

# Bacterial Liver Abscess — A diagnostic problem.

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## SUMMARY

Two cases of bacterial liver abscess presented to a hospital during an 18 month period. Both involved male caucasians who had been resident in Zambia for many years. The cases are recorded with a review of the recent literature. The difficulty in diagnosis and importance of adequate surgical drainage are stressed.

## INTRODUCTION

Bacterial abscess of the liver receives scant attention compared to its amoebic counterpart. However, even with surgical drainage and antibiotic therapy the mortality rate of this condition is about 50%, and without such treatment 100% of patients die (Ostermiller and Carter, 1967). There is also evidence that these unacceptable figures are due to failure or delay in diagnosis (Schraibman, 1974; and Young, 1976) and inadequate drainage at the time of operation (Block et. al., 1964). We are therefore recording in this paper our experiences with two cases of bacterial liver abscess which presented in a recent 18 month period, in order to highlight the difficulties in diagnosis and treatment of this obscure condition.

## Case Histories

Case 1. A 42 year old male Briton who had lived in Zambia for 20 years became ill in June 1975 with fever and vomiting. Examination was negative apart from his pyrexia, and routine investigations revealed an erythrocyte sedimentation rate (ESR) of 40mm/hr, white cell count (WCC) of 14,500/cu.mm. (80% neutrophils) and serum glutamate — pyruvate transaminase (SGPT) of 46 units (normal 0—20). He was given antibiotic courses but remained ill and was finally admitted with a high swinging fever, severe malaise and considerable weight loss. His liver was now enlarged 1 inch and tender, and investigations showed a bilirubin of 1.2mg/100ml, alkaline phosphatase of 28 King — Armstrong units (normal 3—13 KA units), and ESR, WCC and SGPT raised as before. Repeated blood cultures and blood slides for parasites were negative. He was given a course of metronidazole and then cephaloridine with no effect, and he was eventually transferred to the United Kingdom with a diagnosis of an abscess in or around the liver. He was admitted to the Liver Unit of King's College Hospital in London, where a radio-isotope scan, and hepatic arteriography confirmed the presence of a cavity in the right lobe of the liver.

Percutaneous needle aspiration of this cavity produced 15ml of brown pus which grew anaerobic streptococci on culture. However, despite subsequent treatment with gentamicin, metronidazole and erythromycin his fever remained and eventually, 3 months after his original presentation, he underwent surgical drainage. A 10cm diameter cavity was incised and drained of large amounts of pus, and an Argyll drain led from the cavity to an underwater seal. His pre-operative antibiotics were continued and his temperature rapidly returned to normal. There was little further drainage and he was discharged after 10 days. When seen later as an out-patient (4 months after the onset) he was well, with a normal WCC and ESR.

Case 2. In October, 1976 a 30 year old male caucasian, who had lived in Zambia all his life, sustained soft tissue injuries to the chest and abdomen in a traffic accident. Over the next few days he had persistent right sided chest and abdominal pain, felt ill and developed a mild pyrexia. Retrospectively he had felt unwell for some weeks before the accident. Examination was negative but investigations revealed an ESR of 55mm/hr, WCC of 14,000/cu.mm (60% neutrophils) and an SGPT of 124 units. He was thought to have anicteric hepatitis and was discharged for out-patient care. He was readmitted 2 weeks later very ill with a swinging pyrexia, rigors, malaise, weight loss and pleuritic pain in the right lower chest radiating to the right shoulder tip. Examination was again negative apart from the pyrexia, and investigations showed a mild normochromic normocytic anaemia of 10.6g/100ml, alkaline phosphatase of 29 KA units, and WCC, ESR and SGPT raised as before. Chest X-ray and repeated blood cultures and blood slides for parasites were negative. A course of metronidazole was given with no effect, and he continued to deteriorate.

A diagnosis of tuberculous hepatitis was considered, and after bone marrow and liver biopsies had been taken, he was started on streptomycin, rifampicin, isoniazid (INH) and ethambutol. After 2 weeks treatment, however, he was no better and his liver was now enlarged 2 inches and tender, particularly to percussion of the right lower ribs. A bacterial liver abscess was now considered, and was supported by the liver biopsy report which had now returned showing "necrotic material suggestive of the edge of an abscess." He underwent surgical drainage 2 months after his initial presentation, and an 8cm diameter abscess cavity was found in the right lobe after previous open test needle aspiration. A large amount of pus was removed, which though sterile on culture (probably due to the previous antibiotic therapy) showed organisms resembling anaerobic streptococci on Gram stain. Several drains were inserted, including a Foley catheter led from the cavity dependently through the liver tissue. Post operatively he was given gentamicin and lincomycin and the cavity was lavaged daily with

saline. His temperature rapidly returned to normal and he was discharged after 10 days. When seen later as an out-patient (3 months after the onset) he was well with a normal ESR and WCC. Because of a disputed insurance claim he was seen at the Liver Unit of the Royal Free Hospital in London in March 1977. A radio-isotope liver scan was quite normal, and it was considered that the traffic accident had probably been responsible for the development of the liver abscess by causing an intra-hepatic haematoma which subsequently became infected.

## DISCUSSION

The natural history of bacterial liver abscess is poorly understood. An increased incidence has been reported in diabetics (Holt and Spry, 1966) but other wise there is rarely pre-existing illness likely to cause increased susceptibility to infection.

A septic focus in the portal system is by no means a constant finding. Thus 9 out of 15 cases in the series of Schraibman, 1974; and 32 out of 65 reported by Altermeir et al, 1970, had a possible infective focus. All age groups are affected, but there is a slight male predominance. Most reported series are from Europe or America, and the frequency of the condition in the tropics is not known. The fact that our two cases were caucasian rather than African, and that they had both lived in the tropics for many years may be of significance, but in the light of present knowledge no other comment can be made.

The abscess is usually in the right lobe of the liver, and there may be more than one present (9 out of 22 had multiple abscesses in the series of Ostermiller and Carter, 1967). The causative organism is usually a coliform or an anaerobe (Bateman et al, 1975) but various others have been reported. Anaerobic streptococci, which appeared to have been responsible in both our cases, are particularly difficult to isolate from the blood as anaerobic cultures are needed. This is almost certainly why both our patients had persistently negative blood cultures.

The presenting symptoms are protean and include fever, rigors, weight loss, abdominal pain, diarrhoea, nausea and vomiting. The usual physical signs are pyrexia and an enlarged tender liver. Collapse or effusion at the right lung base can occur (Grant et al, 1969), but this seems to be less common than with amoebic abscess. Investigations usually reveal a raised ESR, a neutrophil leucocytosis and mild derangement of liver function tests. The differential diagnosis of such a set of symptoms, signs and investigations is obviously huge; and it is not surprising that there is often considerable delay in diagnosis, or the diagnosis may not be made until laparotomy or post-mortem examination (Young, 1970; and Schraibman, 1974).

Amoebic abscess can give a similar clinical picture, though the illness is usually less fulminating, and a therapeutic trial with metronidazole is the quickest way of excluding this possibility. Some workers have analysed the presenting features of patients with bacterial liver abscess (e.g. Young, 1970; and Schraibman, 1974) but no clear picture emerges, and diagnosis is usually one of exclusion. We were impressed with the severity of the constitutional disturbance (fever, malaise, weight loss etc.) and the progressive deterioration in our patients. Perhaps the unusual severity of the illness is a useful clue to the diagnosis. The definitive investigation is of course the radio-isotope liver scan, though this facility is rarely available in the tropics. However, ultra-sonics and arteriography are also useful and these investigations may be more applicable to the 3rd World. In the absence of these facilities, percutaneous exploratory needle aspiration of the liver is probably a useful procedure, as most abscesses are in the right lobe.

Unlike amoebic abscesses, bacterial liver abscesses can never be cured by chemotherapy alone. Surgical drainage is mandatory, and nearly always must be an open procedure. Young (1976) describes a patient cured by repeated needle aspiration of pus together with antibiotics, but this is not the rule. Open drainage is best performed through a right sub-costal incision, and the liver must be very carefully examined, as the abscess is often not obvious from the surface. Preliminary exploration of the liver with a long aspirating needle is useful in locating the abscess or excluding multiple abscesses. If superficial the cavity should be deroofed, and all abscesses must be thoroughly explored with a finger to break down loculations. As has been mentioned adequate drainage is of vital importance (Block et al 1964), and several drains should be placed in the abscess cavity, at least one of which must be led to the exterior dependantly, if necessary through the hepatic parenchyma itself. The danger of haemorrhage from this procedure is less than the danger of inadequate drainage.

Goldsmith and Chen (1973) advise daily post-operative irrigation of the cavity via the drains with saline. Before culture results are available, post-operative antibiotics should include a powerful bactericidal broad-spectrum drug such as gentamicin, together with an antibiotic to cover anaerobic species (lincomycin, clindamycin or metronidazole). Both drugs should be given parenterally, preferably by the intravenous route for the first few days.

The two cases described here demonstrate many of the difficulties in the diagnosis and treatment of

bacterial liver abscess. A high index of suspicion is needed, and once diagnosed treatment must be given quickly and effectively. Delays in diagnosis and inadequate treatment may be disastrous, but prompt and adequate therapy usually gives a complete and most rewarding cure.

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