Disseminated Cysticercosis - A Case Report

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Abstract

Cysticercosis is a parasitic infestation commonly seen in developing countries like India [1]. The common mode of infection is contaminated food or drinks with eggs of Taenia solium. The most commonly involved organs are the subcutaneous tissue, skeletal muscles, lungs, brain, eyes, liver, abdominal cavity and spinal cord [2].

Here we report a case 29 yrs old male with disseminated cysticercosis. He came to our hospital for implant removal of right femur and he is a known case of epilepsy for which he is on antiepileptic drugs. The X-ray of right femur shows rice grain calcification which was an incidental finding. Later workup was done for disseminated cysticercosis and the diagnosis was confirmed. Treated with steroids, albendazole and praziquantel.

Keywords: Disseminated Cysticercosis; Myocysticercosis; Cysticercosis; Rice Grain Calcification

Introduction

Taenia solium is commonly called Pork tapeworm (because the intermediate host is pig), the adult worm which resides in human intestines. The larval forms are also called cysticercus cellulosae which causes cysticercosis in humans. In general adult worm causes minimal symptoms while the larval stages causes serious manifestations [3].

Cysticercus cellulosae develop in human, following ingestion of T. solium eggs through contaminated water/vegetables. Autoinfection can occur in person harbouring adult worms in the intestines through contaminated fingers from perianal skin/faeces.

The eggs can get lodged in any organ/tissues, but most commonly involved are subcutaneous tissue, muscle and other organs like heart, liver, abdominal cavity, lungs and spinal cord.

These larvae evoke a cellular reaction including infiltration of neutrophils, eosinophils, lymphocytes, plasma cells and at times giant cells. This cellular reaction is followed by fibrosis and death of larvae resulting in external calcification.

Disseminated cysticercosis is uncommon manifestation. Less than 50 cases, mostly from India, have been reported worldwide [4]. Dixon., et al. reported only one case of disseminated disease in a study of 450 patients [5]. If occurs, it presents with symptoms like headache, vomiting, recurrent episodes of seizures, weight gain, muscle pain and multiple palpable nodular lesion all over the body.

Case Report

A 29 yrs old male patient was admitted to our hospital for the removal of Intramedullary interlocking nail implant in the right femur which was operated 3 years back. while examining he gave history of seizures that has been going on since 10 years for which he
consulted doctor and they advised to take tab. Levetiracetam 500 gm O.D regularly. He also gave history of headache, easy fatigability and muscle pain since 1 year. There was no history of recurrent fever, loss of weight, chronic cough, chronic diarrhea or signs and symptoms of tuberculosis and hypertension.

On clinical examination, the patient was conscious, cooperative and well oriented. A healed scar present over lateral aspect of mid thigh (8 × 2 cm) and gluteal region (5 × 2 cm). There was mild hypertrophy of calf and thigh muscles which was non-tender. His systemic examinations were normal.

The X-ray of femur with hip and knee joint (Figure 1a and 1b) shows a united fracture of middle 1/3rd of femur with implant in situ and in addition there was rice grain calcification in thigh muscles and subcutaneous tissue which was an incidental finding.

Figure 1: a: Showing preoperative x-ray with implant in-situ and b: postoperative x-ray after removal of implant with rice grain calcifications in muscle and subcutaneous tissue.

Then skeletal survey was done which also shows calcification in both sides of arm, thigh, chest and abdomen (Figure 2a-2d).
His routine haematological examination shows haemoglobin 13.5 gm%, total leucocyte count 6500 cells/cu.mm, with neutrophils 54%, lymphocytes 28%, monocytes 10%, eosinophils 8% and Erythrocyte sedimentation rate was 15 mm/hr. Other blood reports were within normal limits.

Fundoscopy reveals normal study.
CT scan plain and contrast (Figure 3) shows multiple tiny granulomas in bilateral frontal, temporal, parietal and occipital lobes, cerebellar vermis and cerebellar hemisphere with no peri lesional enhancement and edema. Suggestive of neurocysticercosis (calcified stage).

Abdominal ultrasonography was a normal study, no lesions.

A diagnosis of disseminated cysticercosis was made. After the removal of femoral intramedullary interlocking nail, the patient was started on antiepileptic drug (levetiracetam 500 mg OD) and steroid with tapering dose (prednisolone 1 mg/kg). After 7 days of steroid, albendazole (15 mg/kg/day) and Praziquantel (15 mg/kg/day) for 21 days. This case was treated with cysticidal drugs even though there was no active lesion and cyst were calcified because it was extensively involved. No allergic and anaphylactic reactions were noted. The patient was symptomatically improved.

**Discussion**

Human cysticercosis caused by *T. Solium* is a far more important public health problem than human taeniasis. The impact of tapeworm infection in man is difficult to quantify, because in the majority of cases, it does not causes any illness expect abdominal discomfort and indigestion.

A very few cases of disseminated cysticercosis were noted in India. Disseminated Cysticercosis is described by diffuse symmetrical painful or painless enlargement of all group of muscles associated with weakness and easy fatigability, palpable subcutaneous nodules, seizures and features of raised intracranial pressure like headache, vomiting and diplopia [4].

Disseminated cysticercosis diagnosed if there are multiple vesicular cystic lesion present in brain and in atleast 2 other body parts [6].

Pushkar A., et al. [7] studied 20 patients of ocular and orbital cysticercosis. The commonest presentation was proptosis, subconjunctival cyst, subretinal cyst, papilloedema and atypical optic neuritis. Ultrasonography was comparable with CT for detection of scolex.

Bandyopadhyay., et al. [8] described a case of disseminated cysticercosis with huge muscle hypertrophy of the calf and shoulder muscle on both sides with multiple subcutaneous nodules. Clinically it is difficult to diagnose cysticercosis involving the muscles. Histopathological examination of subcutaneous nodule showed the evidence of cysticerci.

Banu A., et al. [9] described a rare case of disseminated cysticercosis involving muscles, subcutaneous tissue, brain and lungs. Inspite of disseminated disease, the patient was symptomatically normal except joints pain.

Syed AA., et al. [10] reported a case of neurocysticercosis presented with dizziness, mild seizures that have been going on for the past 12 years, syncopal attack and vomiting. The MRI scan revealed a nodular focus of enhancement with the multilobulated cystic mass in the brain. The patient was treated with levetiracetam 500 mg OD and albendazole 40 mg BD.

‘Disseminated muscular cysticercosis syndrome’ [11] have muscular pseudohypertrophy along with subcutaneous nodules and seizures with altered mentation. Reports of such cases are rare. Muscle hypertrophy is commonly symptoms free in this pseudohypertrophic type and the muscles are nontender: They must be differentiated from pseudohypertrophy, muscular dystrophy, myotonia congenita, trichinosis, hypothyroidism, amyloidosis and glycogenesis of Type 1 (Pompe’s disease) [12]. Diagnosis of cysticercosis involving the muscles is difficult clinically. Cysts which reside in the muscles are difficult to palpate, as they are often deep seated and numerous cysts lying side by side intramuscularly impart a smooth, shiny and tense appearance to the muscles. Ultrasonography is important in diagnosing the presence of cysticerci in these hypertrophied muscles, through revealing cystic lesions with or without calcification. Pathogenesis of muscular hypertrophy in cysticercosis has not been clearly understood. It has been suggested that the dead larva may act as an irritant to the muscles, causing the inflammatory changes [11].

CT and MRI are useful in anatomical location of cyst, CT being more sensitive than MRI in detecting small calcification but MRI is more sensitive in identifying scolex and live cysts. The presence of a scolex in a cystic lesion usually confirms the diagnosis of cysticercosis [2].

Management of disseminated cysticercosis includes symptomatic treatment of CNS lesions using steroids and antiepileptics. In patients with increased intracranial pressure surgery was considered which includes removal of cyst and ventriculoperitoneal shunting. A combination of cysticidal drug Praziquantel (10 - 15 mg/kg/day) and albendazole for 30 days was more effective in comparison to single drug. To prevent anaphylactic and allergic reaction and other side effects due to release of antigens from the cyst, a coarse of steroids are given before initiation of cysticidal drugs [1-3,10].

There is no role for cysticidal drugs in inactive neurocysticercosis, that is calcified cysts, as the parasites are dead [9,10].

Prevention is better than cure. It can be prevented by improving the hygienic condition, proper sewage treatment and disposal, meat inspection, treatment of infected person and health education.

Conclusion
Even though the disseminated cysticercosis involving multiple sites and organs, sometimes it may be symptoms free. Therefore it is important to be aware of various manifestation of the disease because early the detection, better the prognosis. X-rays are also one of the primary investigation modalities which gives clues for further workup and diagnosis of disseminated cysticercosis.

Interest of Conflicts
We declare that we have no conflict of interest.

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