Metastatic amebic brain abscess: A rare presentation

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INTRODUCTION

Amebiasis is an endemic protozoal infection in developing countries, which mostly manifests as amebic colitis.[1] Extra-intestinal involvement in the form of abscess is frequently seen in liver and lungs.[1] The involvement of central nervous system (CNS) as amebic brain abscess is a rare and life-threatening presentation of systemic amebiasis. Here, we report a case of a young male who simultaneously presented with amebic liver and brain abscesses. He was successfully managed with intravenous metronidazole, other antibiotics, and drainage of both brain and hepatic abscesses along with supportive measures. The rare occurrence of this simultaneous presentation of amebic hepatic and brain abscess, prompted us to report this case.

CASE REPORT

A 22-year-old male presented to the emergency department with high-grade fever and chills for 3 months’ duration. Fever was associated with cough and expectoration for the last 1½ month with occasional brownish-red sputum for 1 month. He had headache and progressive drowsiness for the last 2 days. There was no history of vomiting, photophobia, seizures, or loss of consciousness. He did not have any drug addictions or high-risk sexual behavior.

At presentation, he was conscious but disoriented with a Glasgow Coma Score of 12/15. He was febrile (102°F) and had tachycardia with normal blood pressure. Systemic examination revealed mild pallor and reduced breath sounds at the right infrascapular region, and the liver was tender and enlarged till 15 cm below the right costal margin. Signs of meningeal irritation were present without any focal neurological deficit. Investigations revealed severe anemia (hemoglobin – 6.2 g/dL), neutrophilic leukocytosis (total leukocyte count [TLC] – 20,900/mm³ with 80% neutrophils), hypoalbuminemia (serum albumin 2.0 g/dL), and raised alkaline phosphatase (435 IU/L). Blood and urine cultures revealed no growth. His chest X-ray showed an elevated right hemidiaphragm with mild pleural effusion. Abdominal ultrasound and contrast-enhanced computed tomography (CECT) scan of the thorax and abdomen revealed a single large abscess in the liver and a large right frontal abscess.

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abscess of approximately 750 cc volume in the right lobe of the liver with evidence of rupture into the right subdiaphragmatic space [Figure 1]. The patient was started on broad-spectrum intravenous antibiotics including metronidazole since the day of admission. Subsequently, a pigtail catheter was inserted into the liver abscess which drained around 1.21 l of anchovy sauce-like pus over 2 days. Drained liver abscess pus on evaluation revealed TLC-full field (N – 70% and L – 30%), sterile for bacterial and fungal cultures and negative for amebic trophozoite and malignant cells on microscopic examination as well as negative for Mycobacterium tuberculosis-Gene-Xpert.

As patient orientation was not improved, magnetic resonance imaging (MRI) scan of the brain was done about 6 days later of initiation of antibiotics, which showed a large, ring-enhancing, intracranial, space-occupying lesion involving the bilateral frontal lobes with significant perilesional edema [Figure 2]. Keeping the possibility of primary brain tumor versus metastatic abscess, neurosurgical consultation was sought, and the patient was considered for drainage of abscess. Intraoperative findings revealed rusty, brown-colored, organized abscess extending into the third ventricle with bilateral anterior cerebral artery thrombosis. Microscopy of the pus from the liver and brain did not reveal any amebic trophozoite, Gram stain was negative, and bacterial cultures were sterile.

The patient responded well to the treatment with parenteral metronidazole and antibiotics along with drainage of liver and brain abscesses. He became afebrile, and leukocytosis resolved after 72 h of starting treatment. His sensorium was also improved, but he had persistent urinary incontinence and disorientation, which improved gradually over 3 weeks. His enzyme-linked immunosorbent assay test for Entamoeba histolytica immunoglobulin G was done with RIDASCREEN kit from r-Biopharm (Darmstadt, Germany), which was reported positive, suggesting amebic etiology of liver and brain abscesses. After 2 weeks of parenteral therapy, he was continued with oral metronidazole for another 2 weeks. Subsequently, MRI scan of the brain and CECT of the abdomen were repeated, which showed almost complete resolution of brain abscess and minimally organized residual abscess in the liver [Figures 3 and 4]. He was discharged after 5 weeks of hospital stay, and after 6 months of follow-up, he did not have any residual neurological symptoms.

**DISCUSSION**

Amebiasis is a public health problem, caused by the protozoan parasite *E. histolytica*, which affects more than 50 million people worldwide, with over 100,000 deaths annually,[2] and is the second leading cause of death from parasitic diseases.[3] Primarily, *E. histolytica* causes colitis, and extra-intestinal spread to liver and lungs is common. CNS involvement in the form of brain abscess is reported almost exclusively along with liver abscess and is very rare (<0.1% case of liver abscesses), with only very few case reports from India.[4]
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The involvement of the brain in amebiasis is usually secondary to the involvement of liver and lungs although isolated brain abscesses have also been reported.[3] The onset of CNS symptoms in amebic brain abscess is usually abrupt, and meningeal signs are frequently present as in our case.[4] These abscesses may be single or multiple and most commonly involve the basal ganglia and frontal lobes with the predilection for the right hemisphere.[4] In our case, abscess involved the frontal lobes bilaterally.

Brain imaging with CT or MRI helps in diagnosing the abscess but does not differentiate the etiology.[3] Amebic trophozoites are demonstrated in the brain abscess very infrequently and thus, the diagnosis usually relies on the demonstration of the trophozoites from other involved areas or a positive amebic serology, which has sensitivity and specificity of more than 94% and 95%, respectively.[6]

In our case, simultaneous presence of liver and brain abscesses with anchovy sauce-like pus, positive amebic serology, and excellent response to metronidazole suggests the diagnosis of systemic amebiasis.

With prompt diagnosis, treatment with amebicidal drugs, and timely surgical intervention, the outcome of amebic brain abscess is usually good in the present era. Oral or intravenous metronidazole given for 2–4 weeks is the treatment of choice; however, the exact duration of treatment for brain abscess is unknown.[7]

Although cerebral amebiasis is rare, it is a serious and life-threatening condition which if not recognized timely could be fatal. This case emphasizes the need to consider amebic abscess as one of the differential diagnoses for brain abscesses, especially in endemic countries. It also highlights that the condition is manageable with good outcomes if recognized early.

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Conflicts of interest
There are no conflicts of interest.

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Figure 4: Repeat contrast-enhanced computed tomography abdomen after 4 weeks of treatment showing minimally organized abscess

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