



# A Rare Case of Cysticercosis Involving the Spinal Canal

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## Abstract

A Rare Case of Cysticercosis Involving the Spinal Canal cover: 55-year-old male presented to the radiology department (of his own accord) with a 9-year history of lumbar, spinal pain and a weakness of both lower limbs. He had no bladder or bowel involvement. According to the patient an MRI of the spine with contrast and been performed in 2014. Ependymoma was suggested as a possible cause, however the patient did not seek any treatment. Due to the worsening of the symptoms during the last few months, the patient underwent an MRI imaging of the spine. The MRI study performed in 2022 and the radiologically expressed progression of the disease, specifically the similar changes arising in the cervical segments, put to question the presence of Ependymoma. Patient underwent a surgical resection of the lesion from the lumbar segment for further histological examination. Pathology: A histological examination of a postoperative sample showed the presence of a cyst like structure, containing larvae and consisting of a double layer eosinophilic membrane. The Histomorphology is consistent with cysticercosis. Histopathological images are consistent with tapeworm parasites.

**Keywords:** Spinal MRI; Spinal neurocysticercosis; Arachnoiditis; Intradural spinal mass lesion

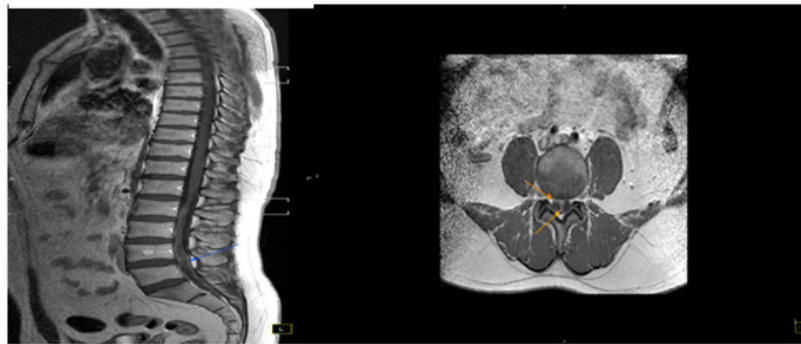
## Clinical Information

Age and gender: 55 year old man. Clinical history & presentation: 55-year-old male presented to the radiology department (of his own accord) with a 9-year history of lumbar, spinal pain and a weakness of both lower limbs. He had no bladder or bowel involvement. According to the patient an MRI of the spine with contrast and been performed in 2014. Ependymoma was suggested as a possible cause, however the patient did not seek any treatment.

Due to the worsening of the symptoms during the last few months, the patient underwent an MRI imaging of the spine. The MRI study performed in 2022 and the radiologically expressed progression of the disease, specifically the similar changes arising in the cervical segments, put to question the presence of Ependymoma. Patient underwent a surgical resection of the lesion from the lumbar segment for further histological examination (Figure 1 to Figure 7).



**Figure 1:** Sagittal T2-weighted image through the lumbar part demonstrates diffuse intradural/ extramedullar multiple small cystic like lesions in the lumbar canal around the cauda equina. (image 1). Timecode year 2014.



**Figure 2:** Sagittal and axial T1-weighted image after IV administration of gadolinium shows an enhanced small cystic like structures. On an axial image these cystic like structures are delineated by contrast enhanced septations and demonstrates right-sided meningeal enhancement. (yellow arrows).(image 2,3). Timecode year 2014.



**Figure 3:** Sagittal T2-weighted image through the cervical part shows no lesions or contrast enhancements. Timecode year 2014. (image 4).

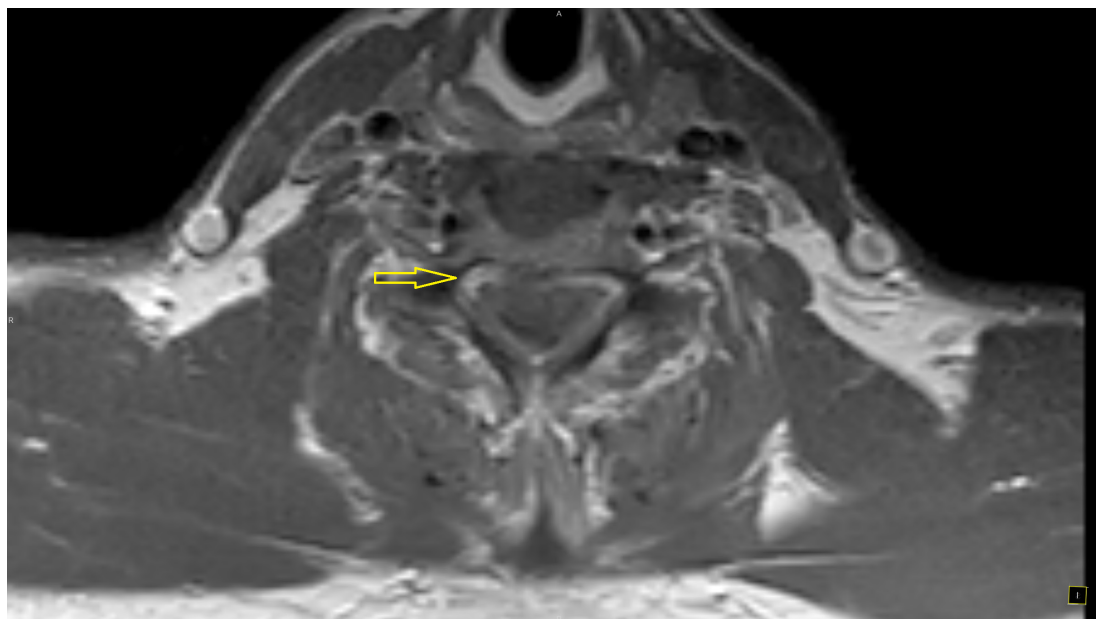


**Figure 4:** Sagittal T2-weighted image through the lumbar part demonstrates cystic like structures that have enlarged in size compared to previous imaging. These cystic lesions at the level of conus medullaris compress/displace the conus and the cauda equina. Timecode year 2022. (image 5).

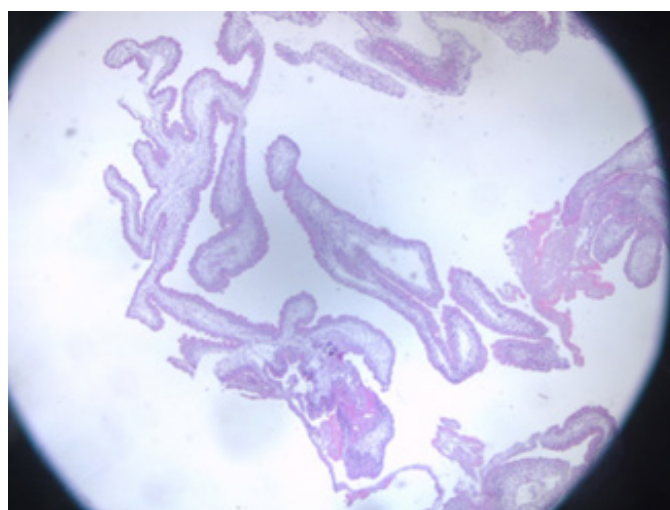


**Figure 5:** T1-Sagittal with fat suppression and axial T1-weighted image after IV administration of gadolinium shows that the contrast enhanced components increased in size. They demonstrate more peripheral enhancement on post-contrast images. (arachnoiditis). Compared to previous imaging, stretches of fibrous tissue were better expressed and fibro-inflammatory changes were observed.

Clear differentiation of the conus medullaris and the cauda equina from the cystic lesions is impossible due to the changes described above. Intramedullary lesions cannot be differentiated. Vertebral swelling and infiltration are not present; however, moderate venous stasis is observed due to venous dilatation. Timecode year 2022. (image 6,7).



**Figure 6:** On previous imaging changes were only observed in the lumbar segments, while on current imaging mild changes, similar to the lumbar segments, were also observed in the cervical segments. On the level of C1-C2 in both the ventral and dorsal epidural space, cystic areas with mildly enhanced rim/septa are observed. On post-contrast images in cervical segment cervical perimedullar arachnoiditis, dilated veins, leptomeningeal enhancement (yellow arrow) can be observed. Timecode year 2022.



**Figure 7:** H&E stain, x100. The larval form, composed of duct-like invaginations, lined by a double layered eosinophilic membrane. Body wall with calcareous bodies (calcified concretions).

**Pathology:** A histological examination of a postoperative sample showed the presence of a cyst like structure, containing larvae and consisting of a double layer eosinophilic membrane. The Histo-morphology is consistent with cysticercosis. Histopathological images are consistent with tapeworm parasites. Other diagnostic testing: elevated eosinophils (Eosinophilia). Laboratory results were positive for *Taenia solium* antibodies.

### Diagnosis

- A. Final diagnosis: Spinal neurocysticercosis.
- B. Differential diagnoses: myxopapillary ependymoma: myxopapillary ependymomas are usually more circumscribed and have more homogenous enhancement.

spinal leptomeningeal carcinomatosis: is usually more nodular enhancing foci along the nerve roots of the cauda equina; are not characterized by small cystic like structures. Leptomeningeal carcinomatosis enhancement is more homogenous.

### Discussion

**Clinical presentation & general epidemiology:** Cysticercosis is an infection caused by *Cysticercus cellulosae*, the larvae of the tapeworm *Taenia solium*, which infects humans mainly by accidental ingestion of eggs containing infective oncospheres. CNS cysticercosis affects men and women equally. The peak incidence is between the third and fourth decades of life. Intraspinal forms of neurocysticercosis are rare with the incidence varying from 1% to 3%. Isolated spinal cysticercosis, like this case, is extremely rare.

**Imaging features:** spinal cysticercosis manifests as a nodular or cystic lesion. Within the lesion the scolex of the tapeworm can be observed. The scolex appears as a mural nodule with isointensity on T1 and iso- to hyperintensity on T2. However, the scolex can't always be visualized in every case. After the administration of contrast medium, the cysticercosis lesions show no enhancement or dot-like enhancement in the scolex, while peripheral ring-like enhancement can be noted in some cases. MRI features include cystic, diffuse arachnoiditis or both. Arachnoiditis is most likely caused by an inflammatory reaction due to the rupture of the cysticercosis cyst into subarachnoid space. Lesions are diffuse with heterogeneous or minor enhancement on post-contrast images.

**Prognosis, treatment or therapeutic options:** typically, medical treatment is antiparasitic drugs, with dexamethasone to attenuate treatment-associated inflammatory reactions, however, if the extensive lesions shows progressive neurological deficit and no response to medical treatment, then it is managed surgically. Post-operatively patient shows improvement in signs and symptoms with no complications. Postoperative follow up and monitoring response to treatment is essential.

## Acknowledgement

None.

## Conflict of Interest

No Conflict of interest.

## References

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