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Case Report

Surgical treatment of extraintestinal amoebiasis with development of right lobe liver abscess: case study

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ABSTRACT

The treatment of extraintestinal amoebiasis is a major surgical concern given the low prevalence in the Republic of Belarus and consequently difficult diagnosis. In this article, we present our own experience with the surgical treatment of a patient with an amoebic liver abscess. The patient underwent laparoscopy guided drainage of the abscess of the right lobe of the liver according to the technique developed in the clinic. A puncture-drainage system consisting of a Foley catheter and a guide stylet was used. The patient was discharged in satisfactory condition for outpatient treatment and observation by a surgeon, a general practitioner, and an infectious disease specialist. There were no repeated visits or admissions. The presented case emphasizes the importance of combined treatment of amoebic liver abscesses using percutaneous drainage and conservative therapy with amoebicidal drugs such as metronidazole.

Keywords: Amoebiasis, Amoebic liver abscess, Percutaneous liver abscess drainage

INTRODUCTION

Entamoeba histolytica, a protozoan parasite, is the causative agent of amoebiasis and is transmitted via the fecal-oral route. Although amoebiasis is reported all over the world, it is prevalent in underdeveloped nations due to inadequate sanitation and fecal contamination of water supplies.[1] Endemic foci of pathology with high incidence rates are seen in India, Africa, Mexico and parts of Central and South America.[2] This is a fairly rare disease for the Republic of Belarus. Based on clinical presentation, amoebiasis can be classified into intestinal (dysentery or bloody diarrhea, fulminating colitis, amoebic appendicitis, amoeboma of the colon) and extraintestinal forms.[3] Amoebic liver abscess is the most common form of extraintestinal amoebiasis and is generally detected in men aged 18-50 years.[2] Other risk factors include alcohol abuse, diabetes mellitus, immunocompromised states, and liver cirrhosis.[4] About 80% of the patients present with a history of dull and aching pain localized in the right upper quadrant of the abdominal cavity, accompanied by fever. Associated gastrointestinal symptoms such as abdominal cramps or distention, nausea, vomiting, diarrhea, and constipation are observed in 10-35% of patients. Hepatomegaly with hepatic tenderness are common physical examination findings.[2] To establish a diagnosis, it is essential to conduct both imaging and serological testing. Imaging tests provide visualization of liver abscesses, which are usually single or, less often, multiple, but cannot be differentiated from abscesses of other etiologies. Ultrasonography reveals a well-defined hypoechoic mass. To confirm the etiology, serological testing is done. Although E. histolytica antibodies may be negative in the first week of infection, they become positive thereafter in 99% of the patients. Despite the likelihood of stool microscopy being often negative, it is beneficial in establishing a diagnosis if proven otherwise.[5] The primary treatment of amoebic liver abscesses involves the administration of oral amoebicidal drugs. Percutaneous

needle aspiration or catheter drainage may be employed if the patient is unresponsive to medical management.[6] The treatment of extraintestinal amoebiasis is a major surgical concern given the low prevalence in the Republic of Belarus and consequently difficult diagnosis.

CASE REPORT

At the Grodno University Clinic (GUC), Grodno, Belarus, between 2021 and 2022, extraintestinal amoebiasis was diagnosed in 4 patients. Among these, in two cases with the established diagnosis of "tumor of the left lobe of the liver," a left-sided hemihepatectomy was performed in the department of oncology. No cancer cells were found, and a histopathological diagnosis was made: chronic liver abscess of amoebic etiology. Two other patients underwent percutaneous drainage of the abscess of the right lobe of the liver under laparoscopic guidance. In this article, we present our own experience with the surgical treatment of a patient with an amoebic liver abscess.

Our patient initially presented with complaints of fever and generalized weakness. Over the course of 4 days, the patient's condition deteriorated with an increase in weakness and shortness of breath. The patient was admitted to the city hospital, where an ultrasound examination was performed and an abscess of the right lobe of the liver was suspected. The patient was subsequently transferred to the intensive care department of the Grodno University Clinic for further examination and treatment. The main diagnosis upon admission: abscess of the right lobe of the liver, complicated by multiple organ failure syndrome, community-acquired bilateral pneumonia with second-degree respiratory failure. Concomitant diagnosis: thrombocytopenia, arterial hypertension, first degree obesity. On examination, the patient's health condition was serious, with complaints of generalized weakness and shortness of breath with little physical exertion. The abdomen was soft and painless on palpation. Numerous laboratory and instrumental diagnostic tests were performed, including an X-ray and CT of the chest and an MRI of the abdominal cavity.

The results of the patient's blood work are as follows: total blood bilirubin 35.8 µmol/l, direct bilirubin-15.8 µmol/l, alkaline phosphatase-169 U/l, aspartate aminotransferase 80 U/l, alanine aminotransferase 140 U/l, total leucocyte count 16×10×9 /l. CT of the chest revealed areas of compressed parenchyma with uneven contours in the dorsal parts of the lower lobes of both lungs. The trachea and large bronchi were without visible narrowing, and the roots of the lungs were not expanded. In the precordial tissue on the right, there were single lymph nodes measuring up to 9 mm. Free fluid was detected in the right and left pleural cavities, 22 mm and 18 mm thick, respectively. Furthermore, a pericardial effusion of 11 mm along the anterior contour was identified. MRI (Figure 1) of the abdominal cavity revealed regular shape of the liver, with the right lobe along the midclavicular line measuring 196 mm and the left lobe measuring 100 mm.

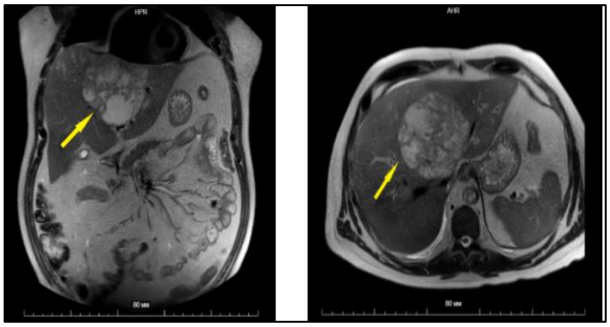

Figure 1: Abdominal MRI, multichambered mass with indistinct contours is detected in the right lobe of the liver (yellow arrow).

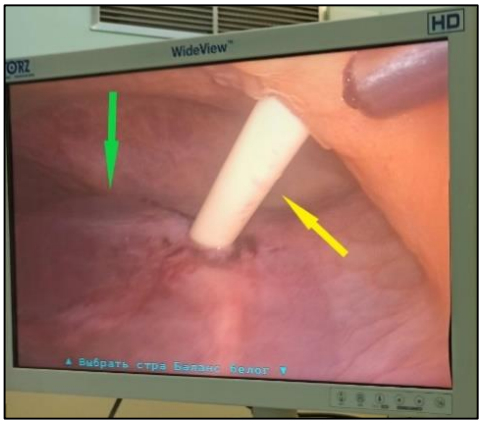

Figure 2: Laparoscopy guided drainage of right lobe liver abscess. The image shows the right lobe of the liver (green arrow) and the Foley catheter (yellow arrow).

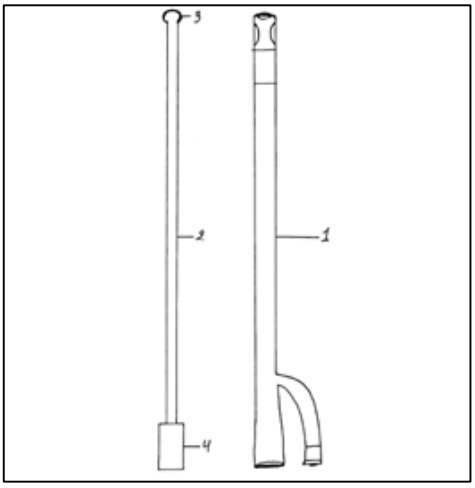

Figure 3: Puncture-drainage system. 1-Foley catheter, 2-guide stylet, 3-club-shaped rounded thickening, 4-handle holder.

A multiloculated mass with indistinct contours and a heterogeneous fluid component measuring approximately 111×95×97 mm in size was detected in segments 2 and 4A. Intrahepatic bile ducts were not dilated; the gallbladder had a width of 17 mm with clear contours and uniform wall thickness, no formations suspicious for stones were found in it.

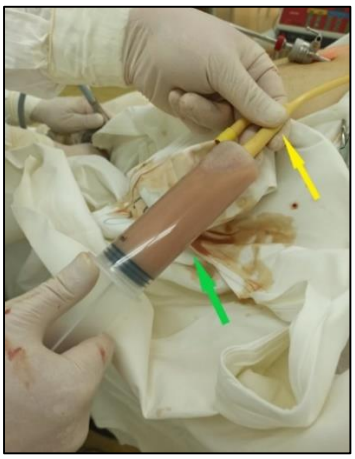

Figure 4: Drainage of right lobe liver abscess. Pus contents from the abscess cavity (green arrow). Foley's catheter (yellow arrow).

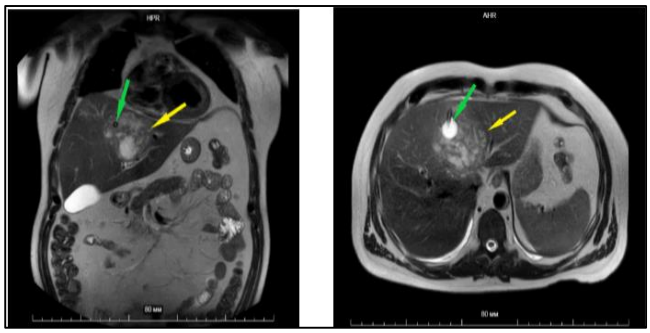

Figure 5: Abdominal MRI (control on the 6th day after surgery). Abscess reduced in size (yellow arrow), drainage tube of catheter with balloon can be seen in its cavity (green arrows).

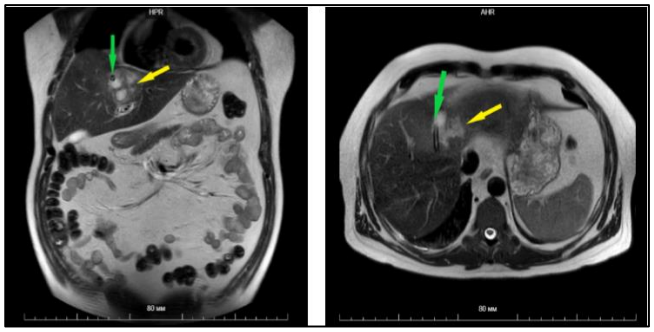

Figure 6: Abdominal MRI (control on the 14th day after surgery). The abscess has significantly decreased in size (yellow arrow), there is a Foley catheter drainage tube in its cavity (green arrow).

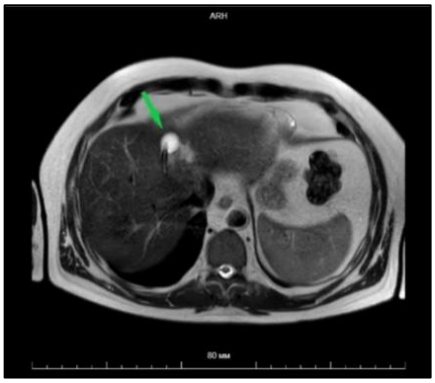

Figure 7: Abdominal MRI (final control). The image shows the drainage tube (green arrow), the abscess cavity is completely absent.

Treatment was initiated with levofloxacin (500 mg orally every 12 hours), metronidazole (100 ml intravenous drip every 8 hours), and metronidazole (500 mg orally every 12 hours) after consultation with an infectious disease specialist. It was also recommended to conduct microscopic examinations of sputum and stool specimens, the results of which demonstrated cysts of *E. histolytica*. The patient's condition continued to deteriorate despite adequate antibiotic therapy, and as the laboratory and MRI findings were consistent with an amoebic liver abscess, the patient underwent laparoscopy guided drainage of the abscess of the right lobe of the liver, according to the technique developed in the clinic (Figure 2).

In our approach, we used a puncture-drainage system consisting of a Foley catheter No. 30 on the Charrière scale and a stylet-conductor made of medical steel measuring 5 mm in diameter, which had a club-shaped prominence at the distal end measuring 7 mm in diameter and a handle-holder at the proximal end (Figure 3).

During inspection, along the diaphragmatic surface of the liver in the area of the falciform ligament, at the border of the right and left lobes, a softening zone of the liver with a whitish color was visualized more posteriorly. When performing drainage, the guide stylet was taken by the holder handle and inserted into the lumen of the Foley catheter, which gave it the rigidity necessary for drainage. An additional incision was made on the skin in the projection of the intended puncture to insert a trocar, and then a trocar puncture of the abdominal wall was performed. Through the resulting hole, a puncture-drainage system was introduced into the abdominal cavity, and, under the visual control of a laparoscope, a puncture of the abscess was performed. The stylet-guide was removed, after which the balloon on the Foley catheter was inflated and tightened to close the hole of the abscess in order to seal and prevent leakage of fluid into the abdominal cavity. About 100 ml of pus was evacuated, which was sent for bacterial culture and microscopy (Figure 4). The abscess cavity was repeatedly washed until the returns were clear and flushed with a

metronidazole solution. Drains were then placed above and below the hepatic spaces on the right. Microscopic examination of the contents of the liver abscess revealed vegetative forms and Entamoeba cysts.

In the postoperative period, the patient's general condition significantly improved; the patient was hemodynamically stable with no fever, the abdomen was symmetrical, not distended, soft on palpation, slightly painful on palpation in the area of postoperative wounds, and the drainage site. According to the follow-up MRI of the abdominal cavity, which was done on the 6th day after surgical treatment, the size of the abscess in the right lobe decreased to 97×80 mm, and an accumulation of fluid with limited diffusion along the periphery of 37×27 mm remained in the lower part. There was a decrease in pneumatization in the posterior-basal sections of both lungs. There was also free fluid up to 12 mm in the right pleural cavity and up to 8 mm in the left pleural cavity (Figure 5).

Due to improvements in the patient's condition, the patient was transferred from the intensive care department to the department of surgical diseases, where conservative therapy was continued: metronidazole 500 mg IV 4 times a day, metronidazole 750 mg orally 3 times a day, linezolid 600 mg IV 2 times a day, omeprazole 20 mg orally once a day, enoxaparin 0.4 ml subcutaneously in the evening. On the 14th day after the surgery, the patient underwent an MRI of the abdominal cavity again, according to which the abscess in the right lobe of the liver decreased to a size of 55×55 mm. The drainage tube was visualized in the lumen of the abscess cavity (Figure 6).

The biochemical blood tests showed a decrease in total bilirubin from 35.8 to 13.1 µmol/l; aspartate aminotransferase from 80 to 31 U/l; alanine aminotransferase from 140 to 41 U/l (in comparison with the data of biochemical blood tests taken upon admission). The leukocyte level was within normal limits. Taking into account the positive outcome of the therapy, on the 23rd day, the patient was discharged for outpatient treatment and observation by a surgeon, a general practitioner, and an infectious disease specialist. At the outpatient stage, on the 29th day after the drainage tube was placed, a follow-up MRI of the abdominal cavity was performed (Figure 7), according to which the abscess cavity was completely absent in the liver tissue and a Foley catheter was visualized. The drainage tube was then removed. There were no repeated visits or admissions of the patient.

DISCUSSION

Amoebiasis caused by Entamoeba histolytica is a ubiquitous infection and accounts for an estimated 40,000 to 110,000 deaths annually.[1] Amoebic liver abscesses are formed when trophozoites of E. histolytica enter the portal venous system and reach the liver.[4] The most common clinical manifestations of amoebic liver abscess are abdominal pain localized to the right hypochondriac region and hyperthermia. In some cases, nausea, vomiting, weight loss, jaundice, and pain radiating to the shoulder may be present.[7] Among the commonest complications of this infection is the rupture of abscesses, which can lead to purulent pericarditis, empyema, and peritonitis. Other complications may arise due to the liver's close proximity to the diaphragm, enabling contiguous spread, which results in inflammation of the diaphragm itself, lungs, and pleura. This can present in the form of pleuritis, atelectasis, pulmonary condensation and empyema, which may manifest as pain in the lower right ribs, dyspnea, and a non-productive cough. Although infrequent, it is possible to develop secondary bacterial infections, or sepsis. This is attributed to the impairment of the macrophage system within the hepatic sinusoids, which fail to destroy enterobacteria passing through the portal vein system. Consequently, this allows the bacteria to cause cellular destruction.[8]

Our patient presented with fever, generalized weakness and shortness of breath with little physical exertion. The diagnosis was established based on laboratory and MRI findings, and the patient was started on metronidazole and levofloxacin. Pharmacotherapy with metronidazole is considered to be the mainstay of treatment for amoebic liver abscesses and is sufficient alone in more than 85% of the cases. Luminal cysticidal agents such as iodoquinol, paromomycin, or diloxanide furoate are administered following metronidazole therapy to eradicate intraluminal cysts, which can persist in 40-60% of patients. Percutaneous drainage is indicated for large abscesses at imminent risk of rupture, left lobe abscesses at risk of rupturing into the pericardium, or in cases of poor response to conservative therapy within 3-5 days of initiating treatment.[9] Both percutaneous needle aspiration (PNA) and percutaneous catheter drainage (PCD) are feasible options for treating single unilocular small abscesses <5 cm, but for abscesses >5 cm, PCD is the preferred treatment modality. The drainage approach for multiple or multilocular abscesses is determined on an individual basis, and the number, size, and accessibility to the abscess, practitioner experience, and patient comorbidities are taken into account.[10] Surgical intervention is necessary when conservative or percutaneous treatment fails, when there are large, multilocular, or dense content abscesses, or if complications like peritonitis occur.[11] A study by Ndong, Abdourahmane, et al. shows that laparoscopic drainage is a safer alternative for patients who require open surgery with lower rates of postoperative recurrences and zero mortality.[12]

In our case, inadequate response to conservative management necessitated drainage. The presented version of the operation expands the possibilities of treating liver abscesses. The use of the puncture-drainage system we offer helps eliminate the possibility of spontaneous migration of the catheter and subsequent leakage of fluid

into the abdominal cavity. As the puncture is made under visual control of a laparoscope, the presence of bleeding and bile leakage can be monitored. The distal part of the Foley catheter that was used has a cone shaped blunt end, which facilitates its penetration into the cavity of the abscess while minimizing the likelihood of bleeding and bile leakage due to deviation of the vascular structures and bile ducts during drainage. With this approach, it is also possible to place subhepatic and subdiaphragmatic drains if necessary. Additionally, less trauma is ensured as complex laparoscopic manipulations are not required.

A slight increase in the number of patients with extraintestinal amoebiasis in the Grodno region (4 cases between 2021 and 2022), may be associated with climate change leading to warmer temperatures in the Grodno region and Belarus as a whole, which is a favorable condition for the life of amoebae and promotes a more active reproduction in the external environment. Another factor that significantly influenced the occurrence of such an "outbreak" of morbidity may be the long-term impact of COVID-19 on the population, which led to a considerable disruption of the body's protective properties and lowered the threshold of resistance for this disease.[13]

CONCLUSION

The presented case emphasizes the importance of combined treatment of amoebic liver abscesses using percutaneous drainage and conservative therapy with amoebicidal drugs such as metronidazole. Our approach to drainage provided favorable outcomes; the patient was discharged in satisfactory condition for outpatient treatment, and complete abscess resolution was observed 29 days after the drainage tube was placed.

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REFERENCES

1. Zulfiqar H, Mathew G, Shawn H. Amebiasis. StatPearls. Treasure Island (FL): StatPearls Publishing. 2023. Available at: https://www.ncbi.nlm.nih.gov/books. Accessed on 3 June 2024.
2. Jackson-Akers JY, Prakash V, Oliver TI. Amebic liver abscess. StatPearls. Treasure Island (FL): StatPearls Publishing; 2023. Available at: https://www.ncbi.nlm.nih.gov/books/NBK430832. Accessed on 3 June 2024.
3. Espinosa-Cantellano M, Martínez-Palomo A. Pathogenesis of intestinal amebiasis: From molecules to disease. Clin Microbiol Rev. 2000;13(2):318-31.
4. Chaudhary S, Noor MT, Jain S, Kumar R, Thakur BS. Amoebic liver abscess: A report from central India. Trop Doct. 2016;46(1):12-5.
5. Anesi JA, Gluckman S. Amebic liver abscess. Clin Liver Dis (Hoboken). 2015;6(2):41-3.
6. Swaminathan V, O'Rourke J, Gupta R, Kiire CF. An unusual presentation of an amoebic liver abscess: The story of an unwanted souvenir. BMJ Case Rep. Published online 2013.
7. Tharmaratnam T, Kumanan T, Iskandar MA, et al. Entamoeba histolytica and amoebic liver abscess in northern Sri Lanka: A public health problem. Trop Med Health. 2020;1:48.
8. Maria Salles J, Alberto Moraes L, Costa Salles M. Hepatic Amebiasis. Brazilian J Infect Dis. 2003;7(2):96-110.
9. Wells CD, Arguedas M. Amebic Liver Abscess. South Med J. 2004;97(7):673-2.
10. Mahmoud A, Abuelazm M, Ahmed AAS, et al. Percutaneous catheter drainage versus needle aspiration for liver abscess management: an updated systematic review, meta-analysis, and meta-regression of randomized controlled trials. Ann Transl Med. 2023;11(5):190-9.
11. Telich-Tarriba JE, Parrao-Alcántara IJ, Montes-Hernández M, Vega-Pérez J. Drainage of amoebic liver abscess by single incision laparoscopic surgery. Report of a case. Cir Cir. 2015;83(4):329-33.
12. Ndong A, Tendeng JN, Diallo AC, Dieye A, Diao ML, Diallo S, et al. Efficacy of laparoscopic surgery in the treatment of hepatic abscess: A systematic review and meta-analysis. Ann Med Surg. 2022;75:103308.
13. Tsyrkunov VM, Prokopchik NI, Andrianova DS, Bogomazova NI, Fedosenko TI, Gaiduk AS, et al. Amoebiasis in the Grodno region: imported or endemic infection? Hepatol Gastroenterol. 2022;6(1):54-65.

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