

Atypical liver resection in treatment of hepatic abscess

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Introduction

Liver abscesses are pus-filled collections localized within the liver parenchyma. Abscesses of the liver do not represent a common liver pathology and are considered a rather rare diagnosis in developed countries, therefore, differential diagnosis is rarely considered in this direction. The availability of ultrasound diagnostics has significantly contributed adequate to the early and diagnosis of liver abscess. There are several options in the therapeutic management of liver abscesses, which, in addition to antibiotic therapy, include interventional radiological procedures (percutaneous drainage) and surgical treatment.

Case report

A fifty-eight-year-old man reported to the Emergency Center of the University Clinical Center Banja Luka with complaints in the form of general weakness and malaise, stomach pain, slurred speech and difficulty moving. According to anamnestic data, the complaints started four days before reporting to the Emergency Center. Clinical examination of the patient reveals that the patient is conscious, afebrile, with regular auscultatory findings over the heart and lungs, a painful palpable abdomen in the upper right quadrant and a palpable edge of the liver 3 cm below the right costal arch. The patient underwent laboratory and radiological examination, where the laboratory findings showed high glycemia (SUK: 23 mmol/L), elevated values of transaminases (AST: 158 IU/L; ALT 313 IU/L), elevated values of C-reactive protein (CRP 117 mg/L), leukocytosis $21 \times 10^9/L$. A minor amount of free perihepatic fluid is determined by the ultrasound findings. Liver in orderly position, AP (antero-posterior) size in the medio-clavicular line approximately 18 cm, diffusely increased echogenicity, focal lesions were not detected. Upon admission, antibiotic therapy is started, and additional radiological diagnostics are performed. A computerized tomography (CT) of the abdomen and pelvis is performed, which describes: in the liver in the VII segment, an irregular, vaguely limited gas-liquid collection with a diameter of about 11 cm, compatible with a hepatic abscess, inseparable from the regional liver capsule. Right subphrenic and subhepatic dense liquid collections in block with gas collections.

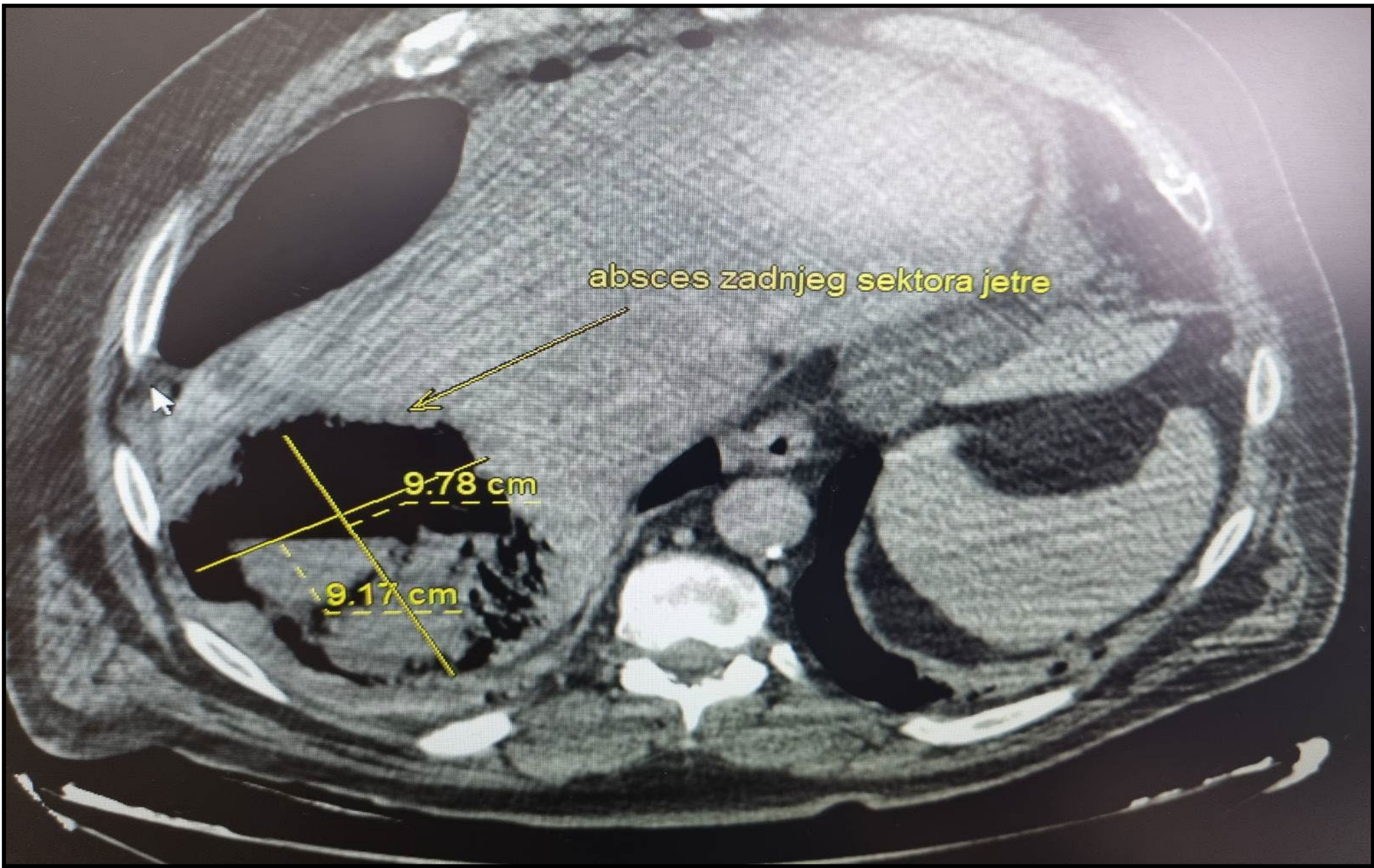


Figure 1. CT of the abdomen and pelvis showing an abscess collection in the posterior sector of the right liver lobe.

An indication for urgent surgical treatment is established. Abdominal exploration is done through a right subcostal incision. When opening the peritoneal cavity in the space below the right liver lobe, and in the right subphrenic, a large amount of purulent fluid is recorded, which is sampled for microbiological analysis and evacuated. Further exploration showed a perforated abscess localized in the VII and part of the VI segment of the liver, which was not clearly demarcated by the capsule from the liver parenchyma, with significant destruction of the liver tissue. Due to the impossibility to achieve adequate hemostasis and to adequately take care of the potentially damaged bile ducts, an atypical resection of the VI and VII segments of the liver was performed. The resection was performed using the clamp-crush technique, and additional hemostasis was established by cauterization with argon. The patient was postoperatively treated with antibiotic therapy, water and electrolyte corrected. The further postoperative course went well. Microbiological culture isolates *Escherichia coli* from a pus sample taken intraoperatively. On the eleventh postoperative day, the patient was discharged for home treatment, with a satisfactory surgical outcome. At subsequent follow-up examinations, the skin sutures were removed, the patient was in good general condition, with no clinical signs of disease recurrence. The exact cause of the abscess remains unknown.



Figure 2. Intraoperative finding of an abscess capsule under the right diaphragm



Figure 3. Resected part of the VI and VII segments of the liver with abscess

Discussion

Liver abscesses are not a common finding. The most common causes of liver abscess are of biliary etiology. Also, they can arise hematogenously from inflammatory bowel diseases, diverticulitis, appendicitis, from which they spread through the portal vein system in the liver. Trauma-blunt and penetrating, can be the cause. However, most abscesses develop without a known cause, these are so-called cryptogenic abscesses. Risk factors for the development of liver abscesses include: recent surgical procedures, diabetes, alcoholism, and various immunocompromising conditions. In developed countries, the most common pathogens isolated from abscesses are *Escherichia coli* and *Klebsiella* spp., while in undeveloped ones, *Entamoeba histolytica* is a common cause. Often, rapid diagnosis is made by ultrasound examination, which has greatly reduced mortality from pyogenic liver abscesses from 40% to 10-25% in the past two decades. Abdominal contrast CT provides a more complete analysis, so often these two diagnostic methods complement each other. Treatment of liver abscesses often requires a multidisciplinary approach that includes surgeons, interventional radiologists and infectious disease specialists. The first line of therapy is antibiotics, primarily third generation cephalosporins, fluoroquinolones and metronidazole. Depending on the size of the abscess, for abscesses smaller than 5 cm, antibiotic therapy is often sufficient. For those that are larger than 5 cm, it is necessary to think in the direction of some form of drainage. With the development of interventional radiology, ultrasound-guided percutaneous punctures and evacuations are increasingly performed in the treatment of abscesses. In the case of multiloculated, multiple or perforated abscesses, surgical drainage is still the gold standard of therapy.

Conclusion

Liver abscesses are a rare clinical finding in our practice. The specificity of the presented case is the rapid diagnosis that led to operative treatment and cure. Also the operational approach was unusual as shown. Our case shows the importance of adequate radiological diagnostics and the readiness of the surgical team to respond adequately to a challenging diagnosis.