Seizures in pregnancy usually result from eclampsia, epilepsy or central nervous system disorders. Neurocysticercosis, although rare, is an important cause of first-time convulsions in pregnancy. Cysticercosis is caused by infection with the larval form (or cysticercus) of the tapeworm Taenia solium. The most important clinical manifestations are caused by cysts in the central nervous system, known as neurocysticercosis. Seizure is the most common manifestation, present in 70-90% of symptomatic patients. Less frequent clinical manifestations include intracranial hypertension, hydrocephalus, chronic meningitis and cranial nerve abnormalities. Diagnosis usually involves both brain imaging and serological testing. We report a case of neurocysticercosis in pregnancy who was misdiagnosed as eclampsia.

Case Report

A 23-year-old (gravida 2 Para 1 Living 1) with 30 weeks period of gestation with previous history of lower segment caesarean section (LSCS) with a single antenatal visit (ANC) visit came with a history of three episodes of tonic-clonic seizures at home. She had no past history of convulsions. Her pregnancy was terminated in view of eclampsia. Later, CT imaging of the brain showed spherical ring-enhancing lesions and a diagnosis of neurocysticercosis was made. Neurocysticercosis should be considered in pregnant women presenting with seizures especially in early pregnancy.
helminthic and anti-inflammatory drugs. She recovered and was discharged on day 18. Follow-up MRI showed an 8x8 mm sized peripherally enhancing lesion in the left frontal lobe. There was no significant perilesional oedema or mass effect.

Discussion

Neurocysticercosis is identified as the single most common cause of community-acquired active epilepsy in 26.3 to 53.8% in the developing world. Cysticercosis is prevalent in virtually all states of India, the only possible exceptions being Kerala, Jammu and Kashmir. It is more prevalent in North (Bihar, Uttar Pradesh and Punjab) than South India. NCC accounts for 8.7-50% of patients presenting with recent onset of seizure. The peculiarity of the disease in India is the high incidence of patients with the solitary form of the disease, namely solitary cysticercus granuloma (SCG). About 60-70% of all Indian patients with NCC have a SCG.

Cysticercosis is caused by infection with the larval form (or cysticercus) of the pork tapeworm Taenia solium. The normal intermediate host is the pig, infected through the ingestion of taenia solium eggs in the stool of a human tapeworm carrier. The tapeworm is acquired through the consumption of undercooked pork meat containing the larvae or cysticerci. Although cysticercosis can occur anywhere in the body (skeletal system, eyes, skin and heart) and the infection is often asymptomatic, the most common clinical manifestation is a seizure disorder resulting from cysts in the central nervous system, known as neurocysticercosis.

Neurocysticercosis may be parenchymal (occurring in the brain substance, the most common location) or extraparenchymal (occurring in the meninges, the ventricles, the basilar cisterns, or the subarachnoid space of the brain or spinal cord). Parenchymal disease with small numbers of cysts carries an excellent long-term prognosis (probably even without anthelmintic therapy) compared to parenchymal disease with >50 cysts and extraparenchymal disease.

The developing cysticercus affects the surrounding tissue as a slowly growing mass that may cause pressure atrophy. Most live cysts cause an acute inflammatory response that occurs when the cysts degenerate, which results in the release of parasite antigens. Degeneration of a cyst may occur years after the initial infection. In the CNS, the inflammatory reaction and resultant oedema appear as a contrast-enhancing ring around the cyst on imaging. Necrotic larvae are completely or partially resorbed, but may become calcified; resulting in focal scarring that may provide a focus for seizures.

The resulting signs and symptoms depend on the number, location, size, and stage (viable, degenerating, or calcified) of the cysticerci and the intensity of the host inflammatory response to degenerating cysts. Seizures are the most common manifestation, present in 70-90% of symptomatic patients.

Diagnosis requires both imaging and serological testing. Serological results may be negative, but the lesions may be visible on imaging. Neuroimaging modalities such as CT and MRI have greatly improved the accuracy in the diagnosis of neurocysticercosis. The neuroradiologic findings depend on the type of cysticercus, stage of larval development and involution, and location and number of cysts. On neuroimaging, four stages of cyst formation have been described i.e. vesicular, colloidal, granular and finally calcified stage. MRI helps in detection of degenerating and innocuous (viable) cysticerci in some locations (cerebral convexity, ventricular ependyma) and is better than CT. However, computerized tomography (CT) is best for demonstrating small calcifications. Mortality is low in patients with parenchymal cysts or calcification without hydrocephalus.

Treatment of neurocysticercosis consists of anti-convulsants and anti-helminthic drugs but in pregnancy anti-helminthic drugs should be deferred until after delivery. The choice of treatment of neurocysticercosis depends on clinical manifestations and the location, number, size and stage of cysticerci. Conventional anti-convulsant therapy is the mainstay of management of neurocysticercosis associated with seizure disorder. Ant helminthic therapy (Albendazole and Praziquantel) is generally indicated for symptomatic patients with multiple, live (non-calcified) cysticerci. Albendazole is used in the dose of 15 mg/kg body weight for 1-4 weeks and praziquantel 50-100 mg/kg in three divided doses for 2-4 weeks. Albendazole is category C drug in pregnancy and should be given only if potential benefit justifies the potential risk. It should be used with caution in breastfeeding women because it is not known whether it is secreted in human milk.

Eclampsia is considered as the first cause of seizures in pregnancy presenting to an obstetrician. When atypical features are present or clinical status worsens we subject the patient to further evaluation. In this case there was a possibility of eclampsia as patient was in third trimester with history of headache, marginally raised BP and 2+ urine albumin and no past history of epilepsy. Hence the case was managed accordingly as eclampsia. However, in the postoperative period her frontal headache persisted for which neuroimaging was done and neurocysticercosis was diagnosed.

Neurocysticercosis can be misdiagnosed as eclampsia and hence every case that presents with seizures with atypical symptoms needs to be subjected to neuroimaging. Treatment of neurocysticercosis consists of anti-convulsants and...
anthelmintic drugs.

**Conclusion**

Though eclampsia is considered as a common cause of seizures in pregnancy, neurocysticercosis should be considered in the differential diagnosis of pregnancy with seizures.

**Editor's comment**

Infection with pork tapeworm or taenia solium affects a large number of people worldwide. This case study of a pregnant woman demonstrates the serious consequences of this parasitic infection in pregnancy. Neurocysticercosis should be considered in the differential diagnosis and any case presenting with atypical symptoms should be subjected to neuroimaging.

**References**

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