Case Report

Neurocysticercosis in pregnancy

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ABSTRACT

Neurocysticercosis is a common cause of adult onset epilepsy. Neurocysticercosis in pregnancy can present with convulsions and may be difficult to differentiate from a pregnancy related disorder. We present a case of neurocysticercosis diagnosed by magnetic resonance imaging.

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Convulsions in pregnancy may result from hypertensive disorders, epilepsy, infections or central nervous system disorders. Magnetic resonance imaging of the brain is safe in pregnancy and helps in the diagnosis. Neurocysticercosis is uncommon in the Middle East, and the diagnosis must be suspected for any one from an endemic area. Neurocysticercosis can be treated with minimal interruption to the course of the pregnancy. Diagnosing an infective etiology helps to cure the condition.

Case Report. A 27-year-old lady, gravida 2, para one, from the north of India presented with history of focal motor seizures starting in the right lower limb spreading to the rest of the body and lasting for a few seconds at 21 weeks gestation. Her booking weight was 63 kg, and blood pressure was 100/66 mm Hg. She was not a known epileptic. She was not on any medication prior to this problem. There was no history of trauma, fever or headache. There was no significant past personal or family history. She is a vegetarian. She had cesarean section for the first delivery for possible fetal distress, however, the baby died 6 hours after birth, ?cause. She was started on phenytoin in India and traveled to Oman after this episode of convulsions.

On examination she was alert, her height was 155 cm, weight 66 kg, and blood pressure was 110/65 mm Hg, and urine analysis routine was normal. Neurological examination revealed no abnormality. Uterus corresponded to 23 weeks of gestation and fetal heart was present. A midstream sample for urine culture revealed no growth. Blood was taken for hepatitis surface antigen and HIV testing and they were negative. She was screened for toxoplasmosis and cytomegalovirus, and the serology was negative. Ultrasound scan of pregnancy revealed the fetus corresponded to gestation and there was no anomaly.

An MRI was requested and it showed small, spherical, ring enhancing lesions, at the corticomedullary junction, with some displaying vasogenic edema (**Figure 1**). The differential diagnosis was cysticercosis, tuberculosis or metastases. A Mantoux test was negative. Serology was carried out for *Taenia solium* antibodies, and it was weakly positive (1.1). An immunoblot assay was carried out, and it tested positive for bands 6-8, 12, 23-26, 39, 45-55 kDa. Stool for tapeworm ova and cyst was negative.

The provisional diagnosis was neurocysticercosis. She was admitted with 3 episodes of seizures again at 26 weeks gestation. The dose of phenytoin was

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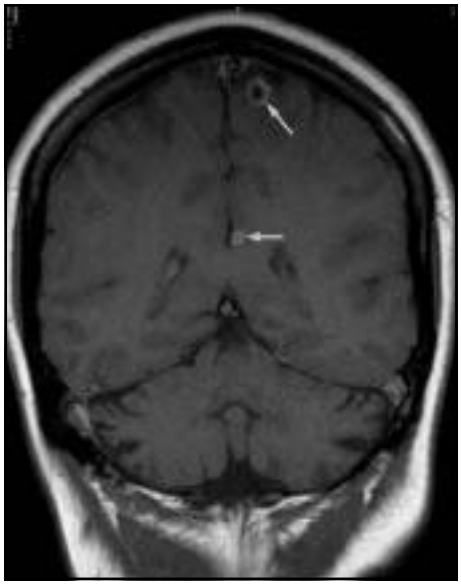

Figure 1 - Contrast enhanced T1 weighted coronal image shows 2 of the many cystic parenchymal lesions with rim enhancement. Some of the lesions, for example, the one in the left superior frontal gyrus showed perilesional edema. A presumptive diagnosis of neurocysticercosis was considered.

increased, and the convulsions subsided. After 26 weeks she was convulsion free, and routine antenatal care was continued. She had an elective cesarean delivery at her request at 38 weeks gestation and delivered a healthy baby boy weighing 3230 gm. The histopathology of the placenta was normal. The baby and mother remain well 2 months post delivery. A follow up MRI was arranged.

Discussion. Convulsions are the most common cause of manifestations of brain abnormalities caused by *Taenia solium* cysticercosis in developing countries. In countries where it is endemic, cysticercosis may affect 2-4% of the population.[1] The condition is caused by the encysted larval stage, cysticercus cellulose, of the pork tapeworm *Taenia solium*. Man is the usual final host, but may unwittingly become the intermediate host, by ingesting the ova shed in the feces of a human carrier and thus may occur in people who do not eat pork and have no contact with pigs. Cysticercosis may develop in tapeworm carriers through autoinfection. Serious neurological sequelae may result when the subsequent larvae preferentially settle in the brain and more rarely the spinal cord. It is the main cause of new onset epilepsy in adults in many countries; accounting for as many as 50% of cases of seizure disorders in the general population.[2] Convulsions in pregnancy have different consequences than in the non-pregnant. The hypoxia and acidosis caused by the convulsions, although well tolerated by the mother, can be fatal to the fetus.

Both MRI and CT are diagnostic of neurocysticercosis. Usually, scolex may be seen within the cyst wall as an eccentric, enhancing hyperdense spot on T1 sequences and is regarded as a pathognomonic feature.[3] There is usually marked edema surrounding the cyst and contrast enhancement during the transitional phase, which diminishes during resolution.[4] In 65% of cases with multiple lesions small calcifications will also be seen, although each cysticercus may not necessarily calcify before resolution.

The 2 principal serological tests in use are the enzyme linked immunosorbent assay (ELISA) and enzyme linked immunotransfer blot (EITB). The immunoblot is regarded as more reliable with a specificity of 100% and sensitivity of up to 97% in both blood and cerebrospinal fluid.[4,5] The Center for Disease Control's immunoblot assay with purified *Taenia solium* antigens have been acknowledged by the World health Organization and the Pan American health Organization as the immunodiagnostic test of choice for confirming a clinical and radiologic presumptive diagnosis of neurocysticercosis.

Two anticysticercidal drugs are widely used in endemic areas: praziquantel and albendazole. In patients with seizures due to viable cysts, antoparasitic therapy decreases the burden of parasites and is safe and effective, at least in reducing seizures and generalization.[6] For pregnant patients with seizures, antihelminthic treatment should be delayed until postpartum if the disease is stable, as the data regarding these medications in pregnant patients are limited.[7] Antihelminthic drugs produce an inflammatory response around the cysticerci, thus, patients receiving them should receive corticosteroids during treatment.[8]

The diagnosis of neurocysticercosis was clear-cut in this patient with MRI features, positive serology, and coming from an endemic area. She was managed conservatively on anti epileptics successfully. Neurocysticercosis should be kept in mind if the patient comes from an endemic area and even if they do not consume pork. Fecal contamination of the vegetables is the most likely mode of acquiring the disease in vegetarians.[9] This case is reported for its rarity and the usefulness of imaging in diagnosing neurocysticercosis.

References

1. Vasquez V, Sotelo J. The course of seizures after treatment for cerebral cysticercosis. ***N Engl J Med*** 1992; 327: 696-701.
2. Garcia HH, Martinez M, Gilman R, Herrera G, Tsang VC, Pilcher JB, et al. Diagnosis of cysticercosis in endemic regions. The Cysticercosis Working Group in Peru. ***Lancet*** 1991; 338: 549-551.

3. McCormick GF, Zee CS, Heiden J. Cysticercosis cerebri. Review of 127 cases. ***Arch Neurol*** 1982; 39: 534-539.
4. Wadia NH. Neurocysticercosis. In: Shakir RA, Newman PK, Poser CM, editors. Tropical Neurology. London (UK): WB Saunders; 1996. p. 73.
5. Rajashekar V, Oommen A. Serological tests using ELISA and EITB in patients with solitary cysticercus granuloma and seizures. ***Neurol Infect Epidemiol*** 1997; 2: 177-180.
6. Garcia HH, Pretell J, Gilman RH, Martinez SM, Moulton LH, Evans CAW et al. A trial of antiparasitic treatment to reduce the rate of seizures due to cerebral cysticercosis ***N Engl J Med*** 2004; 350: 249-258.
7. Paprone PW, Menghetti RA. Case report: neurocysticercosis in pregnancy. ***N Engl J Med*** 1996; 93: 91-94.
8. Flisser A, Madrazo I, Plancarte A, Schantz P, Allan J, Craig P, et al. Neurological symptoms in occult neurocysticercosis after single taeniacidal dose of praziquantel. ***Lancet*** 1993; 342: 748.
9. Varma A, Gaur KJ. The clinical spectrum of neurocysticercosis in the Uttaranchal region. ***J Assoc Physicians India*** 2002; 50: 1398-1400.