Critical Factors in the Management of Liver Abscesses

Melvin A. Block
Hubert M. Allen

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal

Part of the Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation
Available at: https://scholarlycommons.henryford.com/hfhmedjournal/vol19/iss3/5

This Article is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons.
Critical Factors in the Management of Liver Abscesses

Melvin A. Block, M.D.* and Hubert M. Allen, M.D.*

Newer diagnostic techniques, including radioisotope liver scans, bacteriologic culture procedures for anaerobes, serologic tests for amebiasis, ultrasonic echograms, and hepatic arteriography, permit more specific identification and localization of hepatic abscesses. Large pyogenic abscesses are of particular importance to surgeons; are frequently caused by anaerobic organisms; and require early, direct, adequate, and sufficiently prolonged surgical drainage. The clinician should be alert also to recognition and management of the primary lesion responsible for the hepatic abscess, associated abscesses elsewhere, and the possible presence of an underlying liver neoplasm.

The critical factors in the management of liver abscesses relate to early diagnosis, precise localization for effective surgical drainage, identification of the etiologic organisms, follow-up care after specific therapy to ensure complete resolution, and recognition and proper treatment of primary or associated diseases. Although not common, hepatic abscesses are life-endangering. Advances in recent years have facilitated greatly the successful management of curable liver abscesses.

Classification of Liver Abscesses

Separating of hepatic abscesses into four major categories is clinically useful in considering etiology and management (Table 1). The pyogenic variety of apparent hematogenous origin, from a primary infection elsewhere in the body, is of greatest importance to the surgeon and will be given major consideration in this report. This pyogenic variety has predominated in our experience, from 1962 through 1969, with 21 patients having large hepatic abscesses.

Large Pyogenic Liver Abscesses

Large pyogenic liver abscesses develop usually as a complication of intraperitoneal infection, including that associated with abdominal operations. These abscesses have been difficult to recognize, are usually fatal if not
Block and Allen

### TABLE I
Clinical classification of hepatic abscesses.

1. Pyogenic, hematogenous origin  
   - Usually single, large (over 2 cm.)  
   - Occasionally multiple or multilocular  
   - Jaundice uncommon
2. Amebic  
   - Usually large, single  
   - Jaundice uncommon
3. Associated with obstruction to extrahepatic biliary ducts  
   - Pyogenic etiology  
   - Usually multiple, small (under 2 cm.)  
   - Associated with acute cholangitis throughout liver  
   - Jaundice common
4. Miscellaneous, pyogenic  
   - Associated with acute cholecystitis, by direct extension  
   - Associated with primary or metastatic malignancy  
   - Associated with hepatic trauma

Drained, and continue to occur with an incidence equaling or exceeding that in the past. Factors responsible for the previous high mortality from these pyogenic abscesses are listed in Table II. The availability of hepatic radioisotope scanning and arteriography now permit early identification and localization of the abscesses for effective surgical drainage. Also, hepatic echograms can differentiate between solid and abscess masses in the liver. The development of readily available bacteriologic techniques to provide recognition of anaerobic organisms, significant etiologic agents in liver abscesses, has contributed to the current low mortality from these lesions (Table III).

<table>
<thead>
<tr>
<th>Period of Time</th>
<th>Number of Patients</th>
<th>Total Mortality</th>
<th>Operated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>1923 - 1941</td>
<td>40</td>
<td>28 (70%)</td>
<td>18</td>
</tr>
<tr>
<td>1942 - 1969</td>
<td>21</td>
<td>2 (10%)</td>
<td>19</td>
</tr>
</tbody>
</table>

Clinical Features: Although a majority of patients will notice mild to moderate degrees of discomfort in the upper right abdomen or right lower chest and evidence of moderate liver enlargement, the manifestations of large pyogenic abscesses are otherwise nonspecific and consist of intermittent fever, chills, and anorexia with weight loss. A few patients develop systems of right diaphragmatic irritation.

Diagnostic Laboratory Findings: Elevation of the right diaphragm demonstrated by a chest x-ray provides the best clue for the presence of a liver abscess. Since the majority of abscesses are located in the superior aspect of the right lobe of the liver, elevation of the right diaphragm usually occurs within several weeks. It was present in approximately two-thirds of our patients. If the abscess is adjacent to the right diaphragm, or if the hepatic abscess has ruptured into the right subphrenic space, variable quantities of fluid usually appear in the lower right pleural space. A large right pleural effusion frequently produces diagnostic
confusion in localizing infection above or below the diaphragm. If there is greater need for diagnostic information than that provided by a liver scan, a thoracentesis will usually show the pleural fluid surrounding the uninfected lung to be clear rather than purulent and, therefore, will place the infection below the elevated diaphragm. Bacteriologic culture studies of the pleural fluid can be of help in some instances in providing an early bacteriologic diagnosis, and permitting the institution of proper antibiotic therapy prior to drainage of the liver abscess.

Laboratory studies which provided additional help to us include the findings of leucocytosis in at least three-fourths of our patients and a normal serum bilirubin in nearly all patients with solitary pyogenic abscesses. Although the leucocyte count was less than 10,000 per cu mm in some patients or only slightly greater than this figure in others, most patients in our experience had a persistent high leucocytosis. An elevation of total serum bilirubin more than 2 mgm % was reported in only 3 of 21 of our patients, the highest level being 6.7 mgm %. These elevations of serum bilirubin were transient.

Radioisotope Photoscan of the Liver: The liver scan has improved greatly the capability for early diagnosis and management of large hepatic abscesses. Scintillation scanning of the liver indicates defects produced by abscesses in terms of location, size, and number of lesions. A variety of isotopes are available for this study, including rose bengal $^{131}$I, colloidal gold $^{198}$Au, technetium sulfide Tc$^{99m}$, aggregated albumin $^{131}$I, each having individual advantages and disadvantages. Rose bengal $^{131}$I has the disadvantages of a rapid turnover rate and a delayed waiting period for the dye to concentrate, but an advantage in permitting an assessment of the extrahepatic biliary tract. Colloids have an advantage in that the spleen is often visualized with the liver, but the separation of the spleen and left lobe of the liver may be difficult at times. Both anterior and lateral scans are essential for diagnosis and in directing surgical drainage. Technical refinements are decreasing the time required for the study and provide improvement in uniformity and quality of the scans.

The liver scan is not infallible and has limitations when applied to the diagnosis and management of liver abscess. Current techniques are unlikely to identify an abscess smaller than 2 cm in diameter, and abscesses somewhat larger than this may not be demonstrated when centrally located in the right lobe of the liver. Technical factors in accomplishing the procedure as well as experience in interpretation of the scans, especially relative to a variety of congenital variations of gross liver configurations which are within normal limits, influence the accuracy of detection. In the case of an abscess, the radioisotope liver scan will only demonstrate the presence of a defect but will not differentiate this defect from those produced by neoplasms, cysts, and similar lesions. Ultrasonic echogram techniques can be of help in making this distinction between solid and cystic lesions. The liver scan, therefore, must be interpreted on the basis of clinical findings; repeated liver scans should be obtained if the
initial study does not demonstrate a hepatic defect in a patient exhibiting other features indicative of a hepatic abscess.

Radioisotope scanning identified the liver defect in 19 of our 21 patients with pyogenic abscesses who were seen from 1962 through 1969. In one of the failures, the abscess was of borderline dimensions, being approximately 3 cm in diameter. In the other patient, the presence of an elevated right diaphragm and a liver scan, which was not entirely satisfactory for technical reasons, should have led to repetition of the scan. False positive studies were recorded in at least five patients who had clinical manifestations suggesting the presence of a liver abscess. The nature of the hepatic defect in these five patients was clarified by the failure of aspiration of the liver to confirm the presence of an abscess, percutaneous needle biopsies from the region of the defect suggested by the liver scan, and operative evaluation of the liver when abdominal surgery was dictated for other reasons.

Selective hepatic arteriography also is of diagnostic value in identifying the presence of a defect in the liver. In some cases, the study of vascular patterns demonstrated in our patients permits the differentiation of neoplasms from abscesses in the liver. Small lesions also may be depicted by this technique. However, hepatic arteriography is associated with potential complications and also has limitations.

The differentiation of right subphrenic abscesses from intrahepatic abscesses may not be provided by scintillative scanning of the liver. Although this may not appear to be a crucial matter, since both lesions require surgical drainage, this factor can be of real significance if an underlying intrahepatic abscess is overlooked at the time of drainage of a subphrenic abscess. Of the 21 patients seen with hepatic abscesses during the past eight years, an associated subphrenic abscess was concomitantly identified and drained in two patients. A subphrenic abscess had been drained ten months earlier in one additional patient, a subhepatic abscess drained one year before in another patient, and in a fifth patient a subhepatic abscess required drainage at a later date. In still another of the patients, an intrahepatic abscess had apparently drained spontaneously through the right diaphragm to evacuate itself eventually via the tracheobronchial tree. In our experience the defects produced in radiologic studies by associated intrahepatic and right subphrenic abscesses are usually confluent. Simultaneous scans of the lungs and liver may be useful on occasion in further elucidating this problem. A discrepancy in the volume of material drained from a subphrenic abscess and the size of the defect shown on the liver scan should alert the surgeon to the possibility of an associated liver abscess. In such instances, aspiration of the underlying liver should be done to detect the presence of the intrahepatic abscess and, if positive, adequate drainage effected for both the intrahepatic and subphrenic abscesses.

Overlaying a standard sized liver scan onto a positioning x-ray film, in which the level of the diaphragm is evident, assists in the differentiation of an empyema in the right lower pleural space and collapse of the lower right lung from a subphrenic or intrahepatic abscess. Occasionally, an ab-
Critical Factors in the Management of Liver Abscesses

Abscess below the diaphragm ruptures through the diaphragm and produces an empyema or an abscess in the lower right lung. In these patients, drainage is needed both below and above the diaphragm.

Surgical Drainage: In our experience, surgical drainage is required to eradicate large pyogenic liver abscesses. Open surgical drainage was utilized most in our patients. Prolonged catheter drainage alone was used in a few patients with relatively small abscesses in the lower right lobe of the liver. Aspiration only, attempted in two patients seen in the early years of this study, was of apparent benefit only in one patient. However, this patient had also spontaneously evacuated his abscess by rupture through the diaphragm into the bronchial tree, producing a fistula which eventually closed of itself. The apparent ineffectiveness of aspiration, even repeated, is possibly related to the size of these abscesses and the frequency with which anaerobic bacteria produce the lesions. Excision of a chronic abscess, 3 cm in diameter and located in the left lobe of the liver, was carried out in a 3-year-old patient when the lesion could not be definitely differentiated from a neoplasm at the time of operation.

We prefer to drain abscesses located high in the right lobe of the liver through a lateral approach, usually via the bed of an overlying rib from which a segment is removed. This provides the most direct and dependent route for drainage and avoids peritoneal contamination. By utilizing the anterior liver scan to show the location of the abscess as related to the level of the xiphoid and the lateral scan to determine its anterior-posterior level, the proper rib for drainage can be selected (Fig 1). We prefer first to aspirate to confirm the presence of an abscess and the best level of drainage. Material aspirated from the abscess can be immediately subjected to study for motile ameba and by gram-stained smears. Bacteriologic culture studies are also initiated. Following confirmation of the presence of a pyogenic abscess by these initial studies, an incision is made immediately for adequate surgical drainage. The liver often is adherent to the parietal peritoneum at this point. While making the incision, apposition of the diaphragm to the bed of the rib can be ensured by sutures. Following drainage of the abscess, the cavity of the abscess can be gently explored with the surgeon’s finger to be certain that all loculations of a multilocular abscess are evacuated. Of the 21 patients with large pyogenic abscesses treated since 1962, three were multilocular and located in the right lobe. None in this series had multiple large abscesses. Drains and gauze packing are placed in the abscess cavity.

The initial aspiration, or the entire drainage procedure, can be performed under local anesthesia if desired. If pus is not obtained by aspiration, a percutaneous liver biopsy is performed to determine the nature of the tissue in the region of the defect shown on the hepatic scintillogram.

Abscesses located low in the right lobe of the liver can be approached laterally via a rib bed or intercostal space, as discussed earlier, or by a subcostal approach. When feasible, an effort is also made to maintain an extra-peritoneal route. Abscesses in the
low the ribs, an intraperitoneal approach is needed. Of the 21 patients with large hepatic abscesses seen in our institution from 1962 through 1969, 12 were located high in the right lobe, 8 in the lower right lobe, and 1 was in the left lobe.

*Bacteriologic Aspects:* Inasmuch as pyogenic hepatic abscesses usually represent lesions secondary to an infection elsewhere, the bacteriologic etiology of the large pyogenic abscesses is determined by the organisms causing the primary lesion. The majority of these primary lesions are located in the drainage system of the portal vein.

A large proportion of pyogenic liver abscesses, constituting more than one-third of our patients treated since 1962, result from anaerobic organisms. The family *Bacteroidaceae* are prominent in the group of anaerobes producing liver abscesses. This is reasonable since these bacteria increase in frequency in the intestine distal to the midportion of the small intestine and become the major organism in the stool. These bacteria are fastidious and bacteriologic techniques available in the past have not readily permitted their recognition. Even with procedures in current use, growth of these organisms is slow, usually requiring a number of days. We believe that this factor has been a major reason for the numerous past reports of negative bacteriologic culture for material re-

*Figure 1*

Use of liver scan in directing lateral approach to aspiration and surgical drainage of abscess located high in right lobe of liver.
Critical Factors in the Management of Liver Abscesses

moved from liver abscesses. Such negative culture reports have produced confusion in the clinical management of liver abscesses. By assuming that such abscesses are amebic in origin, medical therapy has been directed from this erroneous premise. In our practice, hepatic abscesses due to anaerobic bacteria far outnumber amebic abscesses.

In our experience, the Bacteroidaceae have important clinical characteristics other than those associated with difficulties in their bacteriologic culture. Their isolation as a pure culture from hepatic abscesses in five of six patients firmly supports their etiologic significance. In one of the patients, Bacteroides was isolated also from the blood. These bacteria produced definite although not fulminant toxicity, and abscesses caused by these organisms are potentially fatal. Not only are members of the family Bacteroidaceae difficult to culture, but infections due to these organisms are frequently difficult to eradicate. In our experience, prolonged administration of proper antibiotics as well as prolonged open surgical drainage are necessary to eliminate abscesses due to Bacteroidaceae, so repeated aspiration is not particularly successful in their management.

Management of large pyogenic hepatic abscesses should be modified in several additional ways to meet the problems related to the frequency of an anaerobic bacteriologic etiology. First, the bacteriologist should be provided a large volume of material so that the anaerobic conditions are preserved for at least some of the organisms in the specimen. A mere swab exposes the bacteria to an abundance of air, readily dries, and is unlikely to permit isolation of anaerobic organisms. The specimen should be presented immediately to the bacteriologist who is alerted to the clinical problem. The finding of numerous bacteria in a gram-stained smear confirms the bacteriologic etiology of the abscess and rules out an amebic origin, except for a secondarily infected amebic abscess. Failure to obtain growth of the organisms for a few days to several weeks, despite the presence of numerous gram-negative bacilli on the smear, usually indicates an etiology due to the family Bacteroidaceae.

Post-drainage Care: Treatment following surgical drainage of hepatic abscesses relates to supportive measures, maintenance of drainage of the abscess, follow-up radioisotope scintillography, a search for abscesses elsewhere when suspected clinically, and an investigation for the site of primary infection if not already evident. Each of these factors must be adapted to the individual patient.

If fever or other evidence of an abscess continues or recurs after adequate drainage of a hepatic abscess, a search should be made for another abscess elsewhere. Hepatic scintillography is of value in verifying resolution of the drained abscess and in detecting the presence of an additional intrahepatic abscess or the development of a subphrenic abscess. Other common sites for associated abscesses include subhepatic, pulmonary, and cerebral locations, as well as at the site of the primary infection. Of the 21 patients treated for hepatic abscesses since 1962, five required drainage of abscesses elsewhere as separate pro-
Block and Allen

Procedures. In addition to the three patients requiring drainage of other abscesses previously, two patients later were treated for brain abscesses and one patient had a pulmonary abscess concomitant with an intrahepatic abscess.

If the primary site of infection has not been located and treated already, a search for this lesion should be made postoperatively when the patient's condition permits. If the bacteriologic etiology of the hepatic abscess is known, a hint is provided for the general location of the primary source of the infection. Most primary lesions will be located in the peritoneal cavity and related to the gastrointestinal tract. Therefore, radiologic studies are indicated of the entire gastrointestinal tract, including the gallbladder.

In a few patients of our recent series, the primary lesion has not been detected. This failure may be due to its small size, such as a localized area of diverticulitis of the sigmoid colon, or because the infection was temporary, months or even years in the past, and not particularly noticeable to the patient, such as infected internal hemorrhoids. The primary source of infection can be determined usually from the patient's history or from diagnostic studies. A postmortem examination has provided this information only occasionally. The etiologic bacteria and probable sources of infection for our patients are shown in Table IV. The infection which ultimately leads to a pyogenic liver abscess may precede

---

**TABLE IV**

Bacteriologic etiology and location of primary infection in 21 patients treated for large pyogenic liver abscesses, 1962 through 1969.

<table>
<thead>
<tr>
<th>Bacteriologic Etiology</th>
<th>Location of Primary Infection</th>
<th>No. Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaerobic</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Bacteroidaceae</em></td>
<td>Unknown</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>* Appendicitis</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>* Post-op, gastrectomy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pancreatitis</td>
<td>1</td>
</tr>
<tr>
<td><strong>Streptococci</strong></td>
<td>Pancreatitis</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Diverticulitis sigmoid</td>
<td>1</td>
</tr>
<tr>
<td><strong>Aerobic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enteric bacteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Proteus</td>
<td>* Sigmoid infarction</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Abd. and liver trauma</td>
<td>1</td>
</tr>
<tr>
<td>* E. Coli</td>
<td>* Post-op, abdom. nephrectomy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>* Post-op, gastrectomy and</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>choledocholed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>1</td>
</tr>
<tr>
<td><strong>Streptococci</strong></td>
<td>* Appendicitis</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>* Post-op, gastrectomy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cholecystitis</td>
<td>1</td>
</tr>
<tr>
<td><strong>Staphylococcus aureus</strong></td>
<td>Unknown</td>
<td>1</td>
</tr>
<tr>
<td>Cultures reported negative</td>
<td>Unknown</td>
<td>2</td>
</tr>
</tbody>
</table>

* In 10 patients, hepatic abscess followed abdominal operation.
Critical Factors in the Management of Liver Abscesses

recognition of the abscess by many months or years. Of the 15 patients for whom the primary infection could be localized, in 8 it appeared to have been present 6 months or more prior to recognition of the hepatic abscess. In 10 of the 21 patients, abdominal surgery had been carried out previously for the primary infection or another lesion. In the patients developing large pyogenic liver abscesses following appendicitis, there was no evidence for portal pylephlebitis.

Pyogenic Liver Infections and Abscesses—Miscellaneous and Special Cases

Although the majority of large pyogenic abscesses appear to develop from a hematogenous origin, not all have this pathogenesis. A few develop from direct extension of infection from acute cholecystitis. Although the liver scan in such patients may show a defect larger than attributable to a normal gallbladder indentation, in our experience this finding can result from acute cholecystitis in the absence of an associated abscess and, therefore, cannot be depended upon to identify a pericholecystic abscess. Furthermore, carcinoma of the gallbladder can produce the appearance of a defect in the region of the gallbladder.

Large pyogenic abscesses may be associated with primary or metastatic liver malignancy. The clinical history and presence of multiple defects in the hepatic scintillogram may provide clues to this situation. If this problem is suspected, the operative approach to the liver and the abscess usually is through a subcostal incision which permits evaluation of the entire liver.

At the time of drainage of any hepatic abscess, it is wise to explore the wall of the abscess for suspicious defects and to biopsy the wall at such locations. Hepatic trauma can lead to intrahepatic abscesses, even many years after the original injury.

Although pyogenic hepatic abscesses secondary to extrahepatic biliary tract obstruction are usually multiple, small, and associated with a diffuse acute hepatic cholangitis, they are occasionally large. Surgical therapy for these patients consists of early relief of the extrahepatic biliary tract obstruction, use of appropriate antibiotics, and supportive care. However, the presence of a large pyogenic hepatic abscess requires, in addition, surgical drainage of this abscess.

Pyogenic hepatic abscesses in children differ from those of adults in that extrahepatic biliary tract obstruction is a rare cause and in that a hematogenous origin is usually from appendicitis or pneumonia. Dehner and Kissone noted in children a frequent association of hepatic abscesses with leukemia. Staphylococci appear to be the cause more often in children than in adults; our only patient for whom staphylococci were cultured from a pyogenic hepatic abscess was a 3-year-old child.

Amebic Hepatic Abscesses

From 1962 through 1969, four patients were treated in our institution for amebic abscesses while 21 were treated for large pyogenic liver abscesses of apparent hematogenous origin. In each patient, over two liters of material were drained from the hepatic abscess, resulting in early and perman-
recovery. Repeated aspiration of
the abscess, in conjunction with
emetine and chloroquine therapy, had
been carried out in one patient but
failed to provide permanent recovery.
Many surgeons with experience with
this lesion have reported that repeated
aspiration provides a safe resolution
for amebic liver abscesses and this
may be the preferable technique for
the surgical management of small to
moderate sized abscesses of this
etiology.

Although amebic hepatic abscesses
are not common in many regions of
the United States, the lesion is not
rare and must be considered whenever
evidence of a liver abscess is found in
any patient who has been in an area
in which amebiasis is endemic. In
general, the clinical features of amebic
liver abscesses simulate those of
large pyogenic abscesses except for a
history suggesting previous acute amebia­
is. Jaundice is unusual in either
of these varieties of hepatic abscesses.
Indirect hemagglutination and im­
muno-diffusion tests for amebiasis ap­
pear to be highly specific and sensitive
and offer confidence in the laboratory
diagnosis of this disease.11 Aspiration
of the liver abscess for diagnosis is not
needed when these tests, clinical fea­
tures, and the liver scan all indicate
the presence of an amebic abscess.

Another significant development in
the management of amebiasis and ame­
bic abscesses is the availability of
newer drugs, including Metronidazole.
This drug evidently provides rapid
elimination of toxicity from amebiasis
and will permit complete eradication
of amebic hepatic abscesses. The reso­
lution time of amebic liver abscesses is
reported to be approximately the same
whether patients are treated by surgical
drainage or by appropriate drugs.12
Surgical drainage then may be needed
only for complicated amebic abscesses
in patients who are or remain in crit­i-
cal condition, in failure to respond to
medical therapy particularly by large
abscesses, in recurrent and ruptured
abscesses, and in secondarily infected
abscesses.

Summary and Conclusions
1. Improved diagnostic techniques,
including radioisotope liver scans and
serologic tests for amebiasis, now per­
mit the early diagnosis of large liver
abscesses. Solid tumors may be dif­
ferentiated by ultrasonic echograms
and selective hepatic arteriography.

2. Liver abscesses may be classi­
fied into large pyogenic abscesses of
hematogenous origin, amebic abscesses,
pyogenic abscesses due to extrahepatic
biliary tract obstruction, and a mis­
cellaneous group including those re­
lated to malignancies in the liver, acute
cholecystitis, and hepatic trauma.

3. The large pyogenic abscesses are
of particular concern to surgeons.
Their high mortality in the past has
now been greatly reduced.

4. Hepatic radioisotope scanning,
although not specific, is of particular
value in permitting the identification
of large pyogenic liver abscesses, in
their localization for surgical drainage,
and in follow-up studies to confirm
resolution of the abscess.

5. Surgical drainage of large pyo­
genic liver abscesses should be pro­
vided by the most direct and safe route,
should be adequate, and should be
maintained sufficiently long to permit
Critical Factors in the Management of Liver Abscesses

healing of the abscess cavity. Open surgical drainage is usually required.

6. Material drained from a liver abscess should be studied immediately by gram-stained smears and for motile ameba. Both aerobic and anaerobic culture studies should be performed.

7. A great proportion of large pyogenic liver abscesses are due to anaerobic bacteria, particularly of the family Bacteroidaceae, which are difficult to culture, produce indolent infections, and require prolonged drainage and antibiotic therapy.

8. Large pyogenic abscesses are associated in a significant number of patients with subphrenic or subhepatic abscesses or abscesses at distant locations.

9. Large pyogenic liver abscesses are usually secondary to lesions elsewhere in the peritoneal cavity, their bacteriologic etiology being determined accordingly. If the primary infection is not evident at the time of drainage of the liver abscess, a search for it should be made at a later date.

REFERENCES

Block and Allen

