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Liver actinomycosis mimicking liver tumour

Aktinomikoza koja imitira tumor jetre

Djordje M. Ćulafić*, Nebojša S. Lekić†, Mirko D. Kerkez†, Dragana D. Mijač*

School of Medicine, Clinical Center of Serbia, Institute of Digestive Diseases, *Clinic of Gastroenterology and Hepatology, †Clinic of Surgery, **Belgrade, Serbia**

Abstract

Background. The liver actinomycosis is a rare disease associated with complex differentiation from the liver metastases or hepatocellular carcinoma. **Case report.** A 50-year old immunocompetent female patient was admitted to the Surgical Department in an exhausted condition, with dyspnea, significant weight loss and intermittent fever in the recent two months. Diagnostic procedures that followed, including abdominal ultrasound and computed tomography led us to the diagnosis of metastatic liver disease of unknown etiology with pleural and pericardial effusion. Intraoperatively, the presence of liver pseudotumor without malignancy in the liver was confirmed. Histological examination confirmed the diagnosis of liver actinomycosis. Prolonged treatment with high dose penicillin was performed and all signs and symptoms resolved completely without further problems. The control abdominal ultrasond finding was normal. **Conclusion**. Liver actinomycosis has a nonspecific presentation, often mimicking liver tumor. A timely diagnosis as well as a combined surgical and antibiotic therapy is necessary in the treatment of patients with primary disease and prevention of complications.

Key words:
actinomycosis; liver neoplasms; granuloma, plasma cell; diagnosis, differential; therapeutics.

Apstrakt

Uvod. Aktinomikoza jetre je retko oboljenje koje često imitira metastatske bolesti jetre ili hepatocelularni karcinom. **Prikaz bolesnika.** Bolesnica stara 50 godina, primljena je u Odeljenje za hirurgiju u veoma teškom opštem stanju, dispnoična, sa povišenom temperaturom intermitentnog tipa, i podatkom o značajnom smanjenju telesne mase u poslednja dva meseca. Bolesnica je negirala ranije bolesti i operacije. Nakon obavljenog dijagnostičkog postupka, uključujući ultrazvuk i kompjuterizovanu tomografiju abdomena, postavljena je dijagnoza metastatske bolesti jetre nepoznate etiologije sa pleuralnim i perikardnim izlivima. Intraoperativno, kod bolesnice je utvrđeno prisustvo pseudotumora jetre, bez znakova maligniteta. Patohistološkom analizom postavljena je dijagnoza aktinomikoze jetre i sprovedeno je lečenje visokim dozama penicilina. U daljem praćenju bolesnice svi simptomi i znaci bolesti povukli su se, a fizikalni nalaz, laboratorijske analize i kontrolni ultrazvuk abdomena bili su u granicama normale. **Zaključak.** Aktinomikoza jetre može imitirati tumore jetre. Povoljan ishod zavisi od ranog postavljanja dijagnoze i otpočinjanja antibiotske terapije u kombinaciji sa hirurškim lečenjem pseudotumora jetre.

Ključne reči:
aktinomikoza; jetra, neoplazme; granulom, plazmocelularni; dijagnoza, diferencijalna; lečenje.

Introduction

Actinomycosis is an extremely rare benign disease. In most cases, the diagnosis is made intraoperatively by histological examination of resected material. *Actinomyces Israeli* can generate putrid and granulomatos infections [1]. It is a normal flora of the oropharynx, gastrointestinal tract, and female genital tract; inoculation occurs with mucosal disruption. A review of the literature to date has shown that it can manifest as abscesses in the central nervous system, cervicofacial region and chest, and as pelvicoabdominal actinomycosis with liver dissemination, but intraabdominally, the ileocecal region is most frequently affected [2–5].

Liver is infiltrated in 15% of all cases of abdominal actinomycosis [6–9]. Moreover, liver is primarily infiltrated in only 5% of all actinomycosis infections. However, primary focus of actinomycosis is extremely difficult to identify. When the primary source is not identified, it is then classified as an isolated hepatic actinomycosis (IHA) [10]. According to clinical and radiological characteristics a solitary liver focal leasion is often misinterpreted as primary or metastatic liver tumor [11].

We presented a rare case of IHA that proved to be diagnostic and management challenge.

Correspondence to: Đorđe Ćulafić, Medical Faculty, Clinical Center of Serbia, Institute of Digestive diseases, Clinic of Gastroenterology and Hepatology, Koste Todorovića 2, 11 000 Beograd, Serbia. Tel.: +381 11 36 63 721. E-mail: dculafic@eunet.rs

Case report

A 50-year old female patient was admitted to the hospital on January 17 2002 with a two-month history of right upper quadrant pain, cyclic low-grade fevers up to 37.8 °C, cough, dyspnea, severe weight loss (25 kg body weight decreases during two months), irregular bowel movements (constipation), loss of appetite and fatigue. Empirically, the patient was started on clarithromycin tablets 500 mg twice daily, for 7 days, with no improvement. A medical history included previously good health and general good condition.

Physical examination revealed severe general condition, malnutrition with body mass index (BMI) 16 kg/m2, low blood preasure of 85/60 mmHg, tachycardia (puls rate 120/min), tahypnea respiratory rate of 22 breaths per minute), dyspnea, low-grade fever of 38° C and tender right upper quadrant. Abnormal laboratory values included mild leukocytosis (white blood cells 12.4 × 10^9/L), erythrocyte sedimentation rate 70 mm/h, fibrinogen 7.4 g/L, C-reactive protein 38.0 mg/dL, hyposideremic anemia (hemoglobin 94 g/L, red blood cells 3.38 × 10^{12}/L, mean corpuscular volume (MCV) 72 fL, serum Fe 5.6 μmol/L), decreased total proteins (55.5 g/L), and albumins (29 g/L) with abnormal values of aspartate aminotransferase (58 U/L), alanine aminotransferase (78 U/L), alkaline phosphatase (162 U/L), S gamma glutamyl transpeptidase 64 U/L, and total bilirubine (22 μmol/L). Other laboratory analyses were within normal ranges including tumor markers (alphafetoprotein, cancer antigen (CA) 19–9 and carcinoembryonic antigen (CEA). Virus analyses such as hepatitis B surface antigen (HbsAg), anti-hepatitis C virus (anti HCV) and anti-human immunodeficiency virus (anti-HIV) were negative.

Abdominal ultrasound revealed several liver lesions in the right lobe, the largest measuring 6.7 × 6.8 cm, 5.7 × 3.2 cm and 3.2 × 2.7 cm (Figures 1 and 2). Abdominal computed tomography (CT) confirmed the previous ultrasound examination, while pelvic CT was normal (Figures 3 and 4).

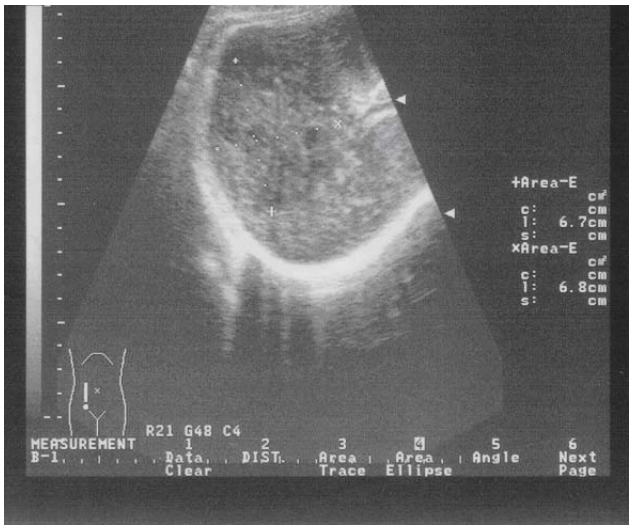


Fig. 1 – Abdominal ultrasonographic finding: the largest actinomycotic node in the right liver lobe

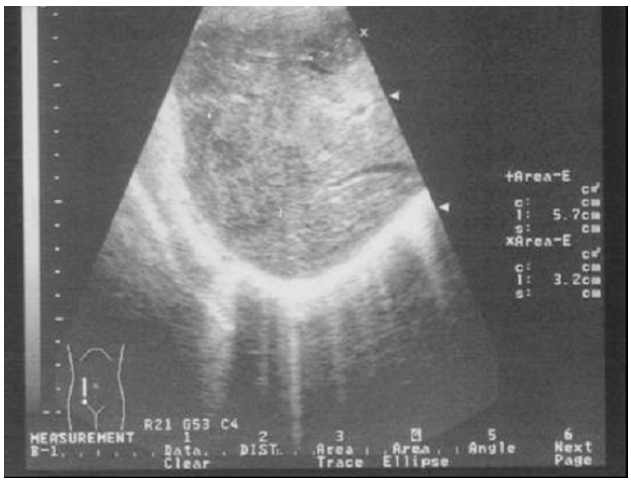


Fig. 2 – Abdominal ultrasonographic finding: other actinomycotic nodes in the right liver lobe

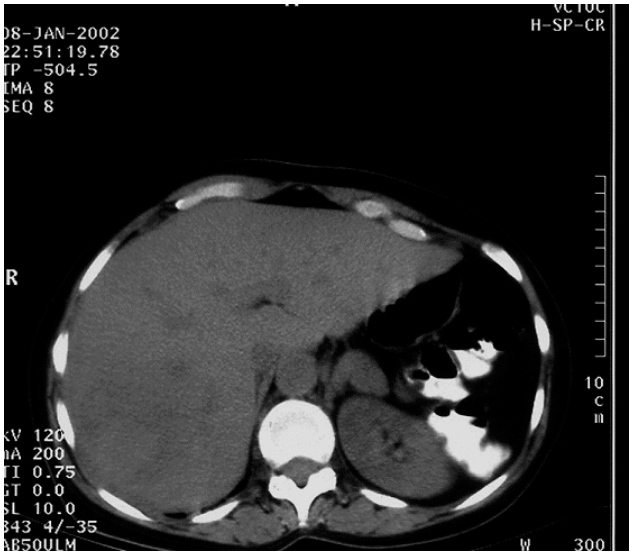


Fig. 3 – Abdominal computed tomography scan showed several liver focal leasions

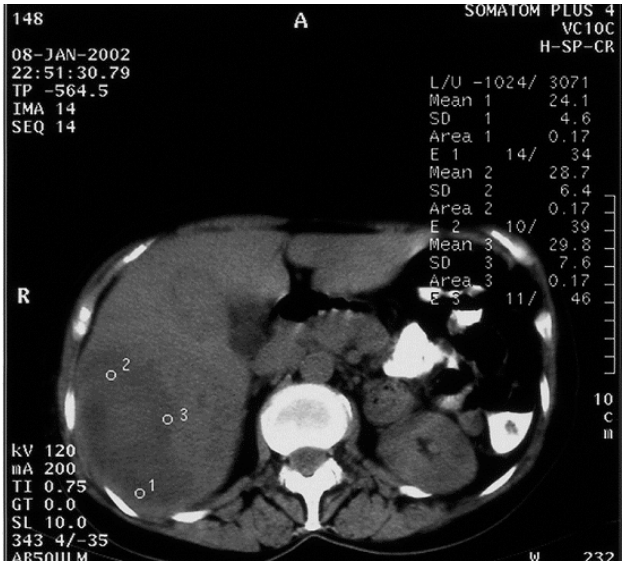


Fig. 4 – Abdominal computed tomography scan revealed the largest focal lesion in the right liver lobe

Chest radiography showed a mild elevation of both hemidiaphragms without any changes in the lung parenchyma. There was the right pleural effusion. The patient underwent percutaneous aspiration of the right pleura, yielding 300 mL simple fluid, bacteriologically sterile and contained no malignant cells. Ultrasound examination of the heart showed pericardial effusion with fibrin deposition in pericardial walls.

Initial radiologic diagnosis was hepatic metastases of unknown etiology and subsequently exploratory laparatomy was indicated. The operation was scheduled for February 11 2002.

Intraoperatively, there were inflammatory colonic wall thicknness adhered to liver pseudotumor in the segment VI, without any tumor mass in the colon. In addition, two hepatic pseudotumors were found in the segment VII and in a part of the segment VIII. Within the largest tumor there was greenish putrid content and in the smaller ones yellow, hard, vaguely defined infiltrates. The content of the largest pseudotumor was bacteriologically sterile with no malignant cells. The affected liver segments were resected.

Histopathologic examination confirmed inflammatory pseudotumor with the areas of focal suppuration. Solid highly cellular areas consisted of myofibroblastic cells and polymorphous lymphoid infiltrates with the domination of plasma cells, lymphocytes and histiocytes (Figure 5a) with a confirmed polytypical immunophenotypes of lymphoid cells. Within a part of abscess, changes were noticed, so-called "sulphur granules", which histochemically resembled actinomyces (Figure 5b).

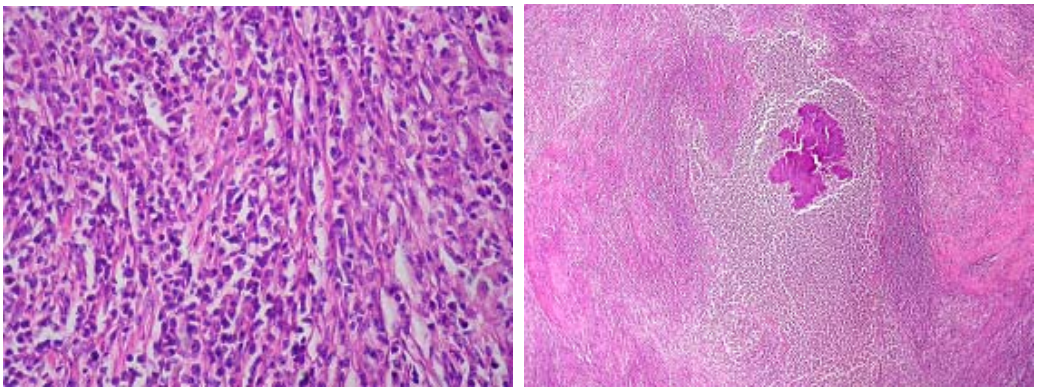
Discussion

Actinomyces Israeli, gram-positive anaerobic bacteria combined with other types of *actinomyces* is a cause of chronic suppurative and granulomatous infective disease [1]. Liver actinomycosis spreads directly from infected focus after abdominal trauma, gut perforation, or by hematogenous dissemination through hepatic arteries or portal vein [12].

Hepatic actinomycosis is usually solitary, and is reported as single liver abscess in 70% of cases [13]. It is characterized by solitary abscess collection with central necrosis surrounded by fibrin tissue and granulations, occurring more frequently in the right liver lobe [14]. Hepatic actinomycosis has been associated with a wide spectrum of clinical manifestations and has a highly variable clinical expression. Some authors described liver abscess due to hepatic actinomycosis following recurrent retrograde cholangitis and *actinomyces* septicemia [2, 4].

In addition, a diagnostic dilemma is even higher due to widespread radiographic presentations. It has been noted that actinomycotic abscesses have no radiographic differences compared with those of other causes [15]. This radiographic-diagnostic dilemma is important consideration in such clinical scenario.

Thus, the final diagnosis is made on patohystology which is the gold standard to confirm or exclude the diagnosis of actinomycosis. Unlike amebic abscesses and echinococcal cysts of the liver, sulphur granules found in purulent exudate give positive reaction by gram and silver methenamine confirming actinomycosis [16].



5a 5b

Fig. 5a – Massive inflammatory pseudotumor proliferation around abscess foci with cellular dominantly plasmocytic infiltration (hematoxylin-eosin, 112×).
Fig. 5b – Area of abscess with sulphur granules showing actinomycotic aggregates (hematoxylin-eosin, 64×).

The treatment with benzylpenicillin 10 million units daily intravenously started on February 17th 2002 , and was continued for 6 weeks and oral amoxycillin 500 mg/three times daily, for 6 months. Following the operation, the patient remained in excellent condition without any evidence of recurrence. Two weeks after the surgery, clinical findings, laboratory analysis and abdominal ultrasonography were within the normal ranges and the patient was discharged. Follow-up continued and five years after discharge, the patient was still doing well clinically.

Abdominal actinomycosis usually occurs after trauma, perforation of gut, or surgical manipulation of gastrointestinal tract [9].

In IHA propagation towards diaphragm and lungs is supported by proteolyitic enzyme exuded by *actinomyces* [6, 16]. *Actinomyces* penetrate pleural space through lymph vessels or pleuro-peritoneal communications on diaphragm [17].

As our patient did not have any history of abdominal surgery or trauma, the origin of infection was unknown. We also confirmed propagation towards diaphragm with pericardial and right pleural effusion in our case.

Radiographically, solid tumor with nonspecific peripheral retention of contrast is not typical for IHA [14]. There is incongruity between ultrasonographic and CT findings of IHA. Ultrasonographic finding identifies inflammatory tumor or abscess collection as single hyperechogenous lesion, whereas CT finding show hypodense multilocular lesions. In some cases multiple inflammatory lesions have radiographic features of an echinococcal cyst [18].

However, as a main diagnostic problem remains differentiation from metastatic liver disease including ovarian, colon etc.

Treatment of IHA is a combination of surgical removal of inflammatory lesion and antibiotic therapy. The treatment of choice for actinomycotic infections is penicillin [19, 20]. Microbes other than *Actinomyces* are frequently isolated from cultures when combined antibiotic therapy should be considered. Alternative antibiotics for penicillin allergic patients include tetracycline, rifampicin, erythromycin, clindamycin, cephalothin, and chloramphenicol [16, 22]. In most patients a 3-month therapy is considered to have very good effect. The intravenous route should be used for the first 2 - 6 weeks followed by oral therapy for 3 - 12 months thereafter [21].

Conclusion

Actinomycosis may mimic metastatic liver disease. A timely diagnosis as well as a combined surgical and antibiotic therapy is necessary in the treatment of patients with a primary disease and prevention of complications.

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