

Amoebic liver abscess a review and study in 167 cases

by *Dr. Mohan Chellappa*

MS, FRCSEd, FIAP
Surgeon, General Hospital,
Kota Bharu, Kelantan,
West Malaysia.

and *Prof. N. Rangabashyam*

FRCS Ed., FICS, FACS, FACG, FIAP.
Clinical Professor of Surgery,
General Hospital, Madras,
India.

THE CONCEPT that most of the cases of amoebiasis seen in the tropical countries is in the form of acute amoebic dysentery is untrue. Despite the availability of oral amoebicidal drugs and the feasibility of microscopic examination of the faecies, inadequate nutritional status, poor sanitation, coupled with a prevalence of alcoholic in-take especially illicit liquor has caused the patient with amoebic disease to come into the realms of the abdominal surgeon many a times. According to Goldberg and Steigmann, (1954) many number of cases of intestinal amoebiasis are incorrectly treated as cholelithiasis, cholecystitis, peptic ulcer, cirrhosis of the liver, appendicitis, functional diarrhoea, psychoneurotic disorders etc. Perhaps this might constitute the prime reason for the disease to pass into the hands of the surgeon from the physician.

The following is the observations in a study of 167 cases of amoebic liver abscess.

Amoebic Liver Abscess:

Before going into the study of amoebic liver abscess, the concept of Rogers (1922) of the dubious entity of "amoebic hepatitis" raises a question about its existence or not. A small group of patients with the clinical picture of amoebic liver abscess get relieved of their symptoms with a short course of amoebicidal drugs. The morphological studies of the liver conducted in these patients showed no actual necrosis but very mild changes which included anisonucleosis of the hepatocytes and accumulation of lipofuscin pigment. From these studies it appears that this group of patients should actually be categorised as suffering from "amoebic prehepatitis"

and not actually amoebic hepatitis because we feel that most of latter cases land into necrosis of the liver tissue. It is very rare for a surgeon to come across a case of amoebic prehepatitis, because in the three stages of the formation of amoebic liver abscess such as:

1. Amoebic pre-hepatitis,
2. Amoebic hepatitis and
3. Amoebic liver abscess.

the transition from stage 11 to 111 is undefinable.

Clinical Features:

The observations are based on our study in 167 cases of amoebic liver abscess.

The classical feature of amoebic liver abscess is a tender hepatomegaly with an antecedent history of diarrhoea or dysentery. But this picture even though very often met with, it is the multivarious clinical syndromes which the amoebic liver abscess manifests which puts the surgeon in a dilemma about the diagnosis.

The clinical picture presented by the liver abscess depends upon its site inside the liver (Paul 1960, Alkan et al 1961). In his study of 203 cases he was able to show the various features presented with varying position of the abscess anatomically inside the liver. (Paul, 1960).

In abscesses situated in the right lobe of the liver which are more common than the left lobe lesions, a tender hepatomegaly of the right hypochondrial

region is associated with intercostal tenderness. Features of right basal pneumonitis, are very common with this syndrome.

Abscess situated at the superior surface of the liver very often produces a silent syndrome and the patient's only complaint may be right shoulder pain. Hence in tropical countries, when a patient with acute abdomen complains of the right shoulder pain it carries a different connotation as against the western countries.

On the other hand, abscess situated at the left lobe, presents a clinical picture of an epigastric lump without producing any of the diaphragmatic irritation or pulmonary symptoms.

Similarly various syndromes have been described for liver abscess situated in various anatomical locations (Ramachandran et al 1976).

The above mentioned clinical pictures does not pose any problem to the diagnostician but it is only the unusual manifestations with which this condition manifests which require stress.

Unusual manifestation:

The first and foremost of these manifestation, is the presentation with fever of unexplained origin, where routine investigations for other specific causes have turned out to be non contributory to the diagnosis. This presentation was met with so commonly in our series (112 cases) that a strong suspicion of amoebic liver abscess should be entertained in any case of prolonged fever in the tropics. A scan is very much helpful in such cases but if it is not available, a laparotomy is mandatory. It must be stressed that during laparotomies for such conditions a careful palpation of the liver for deep abscess and needling of suspicious areas in the liver should be the essential feature. A history of chills and malaise may be concomitant.

Intra-abdominal lumps may be present and if present in the right hemiabdomen may simulate a mucocele or empyema of the gall bladder or hydro or pyonephrosis of the kidney. (Paul 1960).

Presentation with marked icterus is also not unusual. Severe jaundice may give an indication that the abscess is situated at the porta hepatitis if the jaundice is obstructive in nature or it may indicate multiple large or small abscesses (Kapoor and Joshi 1972).

Biliary peritonitis was the feature of presentation in two of our cases, one following unsuccessful needling (closed) of the liver.

Acute pancreatitis may be the manifesting feature in certain cases and even rarer syndromes of presentation have been met with in cases with situs inversus (Ansari et al 1973).

Three unusual methods of presentation was met with in recent years (Rangabshyam et al 1976).

One patient was admitted with acute dyspnoea in the medical unit and two days following admission showed signs of liver abscess and further investigations revealed that the abscess was situated at the summit of the right lobe of the liver. Similar instances causing confusion with tuberculous pericarditis have been reported before (Kapoor & Shah 1972).

Another patient was admitted with a history of hematemesis and when he was submitted for surgery for a possible bleeding peptic ulcer, it was found that the lesser curve of the stomach was adherent to the amoebic liver abscess situated at the inferior aspect of the liver and a gastrotomy revealed a communication between the liver abscess and the stomach. Most of the contents of the abscess had drained into the stomach. The communication was dissected out and the opening in the stomach was sutured. The liver abscess was drained with a malecot's catheter. The area wherein the abscess had burst open was found to have been eroded and the site was found to be the cause of the gastric bleeding.

The third patient sought hospitalisation for pain in the back and a plain X-ray of the abdomen was suggestive of subphrenic abscess. Fluoroscopy in the lateral position localised the abscess as supra hepatic and a diagnostic needling was done. Purulent material was aspirated and open drainage was instituted. During the procedure it was found that the subphrenic abscess was an amoebic abscess of the liver which had burst into the subdiaphragmatic space and got loculated with secondary infection.

A picture of paralytic ileus with toxemia is another method of presentation to be kept in mind. A syndrome of "Prerupture" presenting with acute abdomen has been described (Ramachandran and Goonatilake 1974).

A hepatic rub has also been described as a palpatory or auscultatory finding but it is very often intermittent in nature (Madanagopal, 1975).

At this context, it must be mentioned that diagnostic pitfalls in diagnosis of a case as one of liver abscess when it is not so is also met with. In our experience, a patient was referred to us because

of a failed closed aspiration by the medical unit of a provisionally diagnosed liver abscess. The patients general condition deteriorated following needling

and on the suspicion of intraabdominal bleeding, a selective hepatic and renal angiogram was performed. It was found that the hepatic arterial tree was normal and a right renal tumour blush was demonstrated in the angiographic pictures. An emergency celiotomy revealed a hypernephroma of the right kidney.

Radiographic signs

The most consistent radiographic finding was one of screening in which restriction of mobility of the right hemidiaphragm is highly indicative of the underlying lesion. The second most common finding was raised right dome of the diaphragm. Hepatomegaly could be made out in plain X-ray of the abdomen even though clinically it was not so in some cases.

Certain percentage of cases (30%) show a basal infiltration of the lungs and minimal effusion. In empyema secondary to liver abscess bursting into the pleural cavity there is vertical collection of fluid leaving the base comparatively free because of the adhesion of the lung to the diaphragm (R. Subramaniam 1968).

A picture of generalised ileus is not uncommon, The one particular instance already referred to showed signs of subphrenic abscess in the plain X-ray picture.

In the initial stage, widespread invasion of the liver occurs by the amoeba. At this stage only microscopic changes could be made out. Later the localisation of the necrosis occurs by a process of colliquative necrosis i.e. the amoeba liquefy the liver cells. Though technically it is called an abscess, it is not an area of suppuration but only an area of liquefied live tissue, the amoeba being present only at the walls. Unusually it is a solitary abscess but it can be multiple.

Biochemical changes:

No biochemical test can be defined as definitely indicative of amoebic liver abscess. Although authors like Longerbean et al have shown pronounced leucocytosis in 100% of their cases, it is not demonstrable feature in the tropics. The alkaline phosphatase level was elevated in 102 patients in our series and the Bromsulphalein retention test was positive in 35 out of the 120 cases in which it was performed. The fallibility of the liver function tests in the diagnosis of amoebic liver abscess has also been previously reported (Ramachandran et al

1972). But a consistent finding in the majority of the cases is low plasma protein value (137 out of the total) and a low haemoglobin value is also seen (98 cases below 12 gms%). SGOT AND SGPT levels were elevated in minimal percentage of patients (24 cases).

Serological tests:

Among these, Fluorescent antibody test (Agarwal et al 1971), Gel diffusion preceptin techniques (Powell 1968) and immuno electrophoretic (Savanat 1968) test have been hailed as useful but their limitations are inhibitory to routine use.

Of the two further investigative procedures which are useful in deciding the diagnosis and site of the lesion such as selective hepatic arteriogram and hepatic scan, our experience convinces us of the more usefulness of the former as a diagnostic tool.

Selective hepatic arteriogram is a useful adjunct in large tumours namely renal or hepatic as the one we had already referred to, or the ones with subacute onset wherein a hepatoma or a hydatid cyst cannot be confidently ruled out. The second use of selective hepatic arteriogram is that it is a prerequisite if the patients are to be managed only by repeated aspiration or percutaneous catheter drainage, since the experience of our series has shown that blind aspiration management of presumptive single abscess have led on to the leaving of "Cold amoebic abscess" which may exacerbate later.

Selective hepatic arteriographic pictures are not very much different from demonstrating any avascular lesion, but one diagnostic clue is that in the case of liver abscess, one is not able to demonstrate complete avascularity as seen in cyst but on the contrary, a "Marginal Blush" probably due to the granulating tissue can be made out.

Serial selective arteriographic pictures are useful in the study of the healing of the liver abscess.

When available, radioisotope scanning can be the most useful diagnostic tool (Otero 1968) but it would fail to make out lesions which are smaller than 2 cm in diameter and some times false negatives can occur. Nevertheless they have completely revolutionised the screening of the patients with liver abscess presenting only with fever of unexplained origin.

Ultrasonic scanning has also been advocated as useful to differentiate an abscess from the hepatomas (Monroe et al 1971). Echography is a less useful adjunct in the diagnosis and management.

Nature of Pus:

The nature of the so called "pus" which is contained by the liver abscess is different in nature from the purulent material obtained from pyogenic liver abscess. It is chocolate coloured, thick and characteristically defined as "anchovy sauce" in resemblance. The purulent material is only the liquefied liver tissue and the chocolate colour of the material is not due to the liver tissue because the liver tissue if it contains no blood is only white in colour. The chocolate colour of the material is only dependent upon the blood contained by it even though it is altered in nature (Paul 1960).

Management:

It is absolutely essential that the diagnosis is firmly established before consideration can be given to the type of management one can assign to the patient. The management thereafter should be considered in a semi-emergency manner.

In addition to the management of the amoebic lesion, these patients who are more often prone to other diseases such as pulmonary tuberculosis and peptic ulcer should be investigated for those conditions and concomitantly treated (Subramaniam 1968).

The three modalities of management are:-

1. Closed repeated aspiration
2. Closed percutaneous catheter drainage
3. Open drainage.

The clinician who comes across the individual case has to use his discretion in the choice of the method and might have to change over to another mode during the course of the disease, according to the nature of the progress. At the outset, it can be said, an uncomplicated, fairly localised single abscess is the ideal condition wherein the method of repeated aspiration gives its best results. Some authors defer the time of aspiration to a few days since the placement of the patient on antiamoebic therapy for a few days liquefies the aspirate and makes the matter easier. Any way the principle that at every time as far as complete removal of the aspirate to be done as possible should be adhered to, since unwise, early abandonment of aspiration after striking "pus" may lead on to continuous seepage into the peritoneal cavity and peritonism. In this series, 80 cases were managed only by repeated aspiration. It must be said that one must not be hesitant to switch over to one of the other two modalities of management when the course of healing of the abscess appears to be protracted.

Closed percutaneous catheter drainage has been a very useful method of management of amoebic liver abscess. Cases, which require repeated aspiration or cases in which open drainage is not possible for various reasons, are ideally managed by the above method. This has been a definite improvement over the method of repeated aspiration as it saves the patient the pain of repeated needling. In this series, 53 cases have been managed by percutaneous closed catheter drainage. Comparison with the healing time along with the cases treated by repeated aspiration has definitely shown that healing and resolution time is shorter with this method. The theoretical disadvantage of increased incidence of secondary infection has not been met with in our series.

The technique of open drainage has had very enthusiastic proponents. The procedure which was depreciated in 1966 by Turrill and Burnham found an ardent proponent in 1973 in Balasegaram. It has its definite place in the management when the patient is in a state of prurupture or has already ruptured into the pericardial, peritoneal, and pleural cavities or into a hollow viscus. The disadvantages claimed for open surgical drainage are that it increases the period of hospitalisation and it increases the incidence of secondary infection. But we are unable to find any supporting evidence to this contention in any of our cases which underwent open surgical drainage. We feel that excision of amoebic liver abscess is a concept not to be shuddered at the very thought of it, but a method which would be definitely useful in selected case. With refined methods of hepatic surgical techniques, it needs no longer any depreciation.

It is important to stress that all the cases should have a full blown regime of antiamoebic therapy during the local management of the liver lesions.

Multiplicity and Site of Liver Abscess

One other feature of this series is that we noticed a considerable percentage of cases wherein the abscess were more than one. In 62 patients the lesions were more than one and in fifteen of them only was it manifest in the first clinical examination. This shows the fallibility of relying too much on one clinical examination alone in managing these type of cases. Of the total number of cases, 123 patients had their abscess in the right lobe and in 44 patients in the right lobe.

Healing of liver abscess:

In order to evaluate the comparative worthiness of the various methods of management and to follow the course of the treated amoebic liver abscess, a

study was undertaken and observations compiled. The total number of cases studied was 52. In each case sigmoidoscopy and smear from the mucosa was taken and studied for amoebic and it was ensured that only uncomplicated amoebic liver abscesses were included for the study. Culture studies were done only in a few cases because of the nonavailability of facilities but any case with a positive culture report for pyogenic organisms was excluded from the study.

The cases were submitted either to repeated closed aspiration or to open drainage with a Malecot's catheter or percutaneous catheter drainage according to individual criteria of the cases and not by random sampling. As the main reason of the study was to ascertain the nature of healing of the liver abscess no measures were taken to institute random sampling techniques.

The cases were studied by either one of the following or a combination of the following techniques.

Air Cavitogram:

After aspirating as much as possible of the amoebic pus nearly 50 to 100 ml of air is injected into the cavity and pictures are taken. This manoeuvre was repeated with each aspiration.

Contrast Cavitogram:

Here either after a closed aspiration or open drainage, ultrafluid was put into the cavity and pictures are taken in the anteroposterior and lateral views.

Hepatic Arteriogram:

In few cases serial selective hepatic angiograms were taken and course of the healing of the abscess was studied.

During this period all the cases were put on Metronidazole 400mg thrice daily.

At the outset, the purely medical management of the dubious medical entity called amoebic hepatitis which verges on the abscess stage should be depreciated because in a few of the cases in which selective hepatic angiography was undertaken and who have undergone previous medical treatment for amoebic hepatitis/abscess showed the presence of few cold nodules. Even though they can be passed off as incidental tombstones of previous pathology, at times their innocence cannot be satisfactorily excluded and also they may form a diagnostic dilemma to the radiologist and the clinician.

During the serial study of these techniques it was found that there is a rapid phase of healing initially followed by a lag phase and once again a fairly continued rate of healing. This initial apparent rapid phase of healing may be just due to the falling off a scaffolding and not exactly due to the starting of the healing process.

Even though there was not a statistically significant difference in the healing of abscess treated either by the closed aspiration method or open drainage, it was found the healing was a little faster and more complete in cases which have undergone open drainage.

Summary:

A series of 167 cases of Amoebic Liver abscess are studied. The importance of a clinical awareness of amoebic liver abscess in many pyrexial conditions of acute abdomen is mentioned. A review of the management is discussed with the light of experience in 167 cases.

Acknowledgement:

Our thanks are due to the Superintendent, General Hospital, Madras, the Superintendent and CMHO, General Hospital, Kota Bharu and the Director General of Health, Malaysia. We greatly appreciate the Secretarial assistance of Miss Siti Hasnah.

References

1. Cutler, Avendana, Maldonado, Acosta: AMER, J. Gast 1974, 62: 4 345 - 349 Necrotising amoebic colitis.
2. Bockus HL: Gastroenterology Philadelphia Saunders 1965 - 629.
3. Goldberg, Steigmann: Amebiasis: a general discussion with a report of an unusual case of amoebic granuloma of the descending colon. Gastroenterology 26: 56 1954.
4. Gunn & Howard: JAMA 97: 166 1931.
5. Druckmann & Shorr Amer J. Roentgen 54: 147 1945.
6. Odunji EO: Pathological manifestations of amoebiasis in Nigerians W. Afr. Med. J. 18: 117 1969.
7. Rogers L: Amoebic Liver abscess; its pathology, prevention and cure Lancet 1: 463 1922.
8. Adeseola: A.O. Tropical Surgery Ed Schwartz McGraw Hill Book Company New York, 1971 p. 317.
9. Powel SJ: Serological tests in amoebiasis Ind. Practitioner 1968 21: 10 646.
10. Mafadzean JA: Immunology Ind. Prac. 1968 21: 10 649.
11. Savanat, Chaicump: Immunoelectrophoresis test for amoebiasis Ind. Prac. 1968 21: 10 650.
12. Subramaniam R: Some aspects of pathology and clinical features of amoebic liver abscess, Ind. Prac. 1968 21: 10 724.
13. Agarwal, Mahajan, Datta & Chuttani: 1971 Fluorescent antibody test in serodiagnosis of amoebiasis Ind. J. Med. Res. 59, 1214 - 1219.

14. Ansari, Skaria, Gopal, Vaish & Rai: 1973 Situs inversus with amoebic liver abscess. *J. Trop. Med. Hyg* 76, 169-170.
15. Kapoor & Joshi 1972 Multiple amoebic liver abscess A study in 56 cases *J. Trop. Med. Hyg.* 75 4-6.
16. Kapoor & Shah: 1972 Pericardial amoebiasis following amoebic liver abscess of the left lobe. *J. Trop. Med. Hyg* 75 7-10.
17. Monroe, Leopose, Brown & Smith: 1971 The Ultrasonic scan in the management of amoebic hepatitis. *Am. J. Dig. Dis* 16 523-530.
18. Otero 1968 Au liver scanning in hepatic amoebic disease. *J. Nuci. Med.* 9, 406-410.
19. Paul 1960 New concepts on amoebic abscess of the liver *B.J.S.* 47, 502-514.
20. Ramachandran & Goonatillake 1974 Amoebic liver abscess; syndromes of prupture and intraperitoneal rupture *B.J.S.* 61-353-355.
21. Ramachandran, Sivalingam & Perumal 1972 Hepatic amoebiasis haematological and biochemical changes during therapy. *J. Trop. Med. Hyg.* 75, 34-39.
22. Rangabashyam, Mohan & Premkumar: Unusual manifestations of amoebic liver abscess. *Antiseptic Mar.* 1976.
23. Balasegaram: 1975 Surgical management of hepatic lesions *Mal. J. Surg.* 1: 2, 117-130.
24. Turill & Burnham: Hepatic amoebiasis, *Am. J. Surg.* 11, 424, 1966.
25. Tetz, Reeves & Longerbeam: Treatment of liver abscesses, *Amer. J. Surg.* 126, 263 1973.
26. Madanagopal N. Personal Communication (1975).
27. Subramaniam R (1968) amoebiasis, Extra intestinal manifestation. *J. Assoc. Phys. India* 16. 291.

