Disseminated neurocysticercosis presenting as acute stress reaction

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Neurocysticercosis is the most common parasitic infection of the central nervous system. However, disseminated cysticercosis is said to be rare. It is a leading cause of epilepsy and a major public health problem in the developing world. The major forms of neurocysticercosis are parenchymal, ventricular, subarachnoid, spinal, and orbital. Ventricular and basal cisternal locations are said to be malignant as they are associated with a high mortality (50%), particularly when hydrocephalus is present. Disseminated cysticercosis presents with a widespread infection of almost any organ, and it is an uncommon manifestation of neurocysticercosis. Disseminated form can manifest with intractable epilepsy, dementia, enlargement of muscles, subcutaneous and lingual nodules without obvious signs of raised intracranial pressure, or any focal neurological deficit. Neurocysticercosis is the most serious form of cysticercal infection. It can present with a wide range of psychiatric disorders such as catatonia, affective disorder, and cognitive symptoms. There is a defined set of criteria for diagnosing neurocysticercosis based on clinical picture, neuroimaging findings, serological testing, and response to treatment, as given by Del Brutto et al. The neuroimaging findings are very characteristic for neurocysticercosis and are according to the stage of the cyst. Computed tomography (CT) of the brain shows circumscribed and hypodense lesion if cyst is viable (vesicular stage), since the cysts do not enhance with contrast administration. Most of these lesions have an eccentric hyperdense nodule in their interior part representing the scolex. On magnetic resonance imaging (MRI), vesicular cysts appeared with signal properties similar to those of cerebrospinal fluid in both T1- and T2-weighted (T2W) images. The scolex is usually visualized within the cyst as a high-intensity nodule. In the colloidal stage (dying cyst), there is a ring-enhancing lesion surrounded by white matter edema.

Keywords: Acute stress reaction, disseminated neurocysticercosis, neuroimaging

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The wall of the cyst appears thick and hypointense, and there is marked perilesional edema. In the nodular-granular stage, the lesions are homogeneous and enhancing due to calcification. The calcified stage represents a dead parasite and appears as a hyperdense lesion on noncontrast CT scans and is usually not visualized on MRI. Perilesional edema is often associated with seizures in neurocysticercosis.\[9,10\]

Headache is one of the common clinical presentations of neurocysticercosis. We report a case of a young male, banker, who presented with anxiety due to job-related stress initially. Subsequently, after resolving the anxiety symptoms, the patient complained of intense headache.

**CASE REPORT**

A 31-year-old male, graduate, employed in a bank, presented to the psychiatry outpatient department with complaints of irritability, weakness, anxiety, easy fatigability, decreased appetite, and difficulty in sleep initiation. He attributed these complaints to the mounting stress at work over the past 10 days. His wife reported that he was irritable at home and had stopped participating in routine household activities and pleasurable activities such as playing with the child. The patient also reported increasing nervousness, unesiness, worrisome thoughts, and sweating predominantly at workplace. There was no history of any abnormal sensation or movement. There was no history of sensory or motor complaints, memory loss, gait disturbance, or disturbance of consciousness. Bowel and bladder functions were normal. There was no history of bone or joint swelling, pain, or fever.

**Examination**

On examination, his pulse rate, blood pressure, general physical examination, and systemic examination were normal. On central nervous system examination, there were no signs of raised intracranial tension or meningitis. Ophthalmoscopic examination was also normal. On mental status examination, the patient was well kept and had increased psychomotor activity with irritable mood and anxious affect. A provisional diagnosis of acute stress reaction was made, and tablet etizolam 0.5 mg twice a day was started. The patient was advised adequate sleep and nutritional supplements and was evaluated on a daily basis in the outpatient setting. He was advised medical rest for 3 days. The patient’s clinical condition improved. Two days after joining his office, he experienced diffuse headache which was severe to the extent that he could not continue with the office work. On further evaluation, he reported headache which was exaggerated with office stress, associated with nausea, and at times vomiting. Headache was not localized and was very incapacitating, though intensity reduced on taking analgesics. There was no focal neurological deficits, unconsciousness, and fits.

The patient was admitted in neuropsychiatry ward for further investigations.

On investigation, hemoglobin was 12.0 g%, total leukocyte count was 7200/cumm, absolute eosinophil count was 100 cell/cumm, platelet count was 3,78 lakhs, total bilirubin was 0.3 mg/dl, and serum glutamic-pyruvic transaminase was 51 U/l. His fasting blood sugar was 109 mg/dl and postprandial was 124 mg/dl. Blood urea level was 31 mg% and creatinine was 0.3 mg/dl. His sodium level was 146 mEq/L and potassium level was 4.3 mEq/L. Electrocardiogram was normal. MRI of the brain revealed multiple central T2W hyperintense lesions in bilateral cerebral hemispheres involving frontal-temporoparietal occipital, basal ganglia, thalamus, and bilateral cerebellar hemispheres involving vermis. Mild perilesional edema was seen [Figure 1]. Few of them showed blooming on Gradient-RecallEd Echo suggestive of calcification. Few of them showed restriction on diffusion-weighted images. His cysticercosis antibody IgG serum (EIA) level was 2.05 (reference value <0.90). His electroencephalogram and soft tissue X-rays of the spine and limbs were normal.

The patient was started on tablet albendazole 400 mg twice daily, tablet prednisolone 20 mg once daily, tablet sodium valproate 1500 mg/day in divided doses, syrup glycerol 3 tsf thrice a day, and tablet clonazepam 0.5 mg at night. The patient’s symptoms improved, and he was discharged after 2 weeks of inpatient management. He was counseled for handling stress related to his job. Incorporation of regular walks and leisure activities in daily routine, setting priority, and time management were discussed in individual sessions.

**Figure 1:** Magnetic resonance imaging of the brain with contrast showing multiple small hyperintense lesions involving bilateral, temporoparietal, occipital, gangliothalamic with ring enhancement after contrast.
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His coping skills were also enhanced so that he could handle daily hassles in a much better manner.

DISCUSSION

This is a case of disseminated neurocysticercosis presenting as acute stress reaction. On thorough investigation of headache, it was diagnosed and treated. There are earlier case reports in which neurocysticercosis has presented with psychiatric symptoms, cognitive decline, and tension-type headache, without florid neurological manifestation.[5,6] One has to be very vigilant while encountering patients with headache in psychiatry as well. Neuroimaging studies are now evolved, and MRI can even detect the different stages of cysticercal larvae.[9,10] Treatment involves taking care of acute symptoms and preventing any complication due to neurocysticercosis or due to treatment with antihelminthic drugs.[11]

In general, neurocysticercosis responds very well with treatment, and all neuropsychiatric manifestations resolve easily with treatment. It was earlier when antihelminthic treatment was not available that surgery or shunt procedures with high mortality rates were undertaken.[12] To the best of the knowledge of authors, the psychiatric manifestation of acute stress reaction in a case of neurocysticercosis has not been reported previously, though headache, epilepsy, depression, and focal neurological are commonly described in the literature.[13-15]

Neurocysticercosis is a preventable disease, linked to poverty and ignorance, and eradication programs should target all the stages of larvae, including human carriers, infected pigs, and eggs in the environment.[16] Currently available treatment and diagnostic techniques have now made it much easier to diagnose and treat even when presenting with varied, unusual symptoms.

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Conflicts of interest

There are no conflicts of interest.

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