Cryptococcal Liver Abscess: a Case Report of Successful Treatment with Amphotericin-B and Literature Review

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SUMMARY: Cryptococcus neoformans usually involves the central nervous system and the respiratory tract. We report a case of disseminated cryptococcosis with a liver abscess and meningoencephalitis in a patient with myelodysplastic syndrome. Computed tomography of the abdomen showed a 3-cm low-attenuated lesion in the left lobe of liver. Cultures from specimens of blood, the liver abscess, and the cerebrospinal fluid all yielded C. neoformans. The cryptococcal antigen titer for the serum and cerebral fluid were both 1:32. The patient was successfully treated with 1,335 mg of amphotericin-B followed by fluconazole. Most cryptococcal liver infections present as hepatitis, cholangitis, or microabscesses.

A 72-year-old female was admitted to hospital due to fever, headache, and poor appetite for 1 day before admission. The patient had a history of myelodysplastic syndrome with splenomegaly, and splenectomy had been performed 1 month prior to admission. On examination, the patient’s temperature was 38°C. Mild tenderness was found on deep palpation of the right upper abdominal quadrant. The patient had no meningeal signs. The leucocyte count was 18,260/μl with 26% neutrophils, 16% lymphocytes, 43% monocytes, 2% eosinophils, 2% basophils, 7% band neutrophils, and 3% myelocytes. The hemoglobin level was 7.8 g/dl, and the platelet count was 80,000/μl. The patient’s aspartate aminotransferase level was 61 IU/l, alanine aminotransferase was 66 IU/l, alkaline phosphatase was 191 IU/l, and the total bilirubin was 0.4 mg/dl. The antibody test for human immunodeficiency virus (HIV) was negative. Chest x-ray revealed small bilateral pleural effusions, which had been present in the computed tomography (CT) image captured 1 month prior to admission for the present liver condition. No other chest abnormalities were detected. Ultrasonographic examination of the liver disclosed a hypoechoic lesion with sepatation in the left hepatic lobe (Fig. 1B). A contrast-enhanced CT scan of the abdomen revealed a 3-cm low-attenuated lesion in the left lobe of the liver adjacent to the portal vein, and generalized high-attenuated abnormalities in the liver parenchyma and mild widening of the perportal space (Fig. 1A). Ultrasonic-guided percutaneous drainage was performed to treat the liver abscess. The cryptococcal antigen titer of the serum was 1:32. CT of the brain revealed no abnormal enhanced lesions in the brain parenchyma. The analysis of the cerebrospinal fluid revealed a leucocyte count of 209/μl with 94% lymphocytes, an erythrocyte count of 6/μl, a protein level of 204 mg/dl, and a glucose level of 59 mg/dl. The cryptococcal antigen titer of the cerebrospinal fluid was 1:32. Cultures from specimens of blood, the abscess, and the cerebrospinal fluid all yielded Cryptococcus neoformans.

Amphotericin B treatment at a dose of 0.6 mg/kg/day was initiated. The patient’s clinical condition improved after treatment. Ultrasonography of the liver performed 4 weeks after the initiation of treatment showed a reduction in the size of the liver abscess. Ultimately, the patient received a cumulative dose of 1,335 mg of amphotericin B after 7-week treatment, and the Cryptococcus antigen titer of the cerebrospinal fluid decreased to 1:2. The patient was discharged from the...
hospital, and was treated with fluconazole at a dosage of 200 mg daily for 7 weeks. Bone marrow biopsy performed during hospitalization showed myelodysplastic syndrome with a leukemoid reaction. The patient elected not to receive additional chemotherapy in order to avoid the side effects of such treatment. Two months later, the patient died of cerebral infarction in the emergency department.

Cryptococcal infections usually involve the central nervous system and respiratory tract. Depending on the patients’ immune status, cryptococcal infection can either be localized or disseminate to other organs via hematogenous spread. Previous studies report rates of hepatic cryptococcosis ranging from 1 to 13% of AIDS patients, as determined by autopsy or liver biopsy (1,2). Cryptococcal liver infection is rare in non-HIV-infected patients, and only 13 patients have been reported in 11 references; 10 of the 13 patients were males aged 7 to 73 years. The clinical manifestations of these cases were as follows: hepatic failure (two patients) (3); hepatitis (three patients) (4-6); diffuse microabscesses of the liver (two patients) (7); cirrhosis (one patient) (8); four cases of obstructive jaundice due to either cholangitis (three patients) (9-11) or cholecystitis (one patient) (12); and acute abdominal pain (one patient) (13). *C. neoformans* was isolated from the clinical specimens of eight patients, including specimens from abscesses, bile, blood, bone marrow, cerebrospinal fluid, gastric lavage, liver, lymph nodes, sputum, urine, and skin. It was clearly demonstrated that all eight patients with positive cultures had disseminated cryptococcal infection involving multiple organs. Six of the 13 patients were examined for culture from other sources and it usually occurs in patients with leukemia or lymphoma who have been treated by chemotherapy (16,17). Diffuse microabscesses are the most common feature of hepatic candidiasis (18). Cryptococcal liver infections tend to occur in compromised hosts such as those with rheumatoid arthritis, hyperimmunoglobulin M syndrome, Hodgkin’s disease, and patients post-heart transplantation. In our patient, the risk factors for developing cryptococcosis included myelodysplastic syndrome, splenectomy, and corticosteroid therapy. Most cryptococcal liver infections present as hepatitis, cholangitis, or microabscesses. The CT scan findings of cryptococcal liver abscess in the present case were indistinguishable from those of pyogenic liver abscesses. Reports of cryptococcal liver infection are too rare to elucidate characteristic clinical manifestations or features of radiological images. Hence, for immunocompromised hosts with hepatitis and cholangitis of unknown cause, an elevated serum cryptococcal antigen titer or a positive *C. neoformans* culture from other sources warrant the inclusion of cryptococcal liver infection in the differential diagnosis. Liver biopsy can provide a definitive diagnosis of cryptococcal liver infection, and the survival rate can potentially be improved by early diagnosis and the administration of antifungal agents.

**REFERENCES**