were compatible. Post-hepatic cirrhosis was diagnosed in 15 patients who had had a previous attack of viral hepatitis. Other causes of cirrhosis were confirmed by standard investigations, including immunological tests and, in later years, tests for hepatitis-associated antigen. Patients were labelled as having "cryptogenic cirrhosis" if no causal factor could be found, or if no information about previous illness or drinking habits was available.

Data were analysed using subprogrammes of the *Statistical Package for the Social Sciences*.⁵ The χ^2 test, with Yates's correction where appropriate, was used to assess statistical significance for cross-tabulation analysis. Survival was calculated by the "survival analysis computer programme" based on the method described by Peto *et al.*,⁶ which allows survival rates to be compared by the Mantel logrank test.

Results

INCIDENCE

In all, 512 patients were found to have cirrhosis in 18 years. The population served by the hospitals averaged 366 700, of whom 275 000

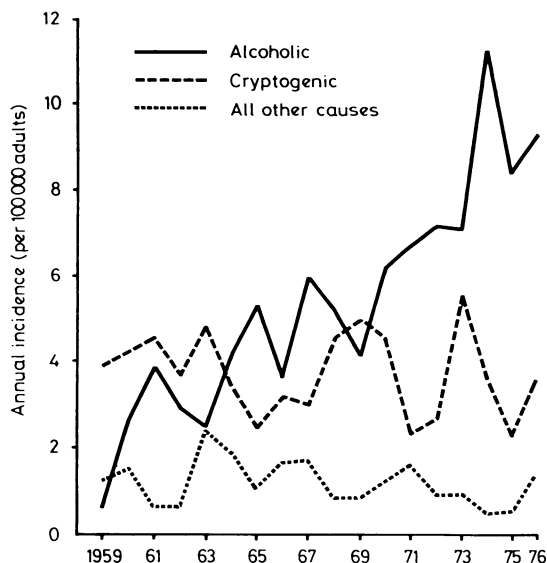


FIG 1—Annual incidence of alcoholic, cryptogenic, and other types of cirrhosis in West Birmingham 1959-76.

TABLE I—Presenting features in patients with alcoholic cirrhosis

	No of patients	No (%) with decompensated liver disease*				No (%) with compensated liver disease
		Ascites	Encephalopathy	Gastrointestinal haemorrhage	Jaundice	
1959-64	54	22 (40.7)	6 (11.1)	7 (13.0)	13 (24.1)	20 (37.0)
1965-70	88	34 (38.6)	6 (6.8)	7 (8.0)	34 (38.6)	33 (37.5)
1971-76	108	47 (43.5)	13 (12.0)	7 (6.5)	41 (38.0)	37 (34.3)

*Some patients had more than one feature.

were aged over 15. The annual incidence of cirrhosis increased from 5.6/100 000 in 1959 to a peak of 15.3/100 000 in 1974 and then fell slightly. With a yearly admission rate to the district hospital of about 15 000 patients, cirrhosis accounted for about 0.3% of admissions. The incidence of alcoholic cirrhosis rose from an average of 2.3/100 000 in the first three years of the study to reach 9.5/100 000 in the last three years (fig 1). In contrast there was a slight fall in the incidence of cryptogenic cirrhosis from 4.2/100 000 to 3.1/100 000, while the combined incidence of all other types of cirrhosis remained fairly constant at 1.2/100 000.

CAUSES

Alcoholic cirrhosis was diagnosed in 242 of the district hospital patients (52%), but the proportions in each of the three six-year periods rose from 33.5% to 55.4% to 66.4%. Alcohol intake varied from 80 g to 402 g daily; the mean intake in men was 152 g (mostly as beer) and in women 112 g, more commonly as spirits or sherry.

Cryptogenic cirrhosis was the next most common category, diagnosed in 162 (35%) patients. No history of alcohol consumption was obtained in 66, either because the question was not asked (40) or because cirrhosis was an incidental finding after death. The remaining patients were either teetotal (49) or had a mean alcohol intake of less than 80 g a day (47). Other recognised causes of cirrhosis accounted for only 61 (12.3%) of the total. The largest group (26) had chronic active hepatitis, while 15 patients had post-hepatic cirrhosis and in three others serological tests for hepatitis B surface antigen were positive. There were only eight patients with primary biliary cirrhosis and seven with haemochromatosis.

Of the 47 patients diagnosed outside the district hospital only 17 (36.2%) were known to be alcoholics. Twenty-eight (59.6%) were labelled cryptogenic; little was known of their drinking habits.

AGE AND SEX DISTRIBUTION

The mean age of men with alcoholic cirrhosis was 53 years and of women 55.2 years. Increasing numbers of patients, particularly women, under the age of 40 were encountered in the later years of the study, and mean age fell by eight years for women from the first to the last six-year period but by only one year for men. The overall ratio of men to women fell from 4:1 in the first six years to 2:1 in 1971-6 ($p < 0.05$).

Cryptogenic cirrhosis was most commonly diagnosed in elderly patients: the mean age was 61.6 years for men and 68.0 years for women. The male:female ratio was 1.1:1. These figures did not alter significantly during the course of the study. Post-hepatic cirrhosis was most common in middle-aged men, seven of whom had had hepatitis while in the Army during the 1939-45 war and died of complicating hepatoma during the 1960s.

PRESENTING FEATURES

In 58 (11.3%) of the 512 patients cirrhosis was an incidental finding at postmortem examination. Of those diagnosed during life about two-thirds had signs of decompensated liver disease—ascites, jaundice (serum bilirubin $> 50 \mu\text{mol/l}$ (2.92 mg/100 ml)), encephalopathy, or gastrointestinal haemorrhage—when first seen. Jaundice was more common in alcoholic (36%) than in cryptogenic cirrhosis (15%) while gastrointestinal haemorrhage was seen more frequently in the cryptogenic group. Non-specific abdominal pain and dyspepsia were the most common symptoms in patients with compensated cirrhosis; only 12 were referred because of hepatomegaly and none because of abnormal liver function.

Over the 18 years little change in presenting features took place, the

proportion of patients with compensated cirrhosis remaining at about 35%. In those with alcoholic cirrhosis jaundice became more common ($p < 0.05$) and gastrointestinal bleeding somewhat less so (table I).

CAUSES OF DEATH

Four hundred and one patients (78%) had died by the end of 1978, 67 were known to be alive, and 44 could not be traced. Liver failure accounted for 126 (36.7%) deaths and hepatoma or gastrointestinal

bleeding for a further 122 (35.6) (table II). Other less common causes included renal failure and intercurrent infections. All except nine of the 69 hepatomas occurred in men, and half the deaths in patients with post-hepatic cirrhosis were due to hepatoma. The relative frequency of hepatoma tended to decrease over the period of the study, with the decrease in the male:female ratio. Minor differences in causes of death were found in the different groups, death from liver failure being more common in alcoholic cirrhosis, but there were no important trends over the 18 years.

TABLE II—Causes of death in patients with cirrhosis diagnosed during life. Results are numbers (and percentages) of patients

Causes of death	All patients	Patients with alcoholic cirrhosis	Patients with cryptogenic cirrhosis
Liver failure	126 (36.7)	74 (44.3)	39 (29.5)
Hepatoma	69 (20.1)	28 (16.8)	29 (22.0)
Gastrointestinal haemorrhage	53 (15.5)	15 (9.0)	31 (23.5)
Renal failure	13 (3.8)	8 (4.8)	3 (2.3)
Other causes (infections, cerebral infarction, cardiac failure, etc)	53 (15.5)	27 (16.2)	22 (16.7)
Unknown	29 (8.5)	15 (9.0)	8 (6.1)
Total	343	167	132

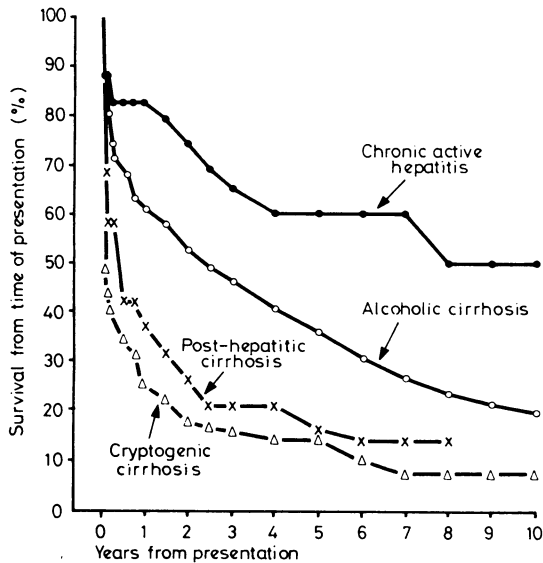


FIG 2—Cumulative survival from time of presentation in patients with different types of cirrhosis.

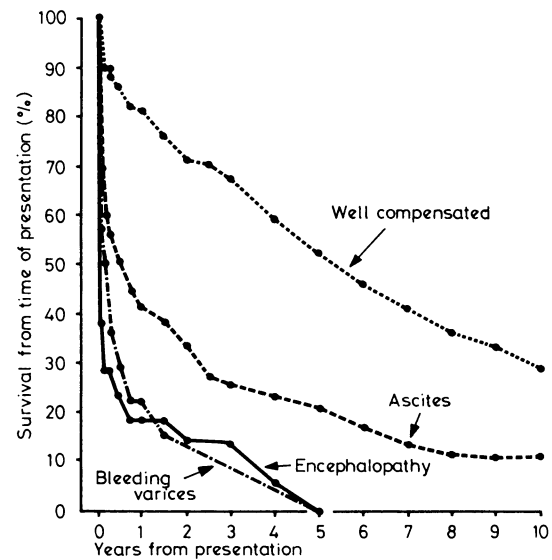


FIG 3—Cumulative survival in patients with alcoholic cirrhosis according to clinical features at presentation.

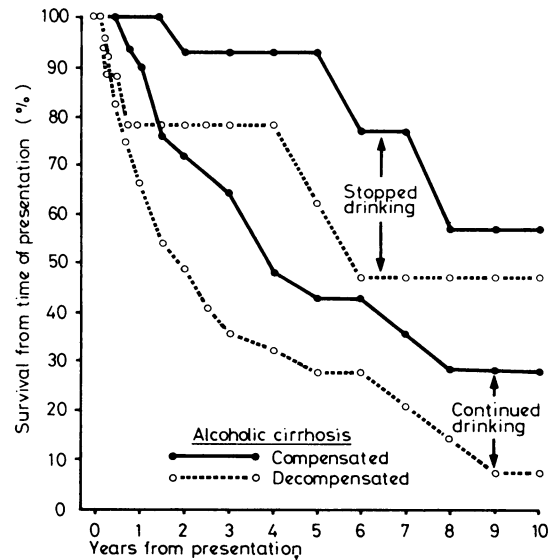


FIG 4—Cumulative survival in patients with compensated and decompensated alcoholic cirrhosis alive two months after admission. Abstention from alcohol improved prognosis (compensated: $\chi^2=7.3$, $p<0.01$; decompensated: $\chi^2=9.5$, $p<0.005$).

SURVIVAL

Mortality in the first year among patients with alcoholic, cryptogenic, and post-hepatic cirrhosis was high (fig 2) and five-year survival was only 36%, 14% and 14% respectively. As expected, patients with chronic active hepatitis, of whom 22 were treated with corticosteroids, had a better outlook, and half those with primary biliary cirrhosis survived five years. The death rate in patients with decompensated liver disease was especially high (fig 3), particularly in those with hepatic encephalopathy and variceal haemorrhage, whatever the cause of the cirrhosis, who seldom survived five years.

No significant improvement in prognosis of any type of cirrhosis occurred in the 18 years, and there was no sign of a better outlook for patients with ascites, variceal bleeding, or hepatic encephalopathy. Only complete abstinence from alcohol affected survival: if this could be achieved in patients with compensated alcoholic cirrhosis five-year survival more than doubled, and even in patients with decompensated disease the outlook after the first year was greatly improved (fig 4).

Discussion

The increasing incidence of cirrhosis in west Birmingham in the last 18 years was due to a fourfold rise in the incidence of

alcoholic cirrhosis. During this time per caput intake of alcohol in Britain nearly doubled⁷ and nationally deaths from cirrhosis increased by more than half.^{1 2} At least two-thirds of patients now attending hospital with cirrhosis are, by our definition, alcoholic and the true figure may be higher, as we had no information about the alcohol intake in 41% of patients with cryptogenic cirrhosis. We chose 80 g as the lower limit for a diagnosis of alcoholic cirrhosis, but the possibility that some people, especially women,⁸ may be sensitive to smaller quantities should be kept in mind.

Fortunately cirrhosis is still an uncommon disease in Britain, but most patients need hospital admission for decompensated liver disease and treatment is often heroic and expensive. During the 18 years of our study we found no indication that cirrhosis was being diagnosed earlier, before decompensation. The long-term outlook for patients with complications did not improve with advances in treatment, such as improved diuretic treatment, more potent antibiotics, and surgical control of variceal haemor-

rhage (performed in most patients by one specialist surgeon). Indeed, comparison with the report of Ratnoff and Patek⁹ showed that in patients with ascites there has been virtually no change in mortality in the last 50 years.

There are several explanations for the poor life expectancy of patients with cirrhosis. The proportion for whom there was any form of "specific" treatment, such as corticosteroids, penicillamine, or venesection, barely exceeded 5%. Most patients already had decompensated liver disease when first seen and died of progressive liver failure or hepatoma, a tumour which has proved particularly resistant to treatment. Fewer succumbed to gastrointestinal haemorrhage, nearly always as a result of hepatorenal failure rather than exsanguination. Lastly, the proportion of patients with alcoholic cirrhosis who abstained after discharge averaged only 19% over the 18 years.

Because alcoholic cirrhosis is emerging as the most common form of the disease, ways must be found to detect alcoholics at risk of developing liver damage and treatment programmes devised which will lead to successful abstinence. The causes of cryptogenic cirrhosis, which still accounts for a significant proportion of patients, also need to be identified. Diagnosis must be made before decompensation has occurred, otherwise we shall continue to waste resources in unsuccessful treatment of patients with irreversible liver disease.

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How dangerous are falls in old people at home?

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Abstract

From a survey in six general practices information was obtained on 125 people aged 65 and over who fell in their own homes. Three fractured their femurs and 15 had other fractures; most of the rest suffered only trivial injuries. Twenty lay on the floor for more than one hour; none were known to have suffered hypothermia. One-quarter of these patients died within one year of the fall, five times as many as in an age- and sex-matched control group; while of those who lay on the floor for more than one hour, half died within six months of the fall. Factors associated with mortality from falls were impaired mobility, abnormal balance, and a disturbed pattern of gait.

Falls at home in old age are often indicative of the presence of severe ill health.

Introduction

Much attention has been paid to fractures of the femur in old age resulting from falls^{1,2}; but most old people who fall

over at home do not break any bones.³ Some studies have been made,^{4,5} but little is known about the causes of these falls, what can be done to prevent them, what resources are devoted to those who fall, and what happens to them.

In an attempt to find answers to these questions we organised a survey of falls at home in people aged 65 and over in the Birmingham area. A group of persons reporting falls were matched for age and sex with a control group, and both were followed for one year after the fall.

Material and methods

Six general practices in and near Birmingham kindly agreed to take part and to notify a research nurse of all falls occurring in people aged 65 and over that came to their attention during an observation period of one year. Falls were defined as "untoward events which resulted in the subject involuntarily coming to rest on the ground." This excluded episodes of staggering against the wall or falling into a chair or on to a bed. In a few instances consciousness was lost and there was a suspicion of an epileptic fit; and in two cases the fall represented the onset of a stroke. The location included the house and its immediate surroundings, the front and back steps, the courtyard, and the garden but excluded falls in the street. Most of the participating doctors looked after some patients in local authority residential homes, and any of those who fell were included in the survey.

Information about falls was sought from the general practitioners themselves, their receptionists, community nurses, home helps, staff of residential homes, police, and other informants. Most falls were reported by the practitioner himself and were accompanied by at least a minor injury. Falls were reported at a rate of 20 falls per

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