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Disseminated Cysticercosis: Uncommon Presentation of a Common Disease

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Case Report

Abstract: **Introduction:** Cysticercosis is a common tropical disease. One of the uncommon manifestations of cysticercosis is its disseminated form. This is the report of a case of disseminated cysticercosis, with simultaneous involvement of the brain, eyes, muscles and subcutaneous tissues. Such an extensive involvement of cysticercosis is extremely rare. **Case Presentation:** A 24 year old male presented with a history of abdominal and back pain, one brief episode of tonic clonic seizure and headache. He had multiple asymptomatic pea-sized subcutaneous nodules over the trunk**.** Serological test for cysticercal antibodies was positive. In Ultrasonography multiple small cystic area seen in muscles of anterior abdominal wall s/o muscular cysticercosis**.** In Contrast Enhanced CT Scan extensive foci of calcification with non enhancing pea sized hypodense areas seen in abdominal muscles, Psoas, pelvic and thigh muscles s/o cysticercosis. In CT brain multiple hyperdense foci and few hypodense small sized tiny lesions were seen. The patient was treated with albendazole, steroids and phenytoin, and showed improvement during follow up. **Conclusion:** Wide spread dissemination is a rare complication of cysticercosis. A planned approach to therapy is required.

Keywords: Disseminated cysticercosis, Neurocysticercosis, Seizures.

Introduction

Cysticercosis is caused by the Cysticercus cellulose, a larval form of the tape worm, Taenia solium. Humans acquire cysticercosis through fecal-oral contamination with T. solium eggs from tape worm carriers. Human cysticercosis is an important cause of epilepsy and neurological morbidity in many developing countries. Cysts occur especially in striated muscles, subcutaneous tissues, the nervous system and the eye. Cysticercosis becomes symptomatic almost exclusively in the nervous system or the eye. Central nervous system involvement with *T. solium* cysts, neurocysticercosis, is a pleomorphic disease whose clinical manifestations vary with the number, size, location and stage of cysticerci as well as the intensity of the host's immune response.[1] Common manifestations include epilepsy, focal neurological signs, intracranial hypertension, cognitive decline, cerebellar ataxia, symptoms of hydrocephalus and psychiatric disorders. Neurocysticercosis is the most common parasitic infection of the brain and a leading cause of epilepsy in the developing world. Late-onset seizures in otherwise healthy individuals in endemic areas are highly suggestive of neurocysticercosis. The major forms of neurocysticercosis are parenchymal, ventricular, subarachnoid, spinal and orbital. Ventricular and basal cisternal locations are considered to be malignant forms as the mortality rate is high (50%) when hydrocephalus is present.[1] A set of diagnostic criteria based on neuroimaging studies, serological tests, clinical presentation and exposure history has been proposed by Del Brutto et al.[2] CT and MRI remain the most effective means of diagnosis. Sensitivity of serological tests tends to be high for patients with multiple cysts (94%) but substantially lower for patients with a single cyst or calcified cysts (28%).[3] Fewer than 50 cases of Disseminated Cysticercosis (DCC) have been reported worldwide, the majority being from India. Simultaneous and extensive involvement of the brain, eyes, muscles and subcutaneous tissues is extremely rare and has been rarely reported in literature. This is the report of a case of disseminated cysticercosis from Mumbai, India.

Case Report

A 24 year old male, resident of Kalyan, Mumbai, Medical Representative by profession, presented with a history of abdominal and back pain, one brief episode of tonic clonic seizure and headache. There was no history of recurrent fever, chronic cough, chronic diarrhea,weight loss, decreased appetite, joint pain and past history suggestive of diabetes and tuberculosis. On examination, he was afebrile, with normal blood pressure. He had bilateral, non tender, palpable cervical nodes present along with multiple asymptomatic pea-sized subcutaneous nodules over the trunk (figure. 1). On CNS assessment, no cognitive or sensory deficit was present. Routine laboratory examination was normal except for eosinophilia and Cercus IgG antibodies were positive. Plain radiographs of limbs showed muscles studded with cysticerci (figure. 2). In Ultrasonography (A+P) multiple small cystic area seen in muscles of anterior abdominal wall s/o muscular cysticercosis**.** In Contrast Enhanced CT Scan (A+P) extensive foci of calcification with non enhancing pea sized hypodense areas seen in abdominal

muscles, Psoas, pelvic and thigh muscles s/o cysticercosis. In CT brain (P+C) multiple hyperdense foci and few hypodense small sized tiny lesions were seen scattered in supra and infratentorial brain parenchyma with no perilesional enhancement (figure. 3). Similar lesions and foci visualised in neck muscles, temporal muscles, muscles of mastication and lateral rectus of right orbit. B scan revealed bilateral ocular muscle cysticercosis. The patient was treated with albendazole, steroids and phenytoin, and was discharged after a week. At follow up 3 months later, there was marked reduction in the sizes and numbers of subcutaneous nodules and patient remained seizure free.

Discussion

Human cysticercosis is caused by the dissemination of embryos of *T. solium* from the intestine via the hepatoportal system to the tissues and organs of the body. The organs most commonly affected are subcutaneous tissues, skeletal muscles, the lungs, the brain, eyes, the liver and occasionally the heart. Widespread dissemination of the cysticerci can result in the involvement of almost any organ of the body. Widespread dissemination of cysticerci throughout the human body was reported as early as 1912 by British Army medical officers stationed in India.[4] Priest, in 1926, described probably the first case of extensive somatic dissemination of *C. cellulosae* in a British soldier who had swelling of his muscles, epileptic seizures, mental dullness and widespread subcutaneous nodules.[5] Subsequent studies failed to highlight this form of clinical presentation, because of its relative rarity.[5] A series of 22 cases was reported by Wadia et al., who described the syndrome of DCC as pseudomuscular hypertrophy (100%), palpable subcutaneous nodules (87%), seizures (78%), and abnormal mentation (65%).[5] Cysticerci can lodge themselves in any part of the ocular tissues, extraocular tissues, and associated brain parenchyma. A case of orbital cysticercosis, associated with multiple cysts in the brain and subcutaneous tissue, was also reported by Pushker et al.[6] Chadha et al. described disseminated cysticercosis as having simultaneous intraocular and extraocular cysticerci, and reported the first case in a 21-year old male.[7] In our case we had extensive dissemination of *C. cellulosae,* virtually involving all sites, namely, brain, eyes and subcutaneous tissues. Moreover, the innumerable cerebral cysts and subcutaneous nodules seen in our patient, is rarely reported in the existing literature. The main features of DCC include intractable epilepsy, dementia, enlargement of muscles, subcutaneous and lingual nodules and a relative absence of focal neurological signs or obviously raised intracranial pressure, at least until late in the disease. [4,8] Absence of calcification in soft tissues and the head on radiological examination and the presence of living cysticerci at biopsy or autopsy are important findings, although the latter has not been sufficiently observed. Pseudohypertrophy of the muscles is the most common presentation of DCC, followed by palpable nodules and seizures.[5] Our patient presented with abdominal pain, epilepsy and subcutaneous nodules and did not have pseudohypertrophy. Computed tomography (CT) scans and MRI are useful in anatomical localization of the cysts and in documentation of the natural history. Unenhanced CT scans of muscles can show innumerable cysts standing out clearly against the background of the muscle mass in which they are embedded, the CT image appearing like a honeycomb or leopard spots.[9] In our patient the CT scan had a characteristic 'starry sky' appearance but did not reveal any calcified foci in muscles. Management of DCC includes symptomatic treatment of central nervous system lesions using steroids and antiepileptics. In patients with raised intracranial tension, surgical removal of cysts and ventriculoperitoneal shunting can alleviate symptoms. Pharmacological management with the cysticidal drugs i.e. praziquantel and albendazole is indicated as they help by reducing the parasite burden.[10] Pharmacological treatment may be associated with severe reactions, which may result from enlargement of cysts, massive release of antigens causing local tissue swelling and generalized anaphylactic reaction.[8] Priming with corticosteroids before starting the cysticidal drug decreases the incidence of such complications.[5,8]

Conclusion

It is important to recognize DCC clinically and to perform appropriate radiological investigations, as this condition needs planned therapy. The therapy needs to be individualized and close monitoring is required when cysticidal drugs are initiated.

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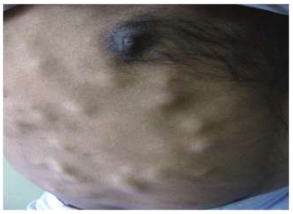

Figure 1: Multiple pea-sized subcutaneous nodules over the trunk

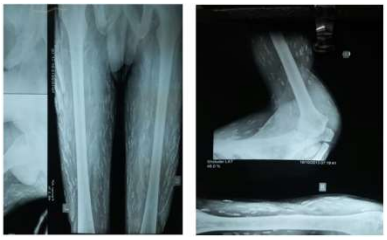

Figure 2: Muscles studded with cysticerci on X ray

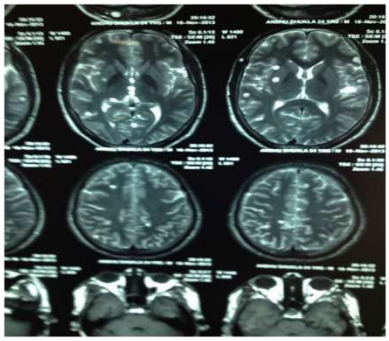

Figure 3: CT Brain showing multiple hyperdense foci

