



## Disseminated cysticercosis: Pleomorphic presentation

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### ABSTRACT

Cysticercosis is a parasitic disease caused due to ingestion of larval form of *Taenia solium*, a pork tapeworm. Disseminated cysticercosis is a rare manifestation of this parasitic disease. Only two cases of splenic and pancreatic involvement by cysticerci have been reported. We emphasize the extensive involvement of splenic, pancreatic, cardiac and pulmonary tissue. To best our knowledge, simultaneous involvement of these organs in one patient has not been described previously in the literature. We are reporting an interesting case which had no classical signs and symptoms of cysticercosis and was accurately diagnosed on MRI.

**Keywords:** Disseminated Cysticercosis, Pancreas, Spleen, Pulmonary, Cardiac.

### INTRODUCTION

Cysticercosis is caused by *Taenia Solium*, a pork tapeworm. Humans are infected by ingestion of contaminated undercooked pork. Oncospheres hatch in the small intestine and invade the blood stream and disseminate into any organ of the body. (1) No organ is immune to this parasitic infection to the best of our knowledge except bone marrow. Less than 50 cases have been reported worldwide, the majority being from India. (2) MRI is the standalone modality for accurate diagnosis of pleomorphic presentation of this communicable disease. (1) We present an exceptional case of disseminated cysticercosis with extensive involvement of all organs of the body. (e.g. brain, orbit, cardiac, pulmonary, pancreas, spleen, musculoskeletal and subcutaneous tissue etc.). This is the first case to be reported with simultaneous and extensive multisystem involvement from this region.

### CASE REPORT

A 25-year-old, three months post partum female came with a history of a headache and on and off abdominal pain for one month. General condition

was normal. On examination, multiple petechial haemorrhages were present all over her hands. Sensory and motor examination was normal. Systemic examination for the respiratory, cardiac and abdominal system was normal. Fundus examination to rule out intracranial hypertension was normal. Routine blood examination, ESR and C-reactive protein were within normal limits. USG was done for abdominal pain was normal. MRI was advised given a headache.

MRI was done in 1.5 T HDXT, Version 23.0 GE Magnetic Resonance Machine using head and body Surface Coil. After examination of localising sequence, the entire body was scanned from head to toe using COR STIR sequence. MRI protocol sequence included T1W1, T2W1, FLAIR, DWI, SWAN images.

MRI revealed multiple well-defined cysts with eccentric scolex scattered throughout the brain parenchyma (starry sky appearance) with extensive extra cranial involvement. These lesions appeared

hyperintense on T2W1, FLAIR and hypointense on T1W1. No restriction noted on DWI. No blooming noted on SWAN. These small nodular lesions were seen involving all the visualised muscles and subcutaneous tissues. Involvement of muscle of mastication, tongue, parotid, face, orbit, paraspinal muscle was noted. On abdominal examination involvement of liver, spleen, the pancreas was noted. Pulmonary and cardiac involvement was seen. On whole body diffusion, MRI using COR STIR sequence in four stations with reconstruction with overlapping of these sequences shows phenomenal involvement of extremity and entire body with disseminated cysticercosis.

On USG multiple well defined anechoic cystic lesion with eccentric scolex was characteristically seen. Scolex appears as the hyperechoic mural area within.

The patient was treated with albendazole 15mg/kg/day and Praziquantel for 21 days. The patient was kept in observation for one week after the start of therapy. No neurological or systemic deterioration noted during the treatment period. No anaphylactic reaction was noted following which the patient was discharged and is now under follow up. Currently, the patient is doing well and is symptomatically better.

## DISCUSSION

Cysticercosis is caused by *Taenia solium*, a pork tapeworm. Man acts as a definitive host (harbours adult form) whereas pig acts as an intermediate host (harbours larval form)(3). Infection occurs through the faecal-oral route. Ingestion of infected vegetables, undercooked pork are the risk factors. The adult form of parasite harbours within small intestine and anchors to the intestinal walls with the help of scolex. They lay eggs in the small intestine. These eggs are passed in the faeces which are then ingested by pigs. From where they can disseminate to any organ. The clinical symptoms depend upon the organ involved. Most commonly it affects the muscles (3). Heavy parasite burden is noted in subcutaneous and skeletal tissue. A seizure is the most common intracranial manifestation. Involvement of spleen, pancreas, cardia and pulmonary is rare. Rarely cases with splenic, pancreatic, cardiac and pulmonary involvement have been reported in the literature. (4)(3)

Disseminated cysticercosis is a rare manifestation of this disease. *Priest et al.* described the first case of disseminated cysticercosis in a British soldier in 1926. *Dixon et al.* reported only one case of disseminated cysticercosis out of 450 reviewed cases of cysticercosis.

The classical evolutionary stages of the parasite are not noted in case of disseminated cysticercosis. In our case virtually all the organs of the body were involved. Initially, the petechial haemorrhages over the bilateral hands and intracerebral haemorrhage misled us to the diagnosis of vasculitis. MRI in our case helped to arrive at an accurate diagnosis. CT scan and USG act as an adjuvant investigation. A non-contrast CT scan showed multiple tiny hyperdense foci scattered throughout the brain parenchyma, extracranial manifestation in the form of involvement of ocular, facial, paraspinal and skeletal muscles and extensive involvement of abdominal organs.

Pharmacological treatment with praziquantel (10-15mg/kg/day for 21 days) and albendazole (15mg/kg/day for 21 days) is usually helpful.(5). Life-threatening complications can occur when the drug leads to the death of cysticerci in the form of severe anaphylactic reaction. However calcified form of cysticercosis means dead organism and therefore requires no treatment.

## CONCLUSION

MRI is the gold standard given widespread involvement and characterising disease burden. MRI is accurate for anatomical location and assessing disease burden thus influencing the decision in the management of disseminated cysticercosis(1). MRI being non-invasive, prompt and specific serves as a boon for confirmation and management to facilitate appropriate steps in the treatment of this rare entity. MRI can also be used to follow up to assess response to treatment.

Our case is unique as in our case the diagnosis of disseminated cysticercosis with the extensive burden of the parasite came as a surprise as there was no manifestation of the involved organs. MRI in our case emerged as a most promising modality for accurate diagnosis. (1)

## FIGURES

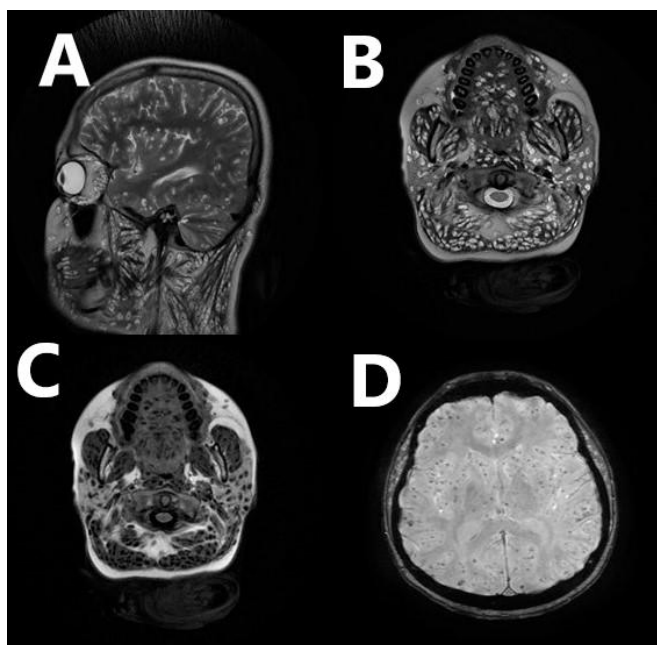


Figure 1: Brain MRI A-sagittal T2W1, B-axial T2W1, C-axial T1W1, D)AXIAL SWAN sequences. Multiple lesions are noted involving bilateral cerebral hemispheres and extracranial extensions.

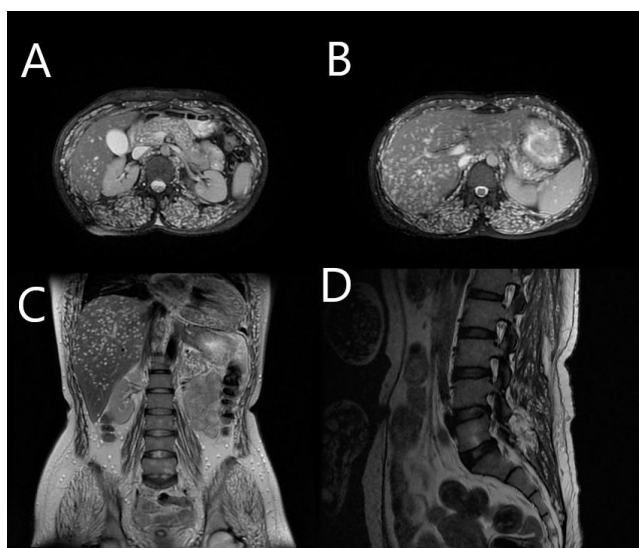


Figure 2: MRI Abdomen and spine axial 2D FIESTA FS (A) shows multiple cysticerci in the pancreas and paraspinal muscles, (B)- as well as in the spleen (C)- myometrium and D- every paraspinal muscle involved.



Figure 3: Whole body MRI WB-STIR image demonstrates multiple hyperintense lesions involving all the visualized muscles and organs

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