THE SWINE THAT RUINED HER BRAIN (Disseminated Neurocysticercosis - A case report)

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Abstract:  
Hemiplegia is one of the most common medical emergency admissions in a government hospital setup. The common suspected etiology is being cerebrovascular accidents. In our patient who presented with hemiplegia and recurrent seizures, was treated as a case of CVA with the findings of the CT. On proceeding with MRI, due to non responsiveness of treatment and reviewing detailed dietary history, the case turned out to be a rare form of disseminated neurocysticercosis. MRI showed multiple cysts with scolex all over the brain but CT contrast showed only peri-leisional edema at one area only. MRI was superior in diagnosing neurocysticercosis than CT contrast. The patient showed a remarkable prognosis following simple treatment with short course (8 days) of anti-helminthics and steroids.  

Keyword: Neurocysticercosis, Taenia solium, Scolex, Ring enhancing lesions, Late onset seizures, Albendazole.

CASE HISTORY:  
A fifty eight years old lady, presented with complaints of recurrent fits, weakness in left upper and lower limbs with headache and vomiting for two days. She has been taking anti epileptic treatment for adult onset seizures for the past three months irregularly. She is a known diabetic on oral hypoglycemic. She is not a known hypertensive or tuberculous patient. Her family history was insignificant. She was on mixed diet.

EXAMINATION:  
On examination, her vitals were stable, general examination was normal. On neurological examination, her higher mental functions were normal. Mild dysarthria was present. UMN type of left hemiplegia with facial nerve palsy was present. Her sensory system was intact, with no cerebellar in co-ordination, no autonomic dysfunction and no signs of meningeal irritation. She had features of mild raise in ICT. Fundoscopic examination showed mild papilloedema. Her gait was of hemiplegic type. No other findings were significant.
INVESTIGATIONS:
Her routine investigations of blood and urine were normal. CXR was normal. Tests for HIV and VDRL were non reactive. CT scan (fig-1), was taken, which showed hypo dense lesion over the Right Fronto-Pareital region.

Fig. 1 CT Plain – Hypo dense lesion.
She was provisionally diagnosed as a case of vascular stroke and treated accordingly. In spite of treatment, weakness worsened, seizures were not controlled and vomiting and headache also increased in severity. She also had intermittent abnormal behavior. CT contrast was taken, to rule out any intracranial space occupying lesion. CT contrast showed single contrast enhanced lesion with perilesional edema in Fronto-Pareital region. The other areas were normal. The suspected differential diagnosis were Tuberculoma, Meningioma, Neurocysticercosis. (fig-2). Dietary history was reviewed. Surprisingly, the patient’s father was a hunter, and they used to take partially cooked pork and meat of various animals. MRI plain and contrast were taken. MRI showed multiple cysts in cortex, sub critical areas, ventricles, brainstem and spinal cord. (Fig-3 & 4). The cysts were found in various sizes and stages like vesicular, colloidal and nodular stages. Some cysts showed presence of scolex within the cyst (fig-5). This is known as classical pea in pod appearance. Limb X rays were taken which showed soft tissue calcifications in the left lateral compartment of thigh, and also in the right arm. A confirmed diagnosis of disseminated neurocysticercosis was made according to revised diagnostic criteria.

TREATMENT AND OUTCOME:
The patient was treated with albendazole 15mg/kg orally, injection dexamethasone 8 mg i.v twice daily for eight days. Anti-epileptics along with physiotherapy and rehabilitation were given. The outcome was remarkable and drastic with complete recovery of weakness and control of seizures, along with normal mental behavior.
Vomiting and headache also subsided.

**CLINICAL DISCUSSION:**
Cysticercosis is a zoonotic disease caused by *Tinea solium* (pork tape worm). Larval form *cysticercus cellulosae* is responsible for pathogenesis. It is transmitted by eating under cooked pork and also by faeco-oral route. So vegetarians are also acquiring the disease by eating salads and raw foods, but intestinal infection occurs only through pork. The sites involved are,

1. **Intestinal**
2. **Extra-intestinal**
   a. Myo cysticercosis.
   b. Ocular cysticercosis.
   c. Neuro cysticercosis.

**NEUROCYSTICERCOSIS**
The disease may be parenchymal, meningeal, ventricular and spinal form. The cysts are formed all over. They may be single or multiple. The cyst contains Scolex i.e. head of larva. It is the pathognomonic sign of neurocysticercosis in radiological investigations confirming the diagnosis. The cyst passes through various radiological stages such as nodular, vesicular, and colloidal, finally calcifies. Clinically the disease presents with epilepsy, one of the common manifestations, ventricular cysts produce hydrocephalus, while spinal cysts may present with features of cord compression.

**IMAGING AND OTHER INVESTIGATIONS IN NEUROCYSTICERCOSIS:**
Visualisation of taenia eggs by microscopy was the only diagnostic method available until the early 1990s. Two problems hamper the diagnosis of infection with *T solium: the poor sensitivity of stool microscopy, and the morphological similarity between the eggs of T solium and T saginata*. Laboratory studies in the diagnosis of cysticercosis may play an adjunctive role. On complete blood count (CBC), peripheral eosinophilia is usually not present, but eosinophils may comprise 10-15% of white blood cells (WBCs).

In a patient with neurological symptoms, presence of multiple or solitary cysts with ring enhancing lesions and peri-leisional edema, in CT or MRI suggests neurocysticercosis. Presence of Scolex within the cysts confirms the diagnosis. MRI is superior imaging in diagnosis of basal cysts, brain stem lesions, ventricular and spinal cord lesions. Other investigations that can be done are immunological tests like Immunoserologic assays, such as EITB or enzyme-linked immunosorbent assay (ELISA) which can detect antibodies against *T solium or cysticercus* and are useful in identifying the population at risk of contact with the parasite. Complement fixation test can also be done. Limb X-rays may show soft tissue calcifications. Muscle biopsy and direct ophthalmoscopy may prove presence of cysts in muscles and eye respectively.

**REVISED DIAGNOSTIC CRITERIA:**

**ABSOLUTE CRITERIA:**
1. Histological demonstration of parasite.
2. CT or MRI showing cystic lesions with scolex.
3. Fundoscopic visualization of parasite.

**MAJOR CRITERIA:**
1. Lesions suggestive of neurocysticercosis on CT or MRI.

2. Positive serum EITB.

3. Resolution of cyst after therapy.

4. Spontaneous resolution of single enhancing lesions.
MINOR CRITERIA:
Lesions compatible with neurocysticercosis on CT or MRI.
Suggestive clinical features
Positive CSF ELISA.
Cysticercosis outside CNS.

EPIDEMIOLOGIC CRITERIA:
Household contact with Taenia solium infection.
Immigration from or living in an endemic area.
Travel to an endemic area.

DEFINITE DIAGNOSIS:
One absolute.
Two major + one minor + one epidemiologic.

PROBABLE DIAGNOSIS:
One major + two minor.
One major + one minor + one epidemiologic.
Three minor + one epidemiologic.

TREATMENT:
Combining steroids and anti-helminthics help to suppress the immunological reactions taking place during rupture of cysts with albendazole therapy, which may be life threatening. Albendazole (10-15mg/Kg for 8 days) is found to be beneficial in clearing the cysts. Anti-epileptics and physiotherapy may be helpful during follow up of the patients. Some cysts which are difficult to treat medically can be treated surgically.

CONCLUSION:
Neurocysticercosis should be suspected in any patient with neurological symptoms, since it can be easily curable and economical. Use of MRI in diagnosing neurocysticercosis is very important and has a very vital role, since even CT contrast sometimes fails to diagnose the lesions. Dietary history is very essential in a patient with suspected neurocysticercosis.

REFERENCES:


9 Martinez HR, Rangel-Guerra R, Arredondo-Estrada JH. Medical and surgical treatment in neurocysticercosis: a magnetic resonance study of 161 cases. *J Neurol Sci.* May 1995;130(1):25-34.

Fig._5_Scolex_in_Cyst_Pea_in_Pod_a
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