Case Report

Neurocysticercosis Misdiagnosed in Pregnancy As Eclampsia: Outcome and Management

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ABSTRACT

First episode of Seizure in a pregnant women is always presumed as Eclampsia. Diagnosis of neurocysticercosis in pregnancy is often confounded by fact that associated symptoms of headache, nausea & vomiting, visual disturbance, neurological changes and seizures maybe presentation of Eclampsia Syndrome. In this series we report pregnant patients with atypical features which were misdiagnosed as Eclampsia but they were later diagnosed to be Neurocysticercosis on Neuroimaging.

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Introduction

Cysticercosis has been designated as a "Biological marker" of the social & economic development of a community. Neurocysticercosis is the most common parasitic infection of Central Nervous System (CNS).[1-3] It's manifestation of human nervous system with tissue cyst of zoonotic cestode – *Taenia solium* (Pork tapeworm). T. solium has two hosts – Human (definitive host) and Pig (intermediate host). Humans become infected with cysts by accidental ingestion of T. solium ineffective eggs by feco-oral route.

The diagnosis of neurocysticercosis in pregnancy is often confounded by fact that associated symptoms of headache, nausea & vomiting, visual disturbance, neurological changes and seizures maybe presentation of Eclampsia Syndrome in the women.

Neurocysticercosis is commonly associated with seizures, headache, and focal neurological deficits and can have long term neurological sequelae such as epilepsy and hydrocephalus.[4-6] Seizures are the commonest presentation in such cases.[7-8]

The disease in prevalent in all states of India, although the prevalence varies between the states (Figure 1).[9[The solitary form of disease (solitary cysticercus granuloma, SCG) is the commonest presentation, reported in nearly two-thirds of all the patients with Neurocysticercosis.[10] In a study of 156 pathologically proven cases of cysticercosis from Patiala, Punjab(India), 88% patients presented with solitary lesion[11] Low proportion of pork eaters amongst Indian patients is the other unusual feature of the disease, less than 1-2% of patients with Neruocysticercosis admits eating pork and more than 95% of Indian patients with NCC are vegetarians.

A set of objective diagnostic criteria has been proposed (Figure2). These criteria are very complex and need validation in population or hospital based studies. The major drawback of these criteria is that they do not help a clinician to differentiate NCC with tuberculoma, which is also common neuroimaging finding in country like India. Access to Enzyme linked immunoelectro-transfer blot assay (EITB) which is mentioned in proposed criteria is limited in our country. Del Brutto has proposed diagnostic criteria for neurocysticercosis- Histological demonstration of parasite, Neuroimaging, Serology, Epidemiology, Clinical symptoms.[12]

Case Report(S)

Case 1: A 26 years old unbooked woman, second gravida with one live issue presented in emergency at ?8 months period of amenorrhea with history of four episodes of generalized tonic tonic seizures at home. She was referred by a general physician with diagnosis of Eclampsia with loading dose of Injection Magnesium sulfate already given.

There was no Antenatal checkup or sonography done. No history suggestive of increase in Blood pressure. No past history of seizure or any long term medication. No family history of seizures, Diabetes, Hypertension. She was vegetarian by diet.

On examination, her Glassgow coma scale score was seven and her pulse, Blood pressure and respiratory rate were 92 beats/min, 106/66mm of Hg and 22/min, respectively. Her urine albumin was Trace and liver function, renal function, coagulation profile, and fundus examination was Normal. Patient underwent Caesarean section owing to poor Bishop score and a Single alive female baby was extracted with birth weight 2000 grams with Apgar- 9,9. GCS score of patient improved postoperatively. On day two of caesarean, patient had another episode of Generalised tonic clonic seizure following which CT Head was done which was reported as Ring enhancing lesion & focus of enhancement within it with surrounding edema in Right Frontal region of brain. A diagnosis of Neurocysticercosis was mode on basis of CT finding, symptoms and resident of endemic area.

She was put on Tab Albendazole 400mg BD and Tab Phenytoin 100mg BD under cover of Inj Dexamethasone 4mg BD in first five days. Patient was Discharged on Tab Albendazole 400mg BD for 10days and Tab Phenytoin 100mg BD.

Patient was on regular follow up in Department of medicine and continued Tab Phenytoin twice daily.

Case 2: An Unbooked 23 years old Primigravida with 36 weeks period of gestation was referred from Periphery with diagnosis of Eclampsia. Patient had one episode of generalised tonic clonic seizure at home followed by loss of vision.

Patient had no records of Antenatal workup except sonography. No significant past medical/surgical or family history and followed non-vegetarian diet.

On examination on receival, Glassgow Coma Scale score was Thirteen. Her Pulse rate -76/min, BP- 140/92mmHg & Respiratory rate-16/min. Her fundus examination was Normal. Urine albumin, Liver function test, Renal function test and coagulation profile was unremarkable.

Patient underwent Caesarean section due to fetal distress, Singe alive male extracted with birth weight 2300 and Apgar-8,9. Magnesium sulfate regime was continued. Postoperative period was uneventful. CT Head was done owing to atypical presentation of patient with seizures

which showed lesion in Left occipital region which peripheral enhancement on contrast with perilesional edema suggestive of Solitary NCC lesion (Fig1)

She was put on Albendazole 400mg BD and Leviracetam 500mg BD under cover of Inj Dexamethasone 4mg BD in first Five days and was discharged on Tab Albendazole 400mg BD for 21days and Tab Leviracetam 500mg BD Patient didn't come for follow up later.

Case 3: A primigravida unbooked 21 years old pregnant women presented to emergency 30weeks 6days period of gestation with twins with history of Involuntary movements of Bilateral limbs at home while cooking followed by loss of consciousness & superficial burns on face and disorientation. Patient had history of only two ANC visits. There was no past significant medical or family history and was vegetarian diet. Magnesium sulfate loading dose was given considering it to be eclampsia at our center.

On examination, Glassgow Coma Scale score was twelve. Her Pulse rate, Blood pressure and respiratory rate were 96/min, 124/86 mm Hg & 14/min respectively. Her fundus examination was unremarkable. Her urine albumin was 1+, SGOT/SGPT were marginally raised, Renal function and coagulation profile was within normal limits. Patient threw another fit an hour after Magnesium sulfate loading dose for which patient was dilantanized. Patient delivered Twins by vaginal delivery. Twin1- Female, 1450gm birth weight, Apgar-8,9 and Twin 2- Female, birthweight 1550gm, Apgar-8,9. Post delivery period was uneventful. CT head was warranted due to atypical presentation which showed Solitary encysted lesion in Right parietal lobe which peripheral enhancement and without perilesional edema suggestive of Solitary NCC lesion (Fig2)

She was put on Tab Albendazole 400mg BD and Sodium Valproate 300mg BD under cover of Tab Prednisolone 20mg BD in first seven days. Patient was discharged on Tab Albendazole 400mg BD for 14days, Tab Sodium valproate 200mg BD and Tab Folic Acid 5mg 1OD.

Patient was followed with Medicine department and after 6 months CT head was repeated which resolution of lesion and her Antiepileptic drug was discontinued.

Discussion

First episode of seizure in pregnancy is always presumed to be Eclampsia syndrome, until other differential diagnosis is confirmed. Patient presenting without increase in blood pressure, significant proteinuria, atypical features or worsening of condition merits a full neurological investigation to rule out cerebral, parenchymal, or metabolic diseases.[13]

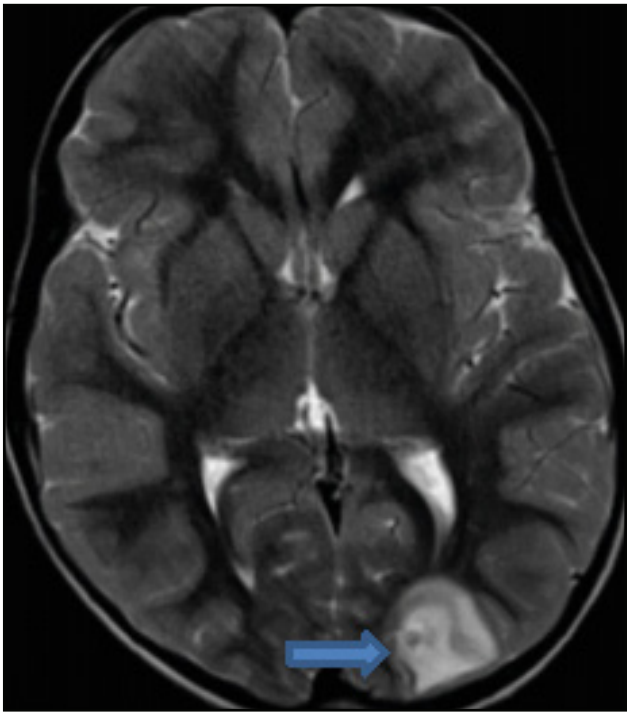

Fig. 1: CT Head showing lesion in Left occipital region which peripheral enhancement on contrast with perilesional edema s/o Solitary NCC lesion

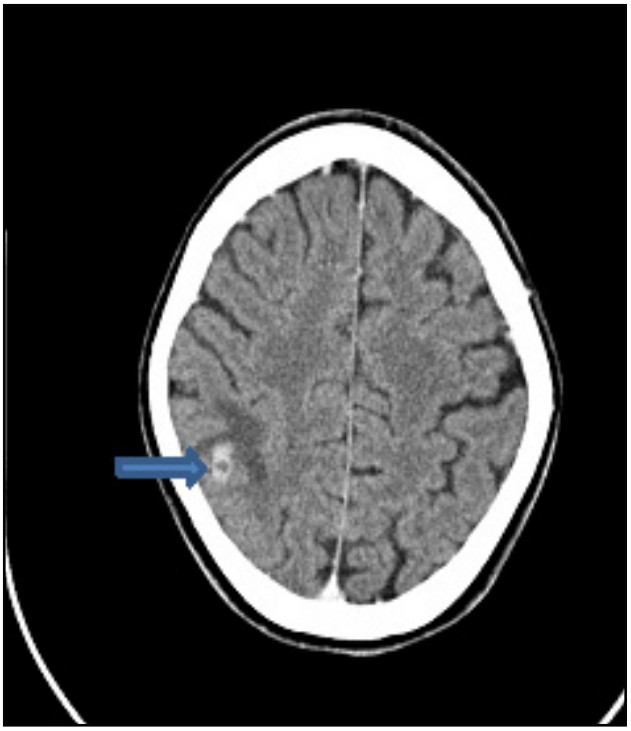

Fig. 2: CT Head showing Solitary encysted lesion in Right parietal lobe with peripheral enhancement on without perilesional edema s/o Solitary NCC lesion.

Cases were misdiagnosed as Eclampsia and were continued with Magnesium sulfate. Atypical features, worsening of symptoms and episode of seizure post completion of magnesium sulfate regime warranted CT Head which detected a ring enchancing lesion. The diagnosis of Neurocysticercosis was made on basis of CT Finding, Symptoms and resident of endemic area.

Although to date there are no trustworthy data on the specificity and sensitivity of neuroimaging diagnostic studies, Neuroimaging are the main tools in neurocysticercosis diagnosis and can be taken as gold standard.

Treatment modalities offered to patients with NCC[15]

1. Larvicidal Agents to kill larvae
   - Alendazole (15mg/kg/day for 5-10days)- Drug of choice
   - Praziquantel (50mg/kg/day for 15days)
2. Corticosteroids to decrease or prevent inflammation.
3. Anti-epileptic drugs to pevent or decrease the severity and number of seizures.
4. Surgical based therapies including measures to remove the cyst and shunt placement for hydrocephalus.

Antiepileptic drugs are principal therapy for seizures in Neurocysticercosis. However, after resolution of the parasitic infection with normalization of imaging studies, most patients who are seizure-free can eventually discontinue antiepileptic drugs. The selection of treatment options must include in the consideration of risk to benefit ratio. In areas where NCC is endemic like India, follow up neuroimaging examination may not be performed for economic constraints, and patients may not have access to latest surgical techniques or maybe managed in centres where intensive care is not available.[16]

During pregnancy, Treatment of Neurocysticercosis consists of Anti convulsant therapy. Postpartum patients are given anti helminthic and anti convulsants.[17]

Conclusion

Neurocysticercosis should be considered an important differential diagnosis in pregnant women with new onset of seizure with atypical features. It should be considered even if patient doesn't consume pork or follows vegetarian diet in endemic areas like India. Infection can be controlled by provision of sanitation and improvement of public health systems. Antihelminthic treatment will never eradicate NCC, unless the health system and sanitary infrastructure improves.

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Competing Interests

Not Declared

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