Clinical presentation and biochemical abnormalities in Black (Zulu) patients with cirrhosis in Durban

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Summary

A retrospective study was designed to analyse the mode of presentation, clinical signs and haematological and biochemical abnormalities in 225 consecutive Black (Zulu) patients who were admitted to a general medical ward between the years 1970 and 1981 and from whom cirrhosis was later diagnosed. The most common presenting complaint was swelling of the body (60% of the patients), followed by abdominal pain (32%) and episodes of bleeding, mainly from the gastro-intestinal tract (19%). On examination, hepatomegaly was encountered in 66% of the patients, with moderate to massive enlargement in 40%. Ascites was detected in 56%, with tense abdominal distension in 34%. Jaundice was present in 38% and emaciation, mental disturbance and splenomegaly in over 25%. Spider naevi (found in 2 patients) and Dupuytren's contracture (found in 1) were very rare. Thrombocytopenia and a high ESR were common. Over 90% of patients had low albumin and high globulin concentrations (albumin < 20 g/dl and globulin > 60 g/dl in 25%). Bilirubin and alkaline phosphatase levels and the prothrombin index were found to be within normal limits in 32%, 24% and 52% of cases respectively. Histologically the lesion was most commonly micronodular (73%) with variable deposits of fat and iron. Peritoneoscopy was the most useful special investigation in the diagnosis of cirrhosis, leading to a correct diagnosis in 77% of cases.

In conclusion, the clinical signs, biochemical abnormalities and histological features suggest that the factors causing cirrhosis in the community studied vary from patient to patient, and may result from the combined effects of alcohol abuse, malnutrition and chronic viral (e.g. hepatitis B) infections.

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Actiology
The precise aetiological processes were often obscure, but 42% of the men gave a history of heavy alcohol consumption (intoxication more than 3 times a week), while a further 16% admitted to occasional (e.g. weekend) abuse of alcohol. The figures for women were similar (40% and 15% respectively).

Histological findings
The great majority (73%) of biopsy specimens showed evidence of micronodular cirrhosis. Frequent additional findings were siderosis and fat deposits. Macronodular cirrhosis was identified in only 8% of specimens, while evidence of post-viral infection, such as 'post-necrotic scarring' and 'chronic active hepatitis', was seen in 20% (12% and 8% respectively). Biliary cirrhosis was very uncommon (1%).

Presenting complaints
Fig. 2 shows the common presenting complaints in order of frequency. By far the most common was 'swelling of the body' (60% of the patients). Abdominal pain, often vague in nature but commonly related to the right upper quadrant, was surprisingly common (32%). Jaundice was infrequently noted, either by the patient or by relatives.

Clinical signs
Fig. 3 indicates that, in keeping with the presenting complaints, ascites and oedema were observed in over half the patients (56%); hepatomegaly was even more common (66%). The incidence might even have been higher, since 34% of the patients had massive ascites which would have interfered with clinical assessment. Hepatomegaly greater than 3 fingerbreadths below the costal margin was noted in 40% of the patients. Splenomegaly was less frequently observed (24%), with increases greater than 3 finger breadths in only 7%. Clinical jaundice was noted in 30% of the patients.

Classic signs of chronic liver disease such as white nails, clubbing or spider naevi (2 patients), Dupuytren's contracture (1 patient), gynaecomastia (6 patients) and testicular atrophy were infrequently observed.

Haematological findings (Table I)
Mild anaemia was common (mean haemoglobin concentration 11.7 ± 2.2 g/dl), although 46% of the patients had values higher than 12 g/dl (Fig. 3). Only 18% had values below 10 g/dl.

The white cell count was normal in 76% of the patients, mean figure being 8.4 ± 4.3 x 10^3/j.l, while elevations above II x 10^3/j.l were noted in 21%.

Platelet counts were normal in only 29% of cases; 43% of the patients were found to have thrombocytopenia (<100 000/j.l) and 10% severe thrombocytopenia (<50 000/j.l). All the patients in the latter group had a large spleen.

The ESR was normal in only 3% of the patients; the elevation was marked (above 50 mm/1st h) in 38%. The mean prothrombin index was 79 ± 13, being within normal limits (> 80%) in 52%.

Biochemical values (Table II)
Hypo-albuminaemia was extremely common, only 6% of the patients having levels higher than 35 g/dl. Severe hypo-albuminaemia (<20 g/dl) was demonstrated in 27% of cases (Fig. 4). Elevation of globulin values was even more dramatic, 95% of the patients being found to have values exceeding the normal range. Furthermore, 24% had values exceeding 60 g/dl, i.e. twice the normal level.

While nearly all the patients were found to have some elevation in liver enzyme values, only 50% had aspartate
transaminase concentrations greater than twice normal. The lac-
tic dehydrogenase level was less commonly elevated. In
general, correlation between levels of lactic dehydrogenase and
evidence of liver disease or aspartate transaminase levels was
poor (r = 0.34). Major abnormalities of the bilirubin and
alkaline phosphatase levels were less common than abnormalities
of the aspartate transaminase level, with 31% and 27% of patients
respectively having levels more than twice normal. Alpha-
Leod protein levels were measured in only 25 patients; in 18
patients the test was positive (mean value 13 ± 9 mg/dl).
The aspartic protein concentration was measured in 32 patients;
the mean value was found to be 21 ± 9.5 mg/dl (range 5 - 40 mg/dl).

Special investigations

Isotope liver scan. Forty-three patients underwent scanning of the
liver, but a specific diagnosis of cirrhosis was correctly made in only 11 (26%). In most of the remaining cases the report
read 'increased irregular uptake with possible space occupying
lesions'.

Peritoneoscopy. This was found to be the more useful of the
special investigations in aiding the diagnosis of cirrhosis. The
diagnosis was confirmed histologically in 77% of 35 patients who
were suspected of having cirrhosis on peritoneoscopy. Mislagnosis was common in the presence of hepatic fibrosis and
macronodular cirrhosis.

Miscellaneous associations

Bacterial infections. Twenty-five per cent of the patients
were shown to have acute bacterial infections of sputum (11%),
ascitic fluid (4%), urine (5%) and blood (5%).

Tuberculosis. Sixteen patients were proved to have active
pulmonary tuberculosis during their stay in hospital.

Porphyria. This was noted most often in the years 1970-1975,
when 15 patients were found to have porphyrins in the urine.

Discussion

From the present analysis it is possible to construct a picture of the
typical presenting features of a patient with cirrhosis at the
King Edward VIII Hospital. The patient would be of middle age
and male. He would give a history of alcohol abuse and would
complain of swelling of the ankles and abdominal distension. On
examination he would be found to have a large liver, ascites and
peripheral oedema. Spider naevi and Dupuytren's contractures
would be absent. Blood tests would show that he was mildly
anaemic with a normal white cell count, mild thrombocytopenia
and a moderately elevated ESR. Liver function tests would
demonstrate a low plasma albumin level, with inverse elevation
of globulins. Bilirubin and alkaline phosphatase levels would be
mildly elevated, while more significant increases in aspartate
transaminase enzymes would be seen. The prothrombin index
might well be normal. A liver isotope scan would demonstrate
increased irregular uptake in the liver together with increased
splenic uptake. Space-occupying lesions might be suggested.

In comparison with similar surveys in Boston and London our
patients had more ascites, a larger liver and spleen and a
higher incidence of encephalopathy, were more jaundiced and
had significantly lower albumin and higher globulin levels. These
differences could be explained by their late referral to
specialized hospitals and the later stage of their illness; however,
it must be remembered that the liver generally becomes smaller
in advanced cirrhosis. Hepatomegaly has been found to be more
common in alcoholic liver disease, presumably owing to the
frequently increased fat deposition.² Fat deposits were common
in our patients, but other histological markers of alcoholic liver
disease such as Mallory's hyaline were absent. Another factor in
favour of alcohol ingestion as a major cause of cirrhosis in our
patients was the male/female ratio of 3:1. The ratio for alcoholic
cirrhosis in Boston was 2:1, while a similar study in Australia
claimed a ratio of 4:1. In cryptogenic cirrhosis there is usually a
preponderance of females³ or the sexes are equally distributed.⁴

Powell et al.⁵ published results from a very similar survey in
Australia, dividing their cirrhosis patients into four major
aetiological subgroups (alcoholic, cryptocogenic, biliary and
chronic active hepatitis). In general, our observations most
closely matched those in their cryptogenic group with regard to
presentation with gastro-intestinal bleeding, splenomegaly,
hypo-albuminaemia, reversed albumin/globulin ratios and
thrombocytopenia. However, the remaining abnormalities of
liver function (i.e. bilirubin, aspartate transaminase and alkaline
phosphatase levels) and in the blood (i.e. haemoglobin
concentration and white cell count) were more like those in their
patients with alcoholic cirrhosis. Overall, our patients had more
ascites, more abdominal pain, fewer spider naevi, lower albumin
and higher globulin levels and lower platelet counts.

To summarize, the high incidence of ascites, the sex ratio, the
mean age, the hepatomegaly, the low albumin levels and the
micronodularity of the liver suggest that alcohol was a major
factor in the causation of cirrhosis in our patients, whereas the
hyperglobulinaemia and splenomegaly would suggest that it was
infected or 'cryptogenic'. The severity of the hypo-
albuminaemia, the clinical evidence of malnutrition and the fatty
liver may also point towards nutritional causes. The complexity
of the situation is in keeping with Conn's⁶ statement that
'multiple factors, acting individually or in concert, may be
responsible for cirrhosis'. It was not possible to distinguish the
effects of alcohol from those of viral infection or malnutrition, as
the classic histological markers of alcoholic liver disease were
absent. For this reason, some are sceptical about the role of
home-brewed beers as a cause of cirrhosis. However, one cannot
ignore the strong history of alcohol abuse given by our patients,
even though accurate estimation of alcohol intake is often
difficult because of translation and variable concentration
problems. The form in which alcohol is taken may be important,
since Isaacson⁷ has recently noted a change in histological
findings from siderotic micronodular cirrhosis to a more classic
micronodular picture with alcoholic hyaline and fat deposits. He
related the change to the substitution of hard spirits for
traditional brews in Johannesburg. This explanation was based
on Christofferson et al.'s⁸ observation of the association

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<th>TABLE II. BIOCHEMICAL FINDINGS</th>
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<td>Albumin (g/l)</td>
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Abnormal: 54% < 12, 18% < 10
3% < 3,5
21% > 11
77% < 150
43% > 100
10% < 50
97% > 5
36% > 50
48% > 80
18% < 70

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between prolonged abuse of spirits and alcoholic hyaline deposition. It is interesting that we have not noticed this in Durban. Possibly for financial reasons 'Zulu beer' remains the most popular alcoholic beverage. It is important to note that Isaacson did not associate the change in the histological picture with an alteration in the incidence of cirrhosis. Consequently, the possibility remains that cirrhogenic factors other than alcohol may be contained within traditional beer, the most likely candidate being iron. Viral infection is probably as important as alcohol in the causation of cirrhosis. Unfortunately identification was not possible during the years of the study reported, but it is the subject of a prospective study. Initial results have shown that 21 of the 42 patients with cirrhosis identified so far this year have immunological markers of present or past hepatitis B virus infection (I. M. Windsor — personal communication). Finally, the high incidence of severe chronic malnutrition in our patients (about 80% of our male patients are below the 5th percentile for triceps skinfold thickness and weight/height ratios) probably predisposes the alcoholic or infected patient towards the later development of cirrhosis. It remains possible that toxic dietary factors (including herbal medicines, which are widely used by our patients) may form additional predisposing factors.

We are very grateful to Professor E. B. Adams for establishing a comprehensive record system from which the data could be collected.

REFERENCES

Transurethral prostatectomy — studies with different intravesical pressures

H. B. RABE, M. L. S. DE KOCK

Summary

In an attempt to study the safety of transurethral prostatectomy in our unit, the use of a low-pressure continuous-flow water irrigation system was compared with our routine method of intermittent bladder emptying during transurethral prostatectomy in 14 patients. The products of haemolysis and parameters of haemodilution were studied, and no significant differences were noted. However, a simple suprapubic shunt provided significant surgical advantages.


Since McCarthy's resectoscope became available in 1935, transurethral prostatectomy (TUP) has become increasingly popular. In our unit we perform 200-300 prostatectomies annually, 86% by the transurethral route. We routinely employ sterile water as an irrigant, with intermittent emptying of the bladder by removing the working element of the resectoscope. The well-known and documented dangers of transurethral prostatectomy are thought to be the result of intravasation of irrigation fluid into the systemic circulation. These dangers are haemolysis due to increased red cell fragility in hypo-osmotic surroundings and the 'TUP syndrome' characterized by hyponatraemia and hypervolaemia. Both may occur concurrently and lead to gross fluid overload with cardiac failure, acute renal failure, haemolytic jaundice and death. Factors incriminated in this regard are the intravesical pressure during resection, the toxicity of the irrigant, and the time required for the resection. Several workers have advised methods to lower intravesical pressure. Other studies have examined the movement of irrigant into the general circulation and its effect on blood toxicity and red cell integrity. The use of continuous-flow systems during resection has also been suggested and employed by several workers.

In an attempt to study the safety of TUP in our unit, we measured electrolyte changes and the products of haemolysis. We performed a pilot study comparing a continuous-flow low-pressure system of irrigation with our routine method of intermittent bladder emptying during TUP.

Patients and methods

Fourteen unselected patients were randomly allocated to two groups. The decision to proceed with TUP was made at