

Hepatic Resection for Liver Abscess – Case Report

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Abstract

Background

Hepatic abscesses are confined masses of pus in the liver that generally form following liver trauma or abdominal infections. They can be classified by the causing organism as bacterial or amoebic (pyogenic abscesses), parasitic (hydatiform) or fungal. By location, most solitary abscesses form on the right lobe due to greater blood circulation, thus left sided abscesses are less commonly found. Intraabdominal inflammatory processes with bacterial infestation may use the the portal system to disperse the pathogen into the liver. Other mechanisms follow a more direct route. Acute cholangitis, or infection of the biliary tree can form a liver abscess per continuitatem. Risk factors for a liver abscess include all the risk factors for cholangitis or intraabdominal infections such as: appendicitis, cholecystitis, diverticulitis, bacteremia, endocarditis, biliary tract malformations, cysts and strictures or hepatocalculosis. Culprit pathogens include: E. Coli, Streptococcus, Staphylococcus, Klebsiella, E. Histolytica, but usually liver abscesses are multimicrobial. Liver metastases may also cause a liver abscess, which is not to be overlooked.

Case presentation

The patient is a 32 years old female who was transferred from a regional hospital. She had the complaints of abdominal pain of the right upper quadrant, high temperature (39-40°C) for three weeks. The patient was treated with a wide range of antibiotics, but no improvement was noted. An abdominal CT scan evidenced a large multicameral hepatic abscess involving segments VI-VII and VIII. The patient was transferred to the Intensive Care Department where she was resuscitated due to the severe septic state. She underwent the procedure of surgical drainage and resection of hepatic segments VI-VII. On the 10th postoperative day she was discharged in good health.

Discussion

Size and location are important determining factors in the treatment strategy. For most of the cases of abscesses small and responsive to medical therapy the preferred route is the percutaneous drainage. However, it is in the surgeon's discretion to decide whether an open approach is more beneficial for the patient.

Conclusion

Surgical drainage remains a cornerstone in the treatment of liver abscesses, especially those unresponsive to medical therapy. Patients with delayed diagnosis are more likely to need drainage or surgery. Our case underlines the importance the involvement of a multidisciplinary team and especially the surgeons in the treatment of patients with liver abscesses, as in advanced stages empiric medical therapy may be ineffective.

Keywords: General Surgery, Liver Abscess, Pyogenic Abscess, Liver Resection, Segmental Resection.

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1. Introduction

Hepatic abscesses are confined masses of pus in the liver that generally form following liver trauma or abdominal infections. They can be classified by the causing organism as bacterial or amoebic (pyogenic abscesses), parasitic (hydatiform) or fungal.

Another classification is by location. Most solitary abscesses form on the right lobe due to greater blood circulation, thus left sided abscesses are less commonly found. Intraabdominal inflammatory processes with bacterial infestation may use the portal system to disperse the pathogen into the liver.

Other mechanisms follow a more direct route. Acute cholangitis, or infection of the biliary tree can form a liver abscess per continuitatem. Risk factors for a liver abscess include all the risk factors for cholangitis or intraabdominal infections such as: appendicitis, cholecystitis, diverticulitis, bacteraemia, endocarditis, biliary tract malformations, cysts and strictures or biliary stones.

Culprit pathogens include: E. Coli, Streptococcus, Staphylococcus, Klebsiella, E. Histolytica, but usually

liver abscesses are multimicrobial.

Liver metastases may also cause a liver abscess, which is not to be overlooked.

On a clinical perspective, patients may present with symptoms of abdominal pain in the right upper quadrant or epigaster, right shoulder pain, fever, malaise, loss of appetite, weight loss. Other cases, depending on etiology may present with jaundice, hepatomegaly. It is important to obtain a full medical history for comorbidities such as cirrhosis, diabetes etc.

Recommended diagnostic modalities include abdominal ultrasound (first line), IV contrast computed tomography (more sensitive) and aspirate cultures.

Treatment options may vary on causative organisms, but generally antibiotic therapy and drainage is the recommended choice. Other cases may need a surgical intervention.

2. Case presentation

2.1 History of present illness

The patient is a 32 years old female who was transferred from a regional hospital. She had the complaints of abdominal pain of the right upper quadrant, high temperature (39-40°C) for three weeks. The patient was treated with a wide range of antibiotics, but no improvement was noted. She was hospitalised in the Gastro-hepatology Department with persisting symptoms.

An abdominal CT scan evidenced a large multi-cameral hepatic abscess involving segments VI-VII and VIII.

The patient was transferred to the Intensive Care Department where she was resuscitated due to the severe septic state and administered fluids, electrolytes, as well as 2 units of blood and fresh frozen plasma each.

A decision was made to prepare the patient for a surgical intervention.

2.2 Details of the surgical procedure

The procedure was performed under general endotracheal anesthesia. An extended right subcostal incision is made. The peritoneal cavity is accessed. We evidence macroscopically normal abdominal organs, with the exception of the liver. The right lobe, in the right segments we notice an irregular tumefaction in the segments VI-VII-VIII.

We insulate the wound and other abdominal organs from the operative field. The falciform ligament is divided, together with the triangular ligament. This makes possible a luxation of the right part of the liver and opens the operative field.

The drainage of the liver parenchyma brings thick pus which is aspirated. We notice some caverns divided from one another in the abscess, which involve the segments VI-VII-VIII, transforming the liver parenchyma in a spongy mass. We continue with the emptying of the abscess and the consecutive pockets near it.

From the abscess we notice not only the evacuation of pus and necrotic tissue, but also blood. This changes our surgical strategy. It is decided to perform the resection of segments VI-VII. The wound is bandaged and we go to the hepatic hilum level.

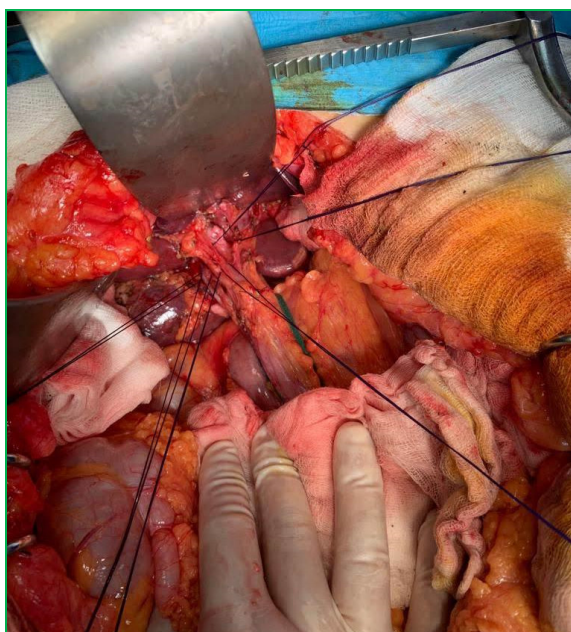


Figure 1. Dissection of the hepatic hilum and its elements.

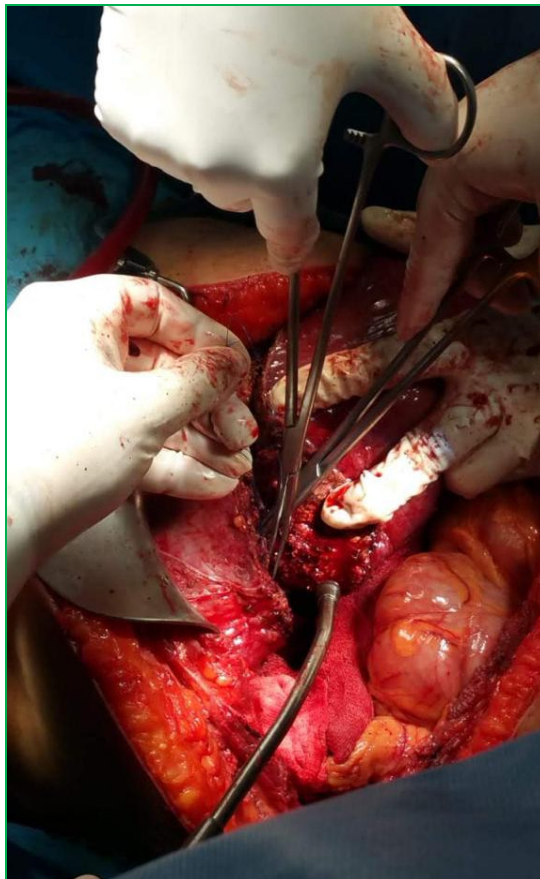


Figure 2. Resection of segments VI-VII.

After cholecystectomy is performed, the elements of the right hepatic artery are prepared, also the branch of the portal vein, which is gently grasped with a bulldog clamp. Getting back to the already luxated liver, we advance close to the vena cava, to identify, clamp and suture-ligate with prolene the right suprahepatic vein. Then the anterior segmental branch of right hepatic artery is ligated, which demarcates an ischemic zone of segments VI-VII and a narrow belt in segments VIII and V.

Now the Pringle manoeuvre is performed for 9 minutes and repeated once more, to allow the resection of segments VI and VII with controlled hemostasis.

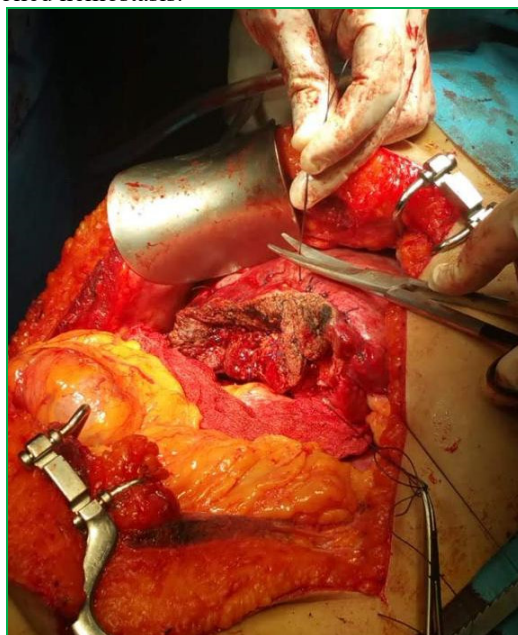


Figure 3. Result of hepatic resection and hemostasis.

Four drains are inserted. The procedure ends, and the patient administered one unit of blood during surgery.

2.3 Post-operative period

The patient was transferred in the intensive care unit where she was monitored for the first 5 days. She was discharged in good health on the 10th postoperative day.

3. Discussion

There is a need for an interspecialty team of gastroenterologists, radiologists, surgeons, intensive care and infectious disease doctors to best treat a patient with liver abscess. This is due to the various etiologies and causative agents of liver abscess.

Size and location are important determining factors in the treatment strategy. For most of the cases of abscesses small and responsive to medical therapy the preferred route is the percutaneous drainage. However, it is in the surgeon's discretion to decide whether an open approach is more beneficial for the patient.

A minor, but considerable part of liver abscesses is caused by *Echinococcus* species. Most cases present with symptoms in the late stages. For small cysts a percutaneous route is preferred. However, greater cysts need surgical treatment. Laparoscopic interventions offer enhanced postoperative conditions, but pose a technical challenge in terms of access (especially in segments VII-VIII), cyst evacuation and peritoneal dissemination prevention.

4. Conclusion

Imaging studies may confirm the presence of a liver abscess, but the causing pathogen and therefore the targeted antibiotics therapy may be difficult to find. Large abscesses may need percutaneous drainage. The aspirated content, as well as blood cultures should be ordered. Amoebic liver abscesses respond to medical treatment, so antigen testing plays an important role in avoiding unnecessary drainage.

Surgical drainage remains a cornerstone in the treatment of liver abscesses, especially those unresponsive to medical therapy. Patients with delayed diagnosis are more likely to need drainage or surgery.

Our case underlines the importance of the involvement of a multidisciplinary team and especially the surgeons in the treatment of patients with liver abscesses, as in advanced stages empiric medical therapy may be ineffective.

Conflict of interest

The author(s) declare(s) that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

Financial disclosure

There is no financial support to this study.

Ethical aspect

Informed consent was obtained from all participants in the study and all procedures were conducted in accordance with the Declaration of Helsinki.

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