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Case Report

Spinal cord compression by multiple cysticercosis

Sebastian Lopez[1], Franklin Santillan[1], Juan Jose Diaz[2], Pedro Mogrovejo[3]

[1]Department of Neurosurgery, Santa Ines Hospital, [2]Department of Family Medicine, System of Public Health, [3]Critical Care Unit, Santa Ines Hospital, Cuenca, Azuay, Ecuador.

E-mail: *Sebastian Lopez - slopez@sisantaines.com; Franklin Santillan -fsantillan@etapanet.net; Juan Jose Diaz - juanjose_diazv@hotmail.com; Pedro Mogrovejo - suriel040@gmail.com

***Corresponding author:**
Sebastian Lopez,
Department of Neurosurgery,
Santa Ines Hospital,
Daniel Cordova 2-67, Cuenca,
Azuay 010112, Ecuador.

slopez@sisantaines.com

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ABSTRACT

Background: Neurocysticercosis (NCC) is the most common parasitic infection involving the central nervous system in endemic areas. Notably, spinal involvement occurs in only 0.7%–3% of patients.

Case Description: A 58-year-old female presented with progressive spinal cord compression attributed to multiple cystic intradural extramedullary thoracic lesions. She underwent laminectomy at two separate thoracic levels; this involved excision of the upper T4–T6, and just exploration of the lower T9–T11 lesions. One year postoperatively, she exhibited a residual paraparesis.

Conclusion: Spinal NCC must be considered among the differential diagnostic considerations for patients presenting with spinal intramedullary or subarachnoid/extramedullary cystic lesions. Although they are typically found in endemic regions, those who have traveled to these locations are also susceptible. Even though it is considered a benign condition, spinal NCC may cause permanent and irreversible neurological damage. Public health policies should, therefore, be developed to help control the spread and transmission of NCC.

Keywords: Intradural, paraparesis, Rare, Spinal cord compression, Spinal cysticercosis, Subarachnoid

INTRODUCTION

Neurocysticercosis (NCC) is a major public health issue in developing countries that are also becoming increasingly prevalent in developed nations.[3] Spinal NCC, caused by the encysted larval stage of the tapeworm *Taenia solium,* occurs in just 0.7%–3% of patients, and typically involves the neural parenchyma and/or subarachnoid spaces. Although NCC is rare, it is the most common parasitic infection that involves the central nervous system in endemic areas.[1,5,6,9]

Here, we report a 58-year-old female who presented with progressive thoracic myelopathy. Although spinal NCC was not considered among the preoperative differential diagnostic considerations, surgery provided both neurological decompression and pathological confirmation of spinal NCC.

CASE REPORT

A 58-year-old female presented with a 6-month history of progressive paraparesis, sensory disturbance, and sphincter dysfunction. Ultimately she became paraplegic (motor function 0/5 in both lower extremities), was severely spastic, and exhibited a T4 sensory level to pin appreciation. The thoracic magnetic resonance (MR) imaging revealed multiple intradural extramedullary cystic lesions at the T4–6 and T9–11 levels [Figure 1].

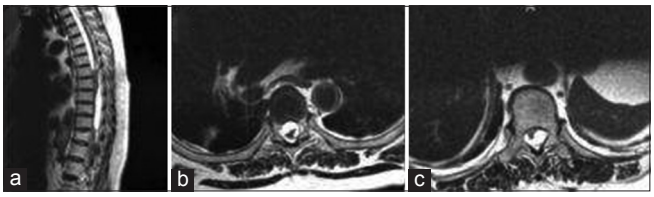

Figure 1: (a) Sagital T2-weighted magnetic resonance imaging (MRI) showing well-defined hyperintense lesions at many levels in the thoracic spinal cord. B-C Axial T2-weighted MRI, showing the intradural extramedullary location of the lesions, compressing the anterior (b) and lateral spinal cord (c).

Surgical procedure

The patient required two separate laminectomies involving both the T4–T6 and T9–T11 levels for resection of spinal NCC cysts. At the T4–T6 levels, once the dura was opened, 12 cystic lesions of different sizes protruded through the arachnoid gap and were removed along with the arachnoid membrane [Figure 2]. However, at the T9–T11 level, on opening the dura, severe arachnoiditis due to spinal NCC made it difficult to identify the spinal cord, a decompression and NCC cyst excision were attempted but ultimately resulted in rupture of a cystic lesion. The dura at both levels was then sutured in a watertight fashion followed by routine closure.

Figure 2: Image of the white colored cysts that were removed.

Pathology and follow-up

The histopathological report confirmed spinal NCC [Figure 3]. Postoperatively, the patient was treated with corticosteroids and Albendazole (30 mg/kg/day) for 15 days.

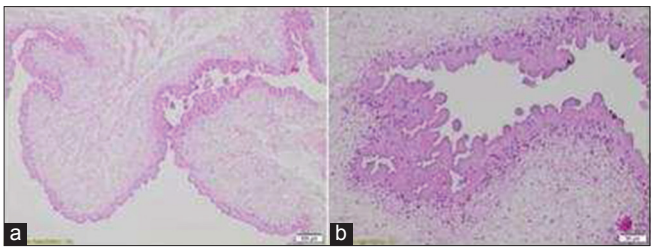

Figure 3: Hematoxylin and eosin staining indicated an eosinophilic outer cuticle layer and a single-layered sub-cuticle cell, representing typical cysticercosis findings, at magnification (a) ×100 and (b) ×50.

Immediately postoperatively, the patient regained 2/5 motor function in the lower extremities. The MR 1 month later showed partial resolution of the preoperative cord compression at both the T4–6 and T9–11 levels. In addition, corticosteroids were continued for the next 3 months to reduce inflammation [Figure 4]. One year postoperatively, the patient was still paraparetic, but could take small steps with the help of a walker (e.g. motor 3–4/5 bilaterally).

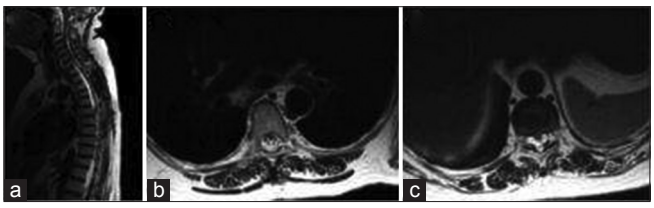

Figure 4: Postoperative T2-weighted magnetic resonance imaging. (a) Sagittal view showing the signal intensity of cerebrospinal fluid without septations in the upper thoracic level and partial resolution in the low level. (b and c) Axial view with a resolution of the compression in the upper level (b) and persistence of the cysts in the low level.

DISCUSSION

Frequency of spinal NCC

Spinal NCC is rare (0.7%–3%) and occurs either in intradural intramedullary or intradural extramedullary locations. In most cases it is associated with intracranial lesions, suggesting that the predominant etiology is direct dissemination (e.g., drop lesions) through the cerebrospinal fluid (CSF). However, there are other cases of isolated spinal involvement, attributed to retrograde migration of NCC through the epidural venous plexus. In a prior study, 31.5% of patients in Mexico with spinal cysticerci had a previous history of subarachnoid cysticercosis.[4]

Location of spinal NCC

Spinal NCC most frequently involves the lumbar and thoracic regions. In two studies, Indian patients typically presented with solitary intramedullary NCC lesions, while Mexican patients mostly had multiple extramedullary NCC (e.g., 68.4%).[2,4]

Clinical presentation

Spinal NCC may result in spinal cord and/or nerve roots symptoms/signs attributed to arachnoiditis, and/or focal compression.[7] Differential diagnoses typically include: neuroenteric, arachnoid, dermoid, epidermoid and hydatid cysts, as well as cystic schwannoma, tuberculomas, or intradural tumors.[7] Enzyme-linked immunosorbent assay testing of CSF may be useful in establishing the diagnosis of spinal NCC.

Surgery for spinal NCC

Surgical treatment is indicated where patients exhibit severe neurological deficits or when definitive histopathology is required to establish the diagnosis. When removing these lesions microsurgically, it is best to preserve the cyst wall; nevertheless, sometimes this is difficult to achieve, particularly when severe arachnoiditis is present (e.g., as in this case at the T9–11 levels where the cyst ruptured). Medical treatment includes a combination of Albendazole and corticosteroids. Despite adequate therapy, some patients may still continue to exhibit severe perioperative/postoperative morbidity (i.e., resultant neurological sequelae), or mortality.[8]

CONCLUSION

Spinal cysticercosis NCC is rare occurring in only 0.7%–3% of NCC in endemic regions. It should be considered among the differential diagnoses for patients with spinal cystic lesions, located either intradural/intramedullary or intradural/extramedullary (i.e., in the subarachnoid space). Although these lesions are benign, gross total excision resulting in resolution of the attendant neurological deficits is not always achieved. Major future efforts should be made to provide primary prevention of NCC and spinal NCC through improved sanitary measures.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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