

[CASE REPORT]

Huge Amoebic Liver Abscess in the Left Lobe Treated by Oral Administration of Metronidazole

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Abstract:

A man in his 60s visited a clinic with chief complaints of a fever and general malaise. Suspecting a liver abscess in the left lobe with infiltration into the subcutaneous fat tissue under the rectus abdominis muscle based on computed tomography findings, we performed fine-needle aspiration. An amoebic liver abscess was diagnosed. Remission was achieved by the oral administration of metronidazole alone without placement of a drainage tube. The results obtained in this case suggest that the first line of treatment should be a non-invasive approach with oral administration alone. Invasive intervention should then be considered depending on subsequent progress.

Key words: amoebic liver abscess, metronidazole, percutaneous drainage

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Introduction

Amoebic liver abscess (ALA), the most common extra-intestinal form of amoebiasis, accounts for up to 37% of cases. Because the efficacy of metronidazole (MNZ) for ALA is extremely high (90%), the first choice of treatment for ALA is the oral administration of MNZ (1, 2). Nevertheless, a high risk of perforation exists, particularly in cases with huge ALA in the left lobe of the liver, and perforation through the diaphragm can induce pericarditis. Therefore, interventional treatment, such as percutaneous drainage, is commonly performed in addition to the oral administration of MNZ. However, percutaneous puncture treatment carries a considerable risk as well.

We herein report a patient with a huge ALA in the left lobe with infiltration into the subcutaneous fat tissue under the rectus abdominis muscle for which remission was achieved by the oral administration of MNZ alone. We describe this case along with a literature review of the treatment methods used for ALA.

Case Report

A man in his 60s was admitted to our hospital for examination and treatment of a suspected liver abscess. He had complained of anorexia and weight loss for the previous four months. A mass was felt on touching the upper abdomen during the prior month. He visited a clinic because he had had a persistent fever and general malaise. Elevation of the inflammatory markers on a blood test and a 14-cm liver mass on computed tomography (CT) were observed. He was therefore referred to our hospital and admitted. He had a medical history of cerebral infarction, type 2 diabetes, hypertension, and dyslipidemia. He had smoked 20 cigarettes a day for 20 years until 40 years old. He had no history of alcohol consumption or homosexuality or enjoyment of adult entertainment. With respect to international travel, he had visited Hawaii in the U.S. with his family eight years earlier.

The physical findings on admission were as follows: body height 165 cm, body weight 57 kg, blood pressure 122/53 mmHg, pulse rate 109 beat/min, and body temperature

38.5°C. His heart and respiratory sounds were clear. A huge bulging mass was visible in the upper abdomen (Fig. 1) but with no tenderness on palpation. A clinical laboratory examination showed elevated inflammatory markers [WBC 10,800/ μ L, C-reactive protein (CRP) 26.5 mg/dL] and hepatic dysfunction [aspartate aminotransferase (AST) 44 U/L, alanine aminotransferase (ALT) 23 U/L, alkaline phosphatase (ALP) 861 U/L, γ -glutamyl transpeptidase (GTP)



Figure 1. Photograph of the patient's abdomen. A huge bulging mass was visible in the upper abdomen.

143 U/L]. The albumin concentration was low (1.8 g/dL). The patient tested negative for HB antigen, HIV antibody, and syphilis. Contrast-enhanced CT showed a 14-cm low-density mass with partial septum in the left liver lobe and mild contrast in the wall (Fig. 2a, b). Consequently, the patient was diagnosed with a liver abscess that had invaded not only the liver parenchyma but also the subcutaneous fat tissue under the rectus abdominis muscle. These findings suggested perforation within the abdominal wall because of the enlarged liver abscess.

Although treatment by drainage was considered, we chose to initiate conservative treatment because he had few abdominal symptoms and also because of the difficulty of percutaneous placement of a drainage tube through the liver. Because the patient had no history of homosexual behavior or international travel to arouse suspicion of ALA, the possibility of bacterial liver abscess was considered. Cefmetazole (CMZ), a broad-spectrum antibiotic, was administered intravenously. Nevertheless, elevated inflammatory markers and fever persisted after CMZ administration. Therefore, to identify the causative microorganism, we performed diagnostic fine-needle aspiration using a 21-gauge needle on day 5 of admission. A small amount of odorless anchovy-paste-like fluid was aspirated. Although no bacteria or amoebic proto-

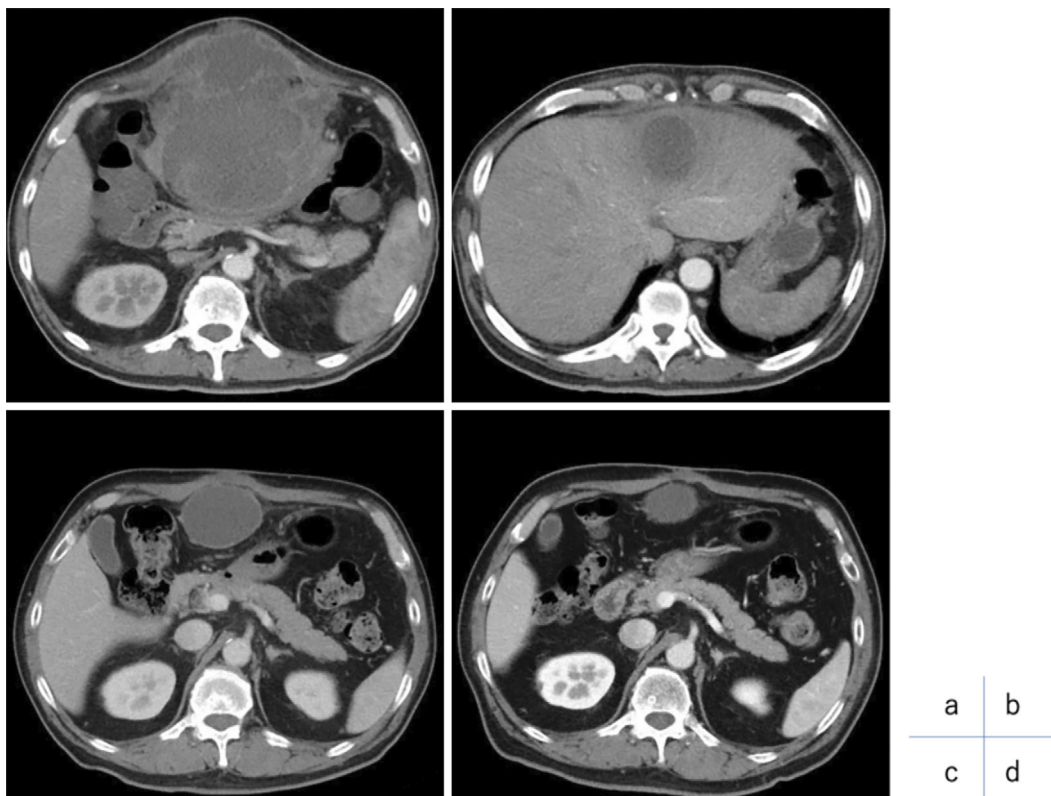


Figure 2. Clinical course on CT. (a, b) Abdominal contrast-enhanced CT scan on admission. A liver abscess with a maximum diameter of 14 cm was visible in the left lobe of the liver. The abscess reached not only the liver parenchyma but also the subcutaneous fat tissue below the rectus abdominis muscle. (c) Abdominal CT scan with contrast at 5 months after the onset (approximately 4.5 months after termination of MNZ administration). The abscess had been reduced. No lesion existed within the abdominal wall. (d) Abdominal CT scan with contrast at 12 months after the onset. No exacerbation of the abscess is apparent. The only finding is of the liver cyst.

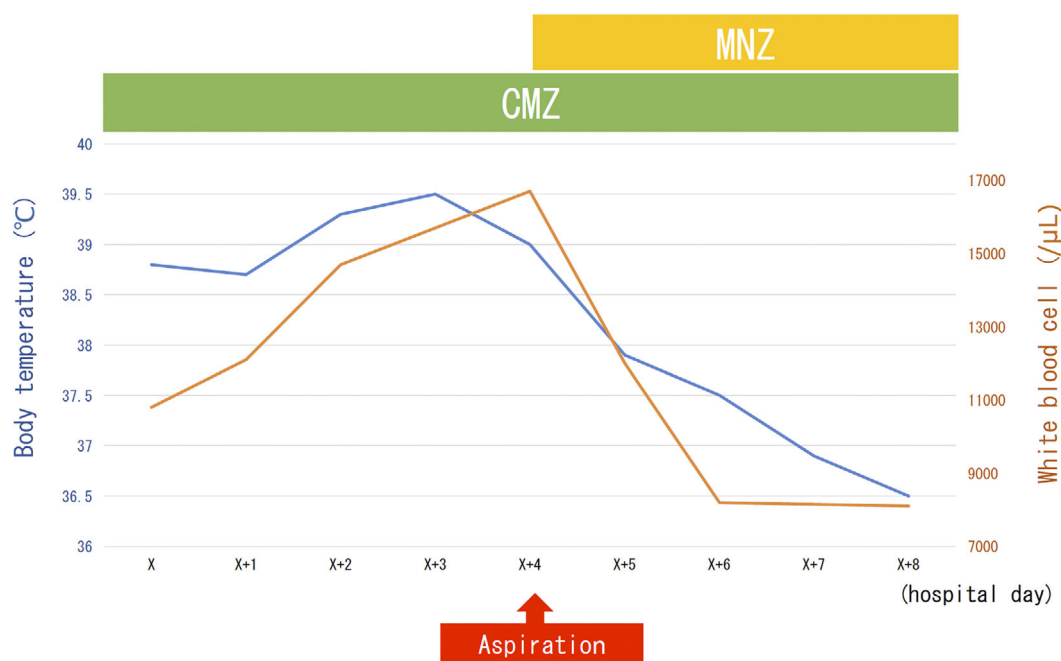


Figure 3. Clinical course of the patient's condition. CMZ: cefmetazole, MNZ: metronidazole

zoa were found from a bacteriological test by a rapid microscopic examination, we suspected ALA based on the characteristics of the drained fluid. Therefore, we initiated oral MNZ administration on the day of aspiration.

Subsequently, his temperature declined rapidly, and the blood concentrations of the inflammatory markers decreased (Fig. 3). On day 10 after admission, colonoscopy was performed to identify the infection route. A punched-out ulcer was visible in the ascending colon, but a biopsy revealed no amoebic polypide. On day 15 after admission, his serum was found to be positive for anti-amoebic antibody. Consequently, the final diagnosis was ALA. After confirming a lack of amoebic DNA in the stool and improved levels of inflammatory markers, MNZ administration was terminated on day 16 of admission.

Abdominal contrast-enhanced CT at approximately 5 months after completion of the treatment revealed a reduction in the size of the liver abscess to 4 cm (Fig. 2c). Subsequently, abdominal contrast-enhanced CT at approximately 12 months after completion of the treatment showed no exacerbation of the abscess, which was confirmed as a liver cyst by observation (Fig. 2d).

Discussion

In general, percutaneous drainage combined with antimicrobial administration is the commonly used treatment for bacterial liver abscess. However, the oral administration of MNZ (750 mg orally 3 times a day for 7-10 days) is the first choice of treatment for ALA. Its effectiveness can usually be verified within 72-96 hours after administration; drainage is not necessary for most patients (1, 2). The indication for drainage in ALA varies depending on the size and

localization as well as the patient's condition. Consequently, the indication for drainage remains controversial.

The recommended first line of treatment in patients with ruptured ALA is percutaneous drainage (1, 3). In patients with unruptured ALA, conservative treatment is commonly recommended. Pritt et al. reported that percutaneous drainage for ALAs is usually not recommended because of the risks of spillage of gene contents and bacterial superinfection (4). A randomized controlled trial in which patients with ALA were divided into two groups—one treated with MNZ and the other with MNZ plus fine-needle aspiration drainage—showed that fine-needle aspiration drainage was useful for relieving symptoms in cases with abdominal pain. Nevertheless, no marked differences in the effectiveness, length of hospital stay, or time for the patient to become afebrile were found (5). Salim et al. (6) reported that drainage by percutaneous fine-needle aspiration was more effective than drainage by the percutaneous placement of a tube because it leads to shorter hospital stays and earlier resolution of symptoms. These studies show that conservative treatment with MNZ is preferred in cases of unruptured abscess, although fine-needle aspiration drainage can be performed to relieve symptoms, and placement of a percutaneous drain is not necessary. However, a systematic review of the treatment for ALA by Kumar et al. (7) found that percutaneous catheter drainage was better than X for treating large ALA. Miyauchi et al. (8) and Gomersall et al. (9) reported a case of rapidly growing ALA in the left lobe of the liver. After they perforated the heart to induce cardiac tamponade, they performed urgent surgical drainage. They recommended early intervention for large ALA.

Based on the reports above, percutaneous catheter drainage for ALA is also regarded as an appropriate indication

for cases with perforation of the lung and heart or for cases with a high risk of lung abscess and pericarditis (10). In addition, drainage is recommended for cases that do not respond to MNZ administration initially and for those in which the general condition of the patient deteriorates rapidly (2).

The present patient had a large ALA that developed in the left lobe of the liver and perforated the abdominal wall. Based on the indication for drainage in the reports described above, percutaneous drainage (placement of catheter or fine-needle aspiration drainage) was considered for the treatment of the present case. However, improvement was observed with the oral administration of MNZ alone. Because percutaneous drainage carries a considerable risk, we consider MNZ administration alone as an appropriate first-line treatment for ALA with no organic complications because of direct infiltration (e.g. pulmonary abscess, pericarditis, mediastinal abscess), even in cases of minor perforation/penetration into other organs. Percutaneous drainage should be considered if no improvement is apparent within 72-96 hours. Kale et al. (11) reported that large-diameter ALA might not respond to MNZ treatment or puncture drainage for each stage, depending on safe and effective progress.

For the present case, we administered the antimicrobial cephem initially. However, no improvement was noted. Therefore, we performed diagnostic fine-needle aspiration to identify the causative bacteria of the liver abscess. Neill et al. (12) reported difficulty diagnosing ALA based solely on clinical and radiological characteristics. In addition, although a serological diagnosis has been shown to have high diagnostic accuracy (amoebic serology has high sensitivity [$>94\%$] and high specificity [$>95\%$]), the possibility of false-negative results in the early stages (7-10 days) cannot be denied (1). Consequently, obtaining a confirmed diagnosis at an early stage is difficult. Therefore, using broad-spectrum antimicrobials initially and then performing diagnostic fine-needle aspiration to confirm the characteristics of the fluid of abscess in cases with no response to antimicrobials is also recommended (1, 2). The typical drainage fluid in ALA resembles anchovy paste, a finding similar to that in the present case. Indeed, this diagnosis was based on the fluid characteristics. Consequently, the case was diagnosed as ALA, and the administration of MNZ was initiated. As reported in an earlier study (13), diagnostic fine-needle aspiration for liver abscess is useful for diagnosing cases where the causative bacteria cannot be identified.

In the present case, the route of infection could not be identified. In addition, ALA responded to the oral administration of MNZ, inflammatory markers improved, and no signs of recurrence were detected at one year after treatment completion. Nevertheless, CT showed a remaining cystic structure. This suggests that the existing liver cyst might

have been infected with amoeba, which caused the formation of an abscess. An epidemiologic survey has revealed that the risk of developing ALA in asymptomatic cyst carriers is not necessarily high (14). When an asymptomatic cyst carrier is regarded as having developed a liver abscess because of infection within the cyst, ALA should also be considered as a differential diagnosis.

Based on the present findings, in cases of huge liver abscesses where ALA is considered as a differential diagnosis, early MNZ administration based on the fluid characteristics noted on diagnostic fine-needle aspiration can be an effective treatment itself, without percutaneous drainage, even if the abscess has perforated the abdominal wall.

The authors state that they have no Conflict of Interest (COI).

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