

Solitary Liver Abscess due to *Listeria monocytogenes*: Case Report of a Rare Clinical Presentation

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Abstract

Listeria monocytogenes is a gram-positive bacillus that affects humans as a result of a food-borne transmission. Generally, infection caused by this agent present as meningitis or primary bacteremia, however it can also affect the liver, causing life-threatening abscesses.

We present the case of a solitary liver abscess caused by *Listeria monocytogenes* in a 62 year-old diabetic male and a review of the available literature on hepatic manifestations caused by this agent.

Keywords: *Listeria monocytogenes*; Liver; Abscess; Diabetes

Introduction

Listeria monocytogenes is a ubiquitous, motile, rapidly growing, gram-positive bacillus with potential to cause severe and fatal infection. Infections caused by this agent result from food-borne transmission and usually affect the extremes of age, pregnant woman, immunocompromised patients and diabetics [1,2]. Although it generally presents as neuromeningeal infection or as primary bacteremia, uncommon cases of focal listeriosis have been described in the literature, such as endocarditis, hepatitis, pneumonitis, peritonitis, osteomyelitis or endophthalmitis [3].

We present the case of a solitary liver abscess due to *Listeria monocytogenes* in a type II diabetic 62 year-old male.

Case Report

A 62 year-old, obese male with type II diabetes mellitus was admitted to our emergency department with fever and right upper quadrant abdominal pain for the last three days, associated with polydipsia and polyuria.

Physical examination revealed fever (38.5°C), hypertension (141/73 mmHg) and tachycardia (105 bpm). He presented with pallor and right upper quadrant abdominal tenderness. Bowel sounds were normal and there was no evidence of hepatomegaly or ascites. No rash or jaundice was evident.

Blood tests showed hemoglobin level of 14.6 g/dL, leukocyte count of 12.43 x 10³ µL (N 93.9%), C-reactive protein of 28.3 mg/dL, glucose 551 mg/dL, alkaline phosphatase 217 U/L, gamma glutamyl transferase 177 U/L, aspartate aminotransferase 165 U/L and alanine aminotransferase 98 U/L.

Abdominal ultrasound revealed a heterogeneous mass with a diameter of 7 cm in the right lobe of the liver (Figure 1). A CT-scan was then performed and the presence of a peripherally enhancing, multi-loculated predominantly cystic mass with 7cm, compatible with abscess, localized in the segment V of the liver was confirmed (Figure 2). The patient underwent a CT-guided percutaneous drainage of the abscess, under local anesthesia. A percutaneous drain was left in the abscess cavity.

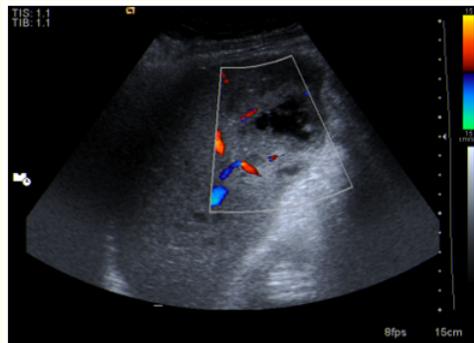


Figure 1: Abdominal ultrasound revealing the presence of a heterogeneous liquid mass, with thick walls and peripheral vascularization.

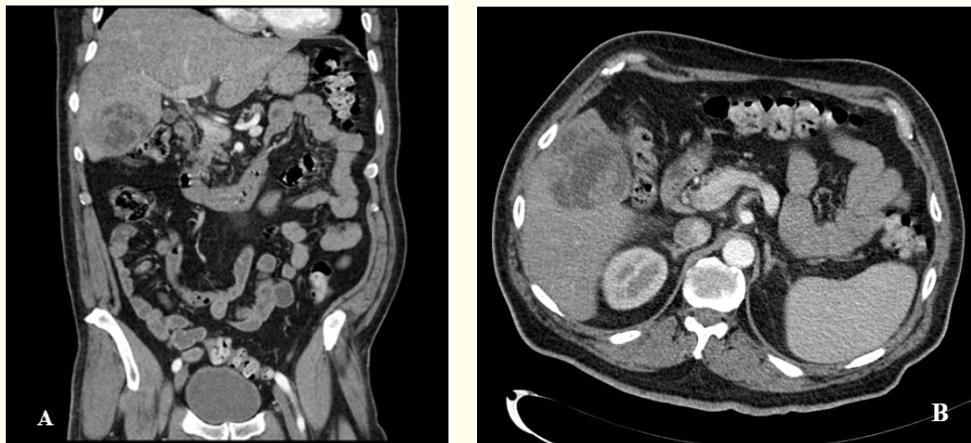


Figure 2A and 2B: Abdominal CT-scan revealing the presence of a multi-loculated 7cm abscess, located in segment 5 of the liver.

Empirical treatment with piperacillin/tazobactam (4/0.5 g IV every 8h) was instituted. Three days later a culture of the drained pus revealed *Listeria monocytogenes* and the previous antibiotics were replaced by ampicillin (12 g/day) and gentamicin (3 mg/kg/day) intravenously for 4 weeks, according to the antibiogram.

During the following days the patient's clinical condition progressively improved as he was without fever or symptoms. Repeated liver ultrasonography showed a continuous reduction of the liver abscess. Approximately 1 month after the initial diagnosis, the patient was discharged and completed an additional 2 weeks antibiotic treatment with oral amoxicillin clavulanic acid (1.5 g/day).

Three months reevaluation showed a complete clinical recovery as all lab tests had returned to normal and ultrasound investigation was normal.

Discussion

Listeria monocytogenes is a ubiquitous, gram-positive bacillus. It is an occasional contaminant in products such as vegetables, fish, meat and in unprocessed food (cheese, unpasteurized milk), even when stored at refrigerator temperatures [3-5]. Although rare, listeri-

osis is of public health concern because of its high fatality rates (20 - 30%) and the potential to cause either large outbreaks or sporadic infection, specially in the elderly, pregnant woman, immunocompromised and diabetic patients [6].

Generally listeriosis presents as meningitis and primary bacteremia, however cases of focal disease have been described, either in the form of organic infection (endocarditis, hepatitis, pneumonitis) or as an abscess (brain, liver, perianal) [1-3,6].

Listeria monocytogenes has a well know propensity to invade the liver in animals and in neonatal humans. Indeed, the first name proposed for this microorganism was *Listerella hepatolytica* in recognition of his capacity to cause hepatic necrosis in animals [1,7]. However, reports of liver involvement due to listeriosis in adults are rare. In 1998, Brönnimann published a case report and literature review where only 7 other cases of solitary liver abscess due to *Listeria monocytogenes* were found since 1972, most of them reported in the ninety's [1]. Few other cases were described since then, mainly because of the efforts taken by food processors and regulatory agencies to aggressively control *Listeria monocytogenes* in the high risk foods, what led to significant decreases in the incidence of sporadic listeriosis [5,8].

The cause of liver involvement in adults with listeriosis remains unclear. Reviews on the pathogenesis and immune responses suggests that since *Listeria monocytogenes* infection develops after enteric colonization, blood stream and portal bacteremia could represent the origin of seeding in the liver [1,9].

Three patterns of liver infection have been described: solitary liver abscess, multiple liver abscesses and acute hepatitis. All the cases of solitary abscesses found in the literature were in patients with a prior history of a non-insulin-dependent type II diabetes mellitus and with a median age at presentation of 62 years, similar the case presented. The reason why these patients have a tendency to form liver abscesses remains unknown [1,5,10].

Generally, patients have a good prognosis as long as prompt diagnosis, drainage and long-term intravenous antibiotic treatment are instituted. All previous reports suggest using an association between bactericidal and bacteriostatic agents, since they confer a synergistic effect. Penicillin or ampicillin are the preferred agents, and should be used in addition to an aminoglycoside, such as gentamicin. For those who are intolerant to penicillins, trimethoprim-sulfamethoxazole as a single agent is the best alternative [9,10].

Conclusion

In our case, the patient started empirical piperacillin/tazobactam that was then replaced for ampicillin in association with gentamicin, according to the antibiogram results. As recommended in the literature he completed a 4 weeks cycle of intravenous antibiotics, followed by 2 weeks of amoxicillin clavulanic acid with a significant clinical and imagiologic improvement and with no signs of relapse in the first year of follow-up.

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