

RARE CASE OF INTRAMEDULLARY SPINAL CYSTICERCOSIS- A CASE REPORTAman Agarwal¹, Rohin Bhatia², Bhawani Shankar Sharma³¹Senior Resident, Department of Neurosurgery, Mahatma Gandhi Institute of Medical Sciences, Jaipur, Rajasthan.²Professor, Unit Head, Department of Neurosurgery, Mahatma Gandhi Institute of Medical Sciences, Jaipur, Rajasthan.³Professor and HOD, Department of Neurosurgery, Mahatma Gandhi Institute of Medical Sciences, Jaipur, Rajasthan.**HOW TO CITE THIS ARTICLE:** Agarwal A, Bhatia R, Sharma BS. Rare case of intramedullary spinal cysticercosis- a case report. J. Evid. Based Med. Healthc. 2018; 5(52), 3611-3613. DOI: 10.18410/jebmh/2018/736**PRESENTATION OF CASE**

An 18-year-old male patient reported in neurosurgery OPD of Mahatma Gandhi National Institute of Medical Sciences, Jaipur (MGM Hospital) with progressive weakness in bilateral upper and lower limb since 20 days. Patient also complained of difficulty in walking since 10 days. Increased tendon reflexes, spasticity in both upper and lower limbs with more spasticity in upper left limb. Sensations were intact. Left hand grip was weak and Hoffman's sign was positive. Extensor Hallucis Longus weakness found was more in left lower limb. Ankle and Patellar Clonus was present. Babinski sign was found to be positive. Contrast Enhanced MRI spine revealed an expansile ill-defined intramedullary mass of cervical cord centered opposite C3 and C4 vertebral level. Lesion was isointense on T1WI and has complex hypointense and hyperintense signals on T2WI. No such lesion was found at thoracic or lumbar levels. Also, MRI brain screening revealed no abnormalities. Surgery was necessary for the progressive neurological deterioration of patient.

The patient reported to us had no history of neurocysticercosis but belonged to endemic region, so we could clinically suspect intramedullary cysticercosis prior to the treatment. India is one of the endemic regions for cysticercosis.^{1,2}

The common clinical signs include pain, paraparesis, spasticity, bowel and bladder incontinence and sexual dysfunction, depending on following the factors: lesion level on spine, anatomical location (extradural/extramedullary /intramedullary), lesion size, stage of development of cysticerci and host immune reaction. In cases of extramedullary lesions, most common symptoms are of back pain and radicular pain whereas in spinal cord compression cases with intramedullary lesions, the most common clinical signs are myelopathy and progressive weakness.

The patient showed progressive weakness in limbs with spasticity in both upper and lower limb with more spasticity in upper left limb.

*Financial or Other, Competing Interest: None.
Submission 03-12-2018, Peer Review 07-12-2018,
Acceptance 22-12-2018, Published 24-12-2018.*

Corresponding Author:

Dr. Aman Agarwal,

Garg Hospital,

Gol Ghar, Gandhi Gali,

Gorakhpur, Uttar Pradesh- 273001.

E-mail: amanagarwalgkp@gmail.com

DOI: 10.18410/jebmh/2018/736

**CLINICAL DIAGNOSIS**

Intramedullary Spinal Cysticercosis.

DIFFERENTIAL DIAGNOSIS

1. Abscess
2. Neurenteric cyst
3. Arachnoid cyst
4. Hydatid cyst
5. Sarcoidosis
6. Neoplasms such as Ependymoma and
7. Inflammatory Lesions

PATHOLOGICAL DISCUSSION

The diagnosis of intramedullary cysticercosis could be suspected if a patient comes from an endemic region or had a history of cysticercosis and MRI reveals a spinal cord lesion. It can be verified by the presence of subcutaneous nodules, serological alterations and changes in the cerebrospinal fluid. The changes in cerebrospinal fluid includes: increased proteins, a low or normal glucose, moderate lymphocytic pleocytosis and eosinophilia. Some cysticercal surface antigens stimulate formation of antibodies as a part of the host immune response that forms the basis for immunological testing for cysticercosis diagnosis. Enzyme Linked Immuno-Sorbent Assay (ELISA) of both, the serum and CSF, is reported to be highly sensitive and specific for its diagnosis.^{3,4}

Magnetic resonance (MR) imaging is the diagnostic tool of choice for cysticercal lesions in the spine. The lesion of spinal cysticercosis appears as a cystic lesion which is hypointense on T1 weighted images, while it shows high signal intensity on T2 weighted images, due to high protein content within the cyst.^{5,6} On post contrast images, surrounding oedema and peripheral rim enhancement can be seen.^{7,8}

The diagnosis was established on the basis of MRI and pathological examination. In the present case, surgery was good choice of treatment, for removing the complete lesion as it was producing progressive spinal compression and also to confirm the diagnosis.

Spinal cysticercosis lesions can cause symptoms by one or more pathological mechanisms: (1) acute neuronal dysfunction caused by the intense host inflammatory reaction surrounding the lesion, presenting with a radiculopathy-like clinical presentation, (2) compressive spinal cord dysfunction caused by mass effect onto the spinal cord produced by a calcified lesion, (3) chronic neuronal degeneration produces irreversible cord changes.

The patient underwent C3-C5 laminectomy. On opening the underlying dura, spinal cord was found to be swollen. We found several greyish-white to greyish brown cyst like lesions in the intramedullary space. Excision of multiple space occupying lesions (Intramedullary) was done.

The histopathological examination of resected sample showed cyst wall with granulation tissue consisting of proliferating capillaries, dense lymphoplasmacytic mononuclear chronic inflammatory infiltrate, fibrosis and focal necrosis with separately lying larval form of *Taenia solium*.

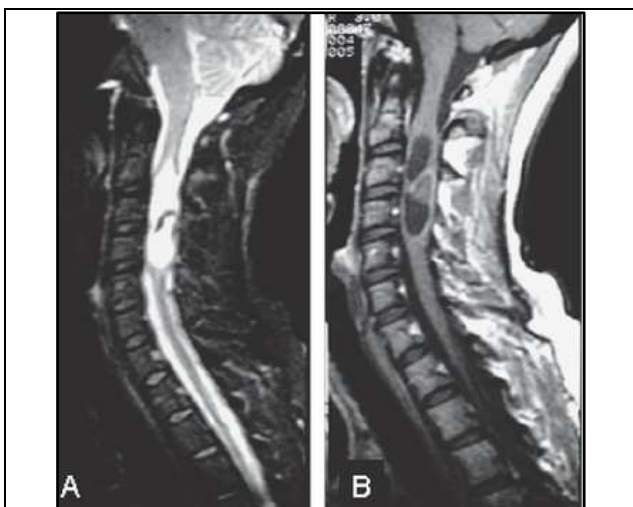


Figure 1. Intramedullary Spinal Cysticercosis. MRI Sagittal T2W1 (A) and Sagittal T1W1 (B): Intramedullary Cystic Lesion in the Cervical Spinal Cord

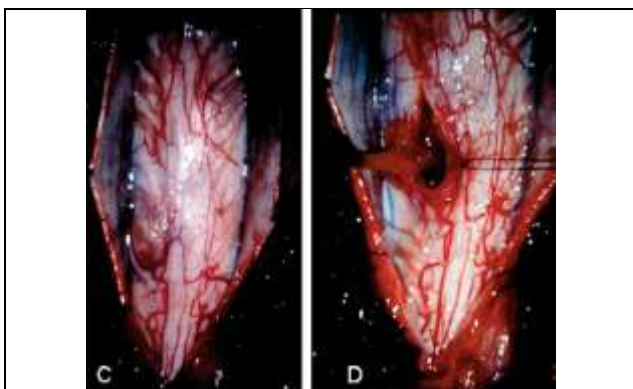


Figure 2. Pictures of Surgical Removal (C and D)



Figure 3. Surgically Removed Cyst

DISCUSSION OF MANAGEMENT

The infection of *T. solium* is relatively rare in spine as compared to the involvement of brain. Neurocysticercosis focus in the cranium, is seen in approximately 75% patients (range 30%-100%).^{9,10} Isolated spinal involvement of cysticercosis is extremely rare, occurring in less than 25% patients.^{5,11} The earliest incidence of spinal cysticercosis was reported in 1963 by Canelas, who noted SCC in 2.7% patients with Neurocysticercosis.¹² He reported incidence of SCC varies from 0.7%-5.85%.^{9,10,13,14} Spinal Cysticercosis most commonly involves the thoracic spine and is most commonly associated with a primary inside a spinal cord. A few cases involving the cervical and lumbar cord were also found. The intramedullary type is a rare form of spinal cysticercosis with only 55 cases reported till 2014.¹⁵ It occurs from direct spread of larvae through the bloodstream or via the ventriculo-ependymal pathway.

The patient of age 18 years, showing intramedullary type of cysticercosis in the cervical region of spinal cord, is the rare case reported in our clinic.

To prevent recurrence after surgical excision of the lesion medical therapy as a postoperative prophylaxis is crucial. Albendazole and Praziquantel are cysticidal drugs of choice. Steroids also used in its management as it control the inflammatory reaction around the cystic lesion as well as to prevent deterioration in spinal cord function after treatment. The potential advantages of medical therapy alone include avoidance of surgery and treatment of surgically unreachable and multifocal cysticerci. Postoperatively patient treatment plan included anticysticercal agent (Praziquantel- 50 mg/kg/day), steroids and physiotherapy with suture removal after 10 days. In this case Praziquantel was the drug of choice with a dosage of 50 mg/kg/day for 21 days along with steroids. Also, patient was advised regular follow up.

The patient's neurological function postoperatively was not changed from his preoperative status in first follow up after a month. In further follow ups patient showed improvement with no spasticity in both upper and lower limbs. Improved grip in upper limb. Clonus present in lower left limb. Patient was able to walk with support.



Figure 4. Follow-Up

FINAL DIAGNOSIS

Intramedullary Spinal Cysticercosis

REFERENCES

- [1] Sawhney IM, Singh G, Lekhra OP, et al. Uncommon presentation of neurocysticercosis. *J Neurol Sci* 1998;154(1):94-100.
- [2] Sharma BS, Banerjee AK, Kak VK. Intramedullary spinal cysticercosis. Case report and review of literature. *Clin Neurol Neurosurg* 1987;89(2):111-116.
- [3] Garcia HH, Del Brutto OH, Nash TE, et al. New concepts in the diagnosis and management of neurocysticercosis (*Taenia solium*). *Am J Trop Med Hyg* 2005;72(1):3-9.
- [4] Garg RK, Nag D. Intramedullary spinal cysticercosis: response to albendazole: case reports and review of literature. *Spinal Cord* 1998;36(1):67-70.
- [5] Jang JW, Lee JK, Lee JH, et al. Recurrent primary spinal subarachnoid neurocysticercosis. *Spine (Phila Pa 1976)* 2010;35(5):E172-E175.
- [6] Qi B, Ge P, Yang H, et al. Spinal intramedullary cysticercosis: a case report and literature review. *Int J Med Sci* 2011;8(5):420-423.
- [7] Gaur V, Gupta RK, Dev R, et al. MR imaging of intramedullary spinal cysticercosis: a report of two cases. *Clin Radiol* 2000;55(4):311-314.
- [8] Parmar H, Shah J, Patwardhan V, et al. MR imaging in intramedullary cysticercosis. *Neuroradiology* 2001;43(11):961-967.
- [9] Izci Y, Moftakhar R, Salamat MS, et al. Spinal intramedullary cysticercosis of the conus medullaris. *WMJ* 2008;107(1):37-39.
- [10] Lim BC, Lee RS, Lim JS, et al. A case of neurocysticercosis in entire spinal level. *J Korean Neurosurg Soc* 2010;48(4):371-374.
- [11] Alsina GA, Johnson JP, McBride DQ, et al. Spinal neurocysticercosis. *Neurosurg Focus* 2002;12(16):e8.
- [12] Montano SM, Villaran MV, Ylquimiche L, et al. Neurocysticercosis: association between seizures, serology, and brain CT in rural Peru. *Neurology* 2005;65(2):229-233.
- [13] Sheehan JP, Sheehan J, Lopes MB, et al. Intramedullary spinal cysticercosis. Case report and review of the literature. *Neurosurg Focus* 2002;12(6):e10.
- [14] Mohanty A, Venkatrama SK, Das S, et al. Spinal intramedullary cysticercosis. *Neurosurg* 1997;40(1):82-87.
- [15] Chaurasia RN, Mishra VN, Jaiswal S. Spinal cysticercosis: an unusual presentation. *BMJ Case Rep* 2015;2015pii:bcr2014207966.