

## Liver Abscess: A Case Report

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### ABSTRACT

A liver abscess is a form of infection in the liver, which is characterized by the presence of pus covered by fibrous tissue in the liver parenchyma. The two most common types of liver abscesses are pyogenic and amebic abscesses, which are usually found in the right lobe of the liver. This study aimed to report cases of liver abscesses that occurred in the left lobe of the liver, with non-specific complaints. The patient came with complaints of a swollen abdomen, pain in the upper right abdomen, and intermittent fever. Radiological examination in the form of a CT scan confirmed the diagnosis of a left lobe hepatic abscess. The patient was treated with an abscess drainase per laparotomy. No complications were found during and after surgery. Open abscess drainase by laparotomy combined with antibiotic therapy is a safe and effective therapeutic approach in such cases.

### 1. Introduction

A liver abscess is an infection of the liver or liver caused by a microorganism such as bacteria, fungi, and parasites, which is characterized by the formation of pus in the liver parenchyma as an invasion and multiplication process that enters through the blood vessels, biliary system or direct penetration. Liver abscesses can affect anyone at any age, but men between the ages of 20 and 40 are most commonly affected. In 60% of cases, the liver abscess is more common in the right lobe. This is because its main blood supply comes from the superior mesenteric vein.<sup>1,2</sup> The prevalence of liver abscess varies according to age, gender, and etiology. Most abscesses are polymicrobial, with the microbes most frequently involved in pyogenic abscesses being *Escherichia coli*

(*E. coli*), *Klebsiella*, *Enterococcus*, *Bacteroides*, and *Staphylococcus*. Most *E. coli* is more common in Western countries, but *Klebsiella pneumoniae* is more common in Asian countries. A single-center study consisting of 100 samples in India found that the majority of patients were male (85%) with an average age of 18-30 years and were more commonly found in the right hepatic lobe (76%).<sup>2,3</sup>

Clinical manifestations of liver abscess are often non-specific. Complaints reported by patients can include fever, abdominal pain, and vomiting due to non-specific complaints. The diagnosis is made based on the clinical picture and supporting examinations such as radiology, including ultrasonography or abdominal CT scan. Abscesses generally occur in the right lobe of the liver but can also be found in the left



lobe. A liver abscess in the left lobe requires special attention and prompt treatment because the location of the abscess has a high risk of rupture into the pericardium.<sup>4-7</sup>

## 2. Case Presentation

A 78-year-old male patient came to the emergency room at Sanjiwani General Hospital, Gianyar, Bali Province, Indonesia, with complaints of swelling in the abdomen. This complaint the patient has experienced for approximately 3 weeks. Complaints are also accompanied by pain in the upper right abdomen, and the pain does not spread to other parts of the abdomen. In addition, the patient also complained of a fever that was not too high and intermittent 1 week before entering the hospital. Complaints of nausea, vomiting, and yellowness of the eyes and the whole body were denied by the patient.

On physical examination of the general condition, it was found that the patient was *compos mentis* and looked moderately ill. Examination of vital signs showed that the patient's body temperature was 37.4°C, blood pressure was 110/70 mmHg, pulse was 90 times/minute, and respiratory rate was 20 times/minute. On general status examination, the conjunctiva was not anemic, and the sclera was not icteric. No enlarged lymph nodes were found. Pulmonary and cardiac examination results were within normal limits. On abdominal examination, it was found that the abdomen was distended, and the upper right side was more prominent than the left. When palpated, the liver feels enlarged, with a smooth surface, and painful when pressed. In addition, tenderness was also found in the epigastric region. The spleen was not palpable, and no ascites were found. Bowel sounds within normal limits.

Laboratory examination was performed on the patient, and hematological examination showed normochromic normocytic anemia (hemoglobin 8.0 g/dL and MCV, MCH, MCHC within normal limits). Other hematological components within normal limits.

Examination results can be seen in Table 1. On examination of liver function, namely aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were found to be within normal limits. Total, direct, and indirect bilirubin levels were within normal limits. The results of an abdominal CT scan (Figure 1) showed an enlarged liver in the left lobe with firm boundaries, relatively thick walls stinging post-contrast accompanied by a slight halo of hypodense. There was inhomogeneous fluid accompanied by air density measuring 10.2 x 8.2 cm. Other than that, no other abnormalities were found on this examination.

Based on the results of the examination, a working diagnosis of left lobe hepatic abscess was established. Based on consultation with the surgical department, it is recommended to perform a laparotomy to drain the abscess fluid. From the operation report, it was known that the abscess was located in the left lobe of the liver. As much as 300 cc of cloudy yellow liquid was successfully removed, and continued with the installation of a tube to drain the remaining pus. After the procedure, the patient was hospitalized for 3 days and received antibiotic therapy such as metronidazole, Luminal amebicides agents such as paromomycin, and analgesics such as intravenous paracetamol. On the third day after the abscess drainase procedure, the general condition was good, vital signs were within normal limits, and no other complaints were found, so the patient was sent home and prescribed metronidazole 3x500 mg, cefixime 2x200 mg and paracetamol 3x500 mg. The patient returned for control 1 week later. There were no complaints, the wound closed properly, and no complications were found in the patient.

## 3. Discussion

A liver abscess is a form of infection in the liver, which is characterized by the presence of pus covered by fibrous tissue in the liver parenchyma. The two most common types of liver abscesses are pyogenic and amebic abscesses.<sup>8</sup>



Table 1. Laboratory examination results.

Examination	Results	Unit	Normal value
Hematology			
Complete blood			
Hemoglobin	8.0	g/dL	11.0-16.0
Hematocrit	22.7	%	37.0-54.0
Platelets	326	10 <sup>3</sup> /mL	150-450
Leukocytes	4,39	10 <sup>3</sup> /mL	4.00-10.00
Erythrocyte	2.93	10 <sup>6</sup> /mL	3.50-5.50
MCV	80.1	fL	80.0-100.0
MCH	27.2	pg	27.0-31.0
MCHC	35.1	g/dL	32.0-36.0
Diff			
N. Segment	55.5	%	50.0-70.0
Lymphocytes	33.3	%	20.0-40.0
Monocytes	9.9	%	3.0-8.0
Eosinophils	1.1	%	0.5-5.0
Basophils	0.2	%	0.0-1.0
Neutrophil lymphocyte ratio	1.6		< 3.13
Absolute lymphocyte count	1.46	10 <sup>3</sup> /mL	0.80-4.00
Clinical chemistry			
SGOT/AST	11	U/L	< 35
SGPT/ALT	5	U/L	< 41
Total bilirubin	0.60	mg/dL	0.1-1.2
Indirect bilirubin	0.39	mg/dL	0.0-0.75
Direct bilirubin	0.21	mg/dL	< 0.2
Current blood glucose	115	mg/dL	80-120
Alkaline phosphatase	92.0	U/L	53-128

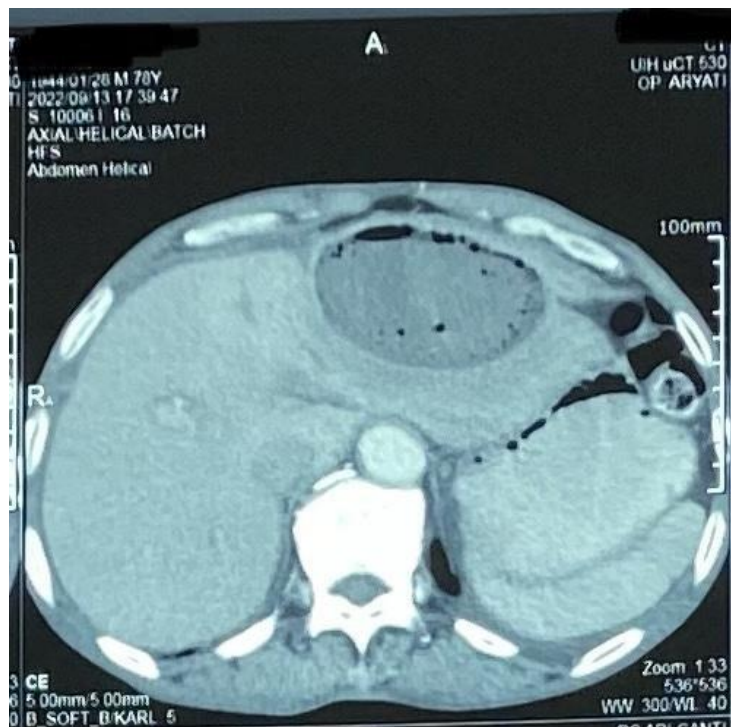


Figure 1. CT scan of the abdomen.



Clinical symptoms found in liver abscess, in general, are fever, chills, night sweats, malaise, nausea or vomiting, right shoulder pain (due to phrenic nerve irritation), right upper quadrant pain, cough, dyspnea, anorexia, uncontrollable weight loss explained. Fever and abdominal pain are the most common symptoms found in patients.<sup>9</sup> In this case, the patient complained of fever, swelling, and pain in the upper right abdomen. Because there was swelling in the abdomen accompanied by fever, we suspected that there was an infection in the stomach. Then when laboratory tests were carried out, no signs of infection were found. In this case, other supporting examinations, such as radiology, have a very important role in establishing the diagnosis. So we did a CT scan of the abdomen in this patient. CT Scan examination is an imaging technique that is very useful in diagnosing liver abscesses, where the image found is known as the double target sign.<sup>10</sup> Examination of the abdominal CT scan, in this case, showed an enlarged liver in the left lobe with firm boundaries, relatively thick walls stinging post-contrast accompanied by a slight hypodense halo, there was inhomogeneous fluid accompanied by air density measuring 10.2 x 8.2 cm, which corresponds to the appearance of a liver abscess.

The diagnosis of amebic and pyogenic liver abscesses is difficult to differentiate based on clinical manifestations, and patients usually present with complaints of fever and right upper abdominal pain. Although laboratory results such as leukocytosis (especially neutrophils), increased inflammatory markers such as C-reactive protein, increased alkaline phosphatase, and abnormal results on liver function tests still cannot differentiate between the two types of liver abscess.<sup>9</sup> Pyogenic liver abscess is common globally and is often found in patients who are older, have diabetes mellitus, have cancer, and are associated with underlying biliary pathology. Meanwhile, amebic liver abscess also occurs globally but is more often found in environments with poor sanitation and in men aged 30-50 years.<sup>10,11</sup>

There are various therapeutic modalities for liver abscesses, namely medication and surgery. Because treatment of liver abscesses is often given before appropriate specimen collection, and the cause of the abscess is still unclear, medical therapy is given, namely empiric antibiotics, to target amebic and pyogenic causes.<sup>10</sup> Meanwhile, for surgical procedures, drainage of the abscess can be performed by laparoscopy or open abscess drainage. In amebic abscesses, it can usually respond only to medical therapy such as metronidazole and luminal agents such as paromomycin orally with a period of 5 to 10 days. Whereas for a combination of infection and pyogenic abscess, usually in addition to giving the right antibiotics, abscess drainage can also be done.<sup>12,13</sup> Recent recommendations state that abscesses that are less than 3 cm in size can be treated medically. In this case, the abscess measured 10.2 x 8.2 cm, so it was not effective only for medical administration but also treated surgically in the form of open abscess drainage with a laparotomy.<sup>14</sup> Laparotomy and abscess drainage are very important procedures to remove the source of infection in the liver. There are several case reports regarding surgical procedures such as open abscess drainage with laparotomy for liver abscess. One study reported cases of pyogenic liver abscess, which were treated with open abscess drainage surgery with laparotomy. This procedure showed good results, and clinical symptoms improved, and no complications. Surgery, and the patient was discharged 7 days after surgery.<sup>15</sup>

#### 4. Conclusion

A liver abscess is an infection of the liver caused by a microorganism such as bacteria, fungi, and parasites, one of the most common infections of the liver, and is life-threatening if not treated properly. The diagnosis of liver abscess is based on the patient's clinical non-specificity so that imaging such as CT scan and abdominal ultrasonography can be performed. Treatment of liver abscesses includes medical therapy and surgery. Surgical procedure on



liver abscess in the form of abscess drainase can be done openly or laparoscopically.

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