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TERATOMA OF THE SPINAL CORD: A CASE REPORT

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ABSTRACT

Intradural spinal teratomas are very rare dysembriogenetic tumors. We present an intradural extramedullary spinal teratoma without spinal dysraphism. Poeze et al. reported 83 spinal teratomas from the literature review in 1999. Of these, only 52 were extramedullary. Most of them were reported in pre MRI era. We discussed neuroradiological properties of an intradural teratoma with emphasis on MRI.

Key words: Spine, MRI, teratoma, neoplasm, CT.

INTRODUCTION

Intradural spinal teratomas are very rare dysembriogenetic tumors [1-10]. The usefulness of magnetic resonance (MR) imaging in detection of spinal tumors has been established.[1, 2, 6] We discussed the neuroradiological and histopathologic properties of an intradural spinal teratoma case.

CASE REPORT

A ten year old boy was admitted to the neurosurgery clinic in our hospital, with complaints of inversion of the left foot on 09.07.2002. He was the second child of a 32 year old mother with normal delivery. He was able to walk when he was two years old.

He didn't have any complaints until last year. On neurological examination, right lower extremity findings were normal. On the left side, hypoactive patellar and aschilles reflexes, hypoesthesia at L4-5 level and weakness (3/5) were noted. The AP X-ray exam on 13.07.2002 showed expansion of the spinal canal and erosion of bilateral pedicles of L2, L3, L4 vertebraes (Figure 1). The MRI exam on 15.07.2002 demonstrated a

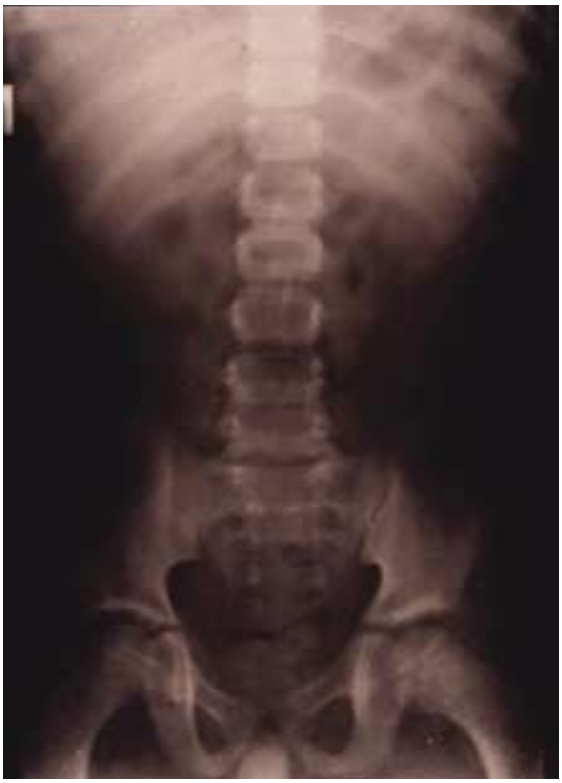

Figure 1: AP view of lumbosacral spine demonstrates expansion of the spinal canal and erosion of the bilateral pedicles of L2, L3, L4 vertebras.

heterogenous intradural mass lesion between L1-S2 vertebraes extending from conus medullaris to cauda equina and causing expansion of spinal canal with indentation of vertebral bodies. it was 138x31x21mm in dimension. In the posterior part of the mass there was a lipomatous component measuring approximately 30x20x10mm with typical signal characteristics (hyperintense on T1 and T2). A large cystic component was also noted (Figure 2, 3). At surgery (18.07.2002), complete laminectomy was done from L1 to S1. After opening the tense dura from midline, an intradural dark gray colour, solid mass resected. It was aspirated easily with no massive hemorrhage. There was a 2x3 cm lipomatous component posteriorly. The patient had satisfactory postoperative course.

He was discharged with no complaints. Examination of the specimen macroscopically revealed white to pink colored tissue fragment 3x1.5x1 cm in dimension and contained hair and adipose tissue. Microscopically stratified squamous epithelium, mucous glands, chondroid tissue, muscle and adipose tissue were seen (Figure 4, 5).

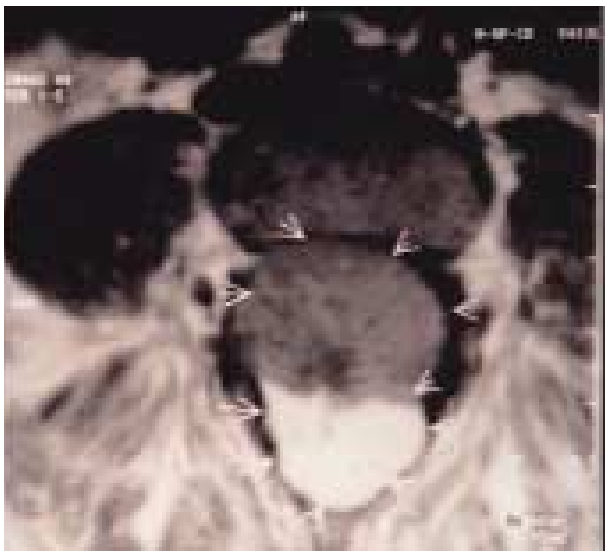

Figure 2: Axial precontrast T1A images demonstrate solid, cystic and lipomatous components of the mass lesion, scalloping of the posterior contour of the vertebrae and spinal canal expansion.

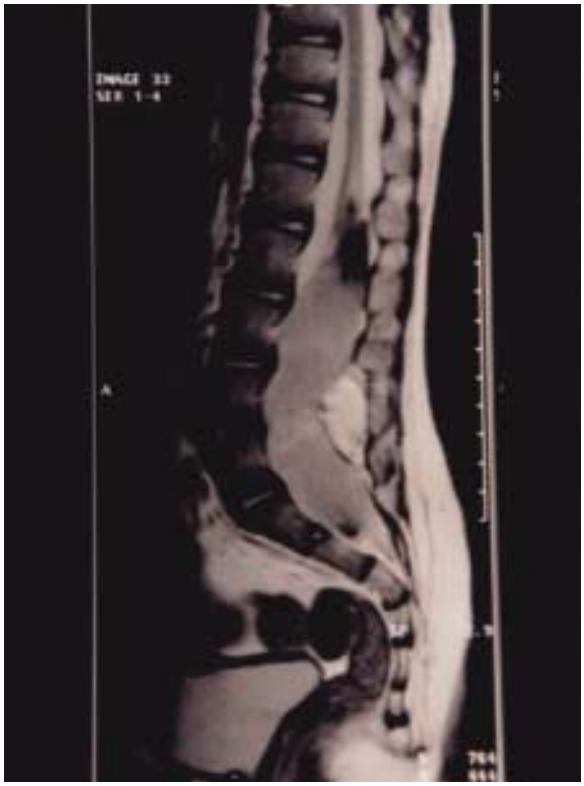

Figure 3: Sagital T2A images demonstrate solid, cystic and lipomatous components.

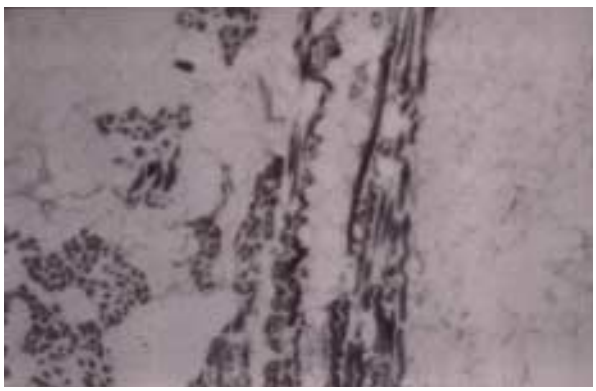

Figure 4: Muscle and adipose tissue.

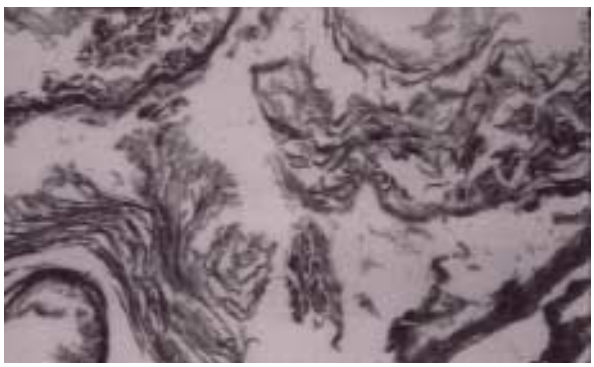

Figure 5: Squamous epithelium and keratinous material.

DISCUSSION

Intradural spinal teratomas are very rare dysembriogenetic tumors. [1-10] Only 2% of all teratomas occur in the central nervous system. Furthermore, only a very small proportion of CNS teratomas occur in the spinal cord. [7] Virchow (1863) and Gowers (1888) may have been the first to describe an intraspinal teratoma. [6,7] Poeze et al. reported 83 spinal teratomas from the literature review in 1999. Of these 83 teratomas, 52 were extramedullary. They are usually located in the dorsal and dorsolateral region in the spinal canal. The vertebral canal congenital anomaly, most commonly a diastometamyelia was found. [8] The mass may be extra or intradural or intramedullary. They usually contain cartilage, bone and ectodermal elements like hair.

Cystic component contains thick whitish material rich in desquamated keratin from the lining. [9] Although a teratoma is a true neoplasm composed of all three germinal layers, the presence of only two germinal components doesn't necessarily role out this diagnosis. [1,3,7] The origin of teratoma of the spinal cord is controversial. Kubie and Fulton (1928) speculated that the tumour was an ependymal diverticulum. Germinal cell aberation theory was supported by Bucky and Bucharon (1935), Rewcastle and Francoeur (1964). [3,4] Ugarte, Gonzalez-Crussi and Satelo-Avila (1970) hypothesized that the persistence of the neuroenteric canal resulted in the formation of teratoma.

Willis defined teratomas as neoplasms composed of multiple tissues foreign to their localization and lacking organ specifity. It is the most commonly agreed explanation.[8] They are divided into three categories as benign, immature and malignant. The benign lesions contain mainly mature elements. The immature components are almost exclusively neuroepithelial.

Plain X ray films often show erosion of vertebral bodies and widening of the interpedicular space. Spina bifida, vertebral body fusion, asymmetry of the vertebral bodies, and diastometamyelia are most commonly detected congenital anomalies on plain films. [7] CT is complementary in demonstrating the bony defects. Teratomas exhibit variable density according to the nature of the tissue. Fat or calcification are easily demonstrated on CT images which could be highly suggestive of the diagnosis. [4,7] MR imaging is the most valuable diagnostic technique of the spinal canal lesions.

Imaging of the spinal cord, conus medullaris and cauda equina is superior to myelography and CT. Teratomas exhibit mixed high and low intensity, indicative of tissue heterogenecity. [1,7] The MRI appearance of lipomatous portion of a teratoma (well defined fatty mass homogenously hyperintense on T1 and hypointense on T2 and fat suppressed T1A weighted images) is well known. On the other hand, epidermoid and dermoid cysts have a heterogenous and less typical aspect. T1 weighted images show the solid component slightly hypo or isointense compared with the spinal cord, hyperintense areas correspond to liquid lipid metabolites, cholesterol and secretions of sebaceous glands. On T2 weighted images the solid portions are hyperintense, whereas the lipid and sebacous components show decreased signal intensity. The entire neuroaxis should be imaged when a single lesion may not explain a clinical presentation. Multiple spinal congenital anomalies, although usually occuring at the same level of the neuroaxis, may occur at multiple levels of the spinal canal. [10] MRI is particularly useful in diagnosing small lumbosacral lesions whereas they may not be easily detected by myelography and CT. Preoperatively, the definition of the anatomical relationship between the tumour and the neural structures is the most impor-

tant aid of MRI. The neuroradiologist must define the tumour location in respect to the cord and nerve roots, the position of the conus and the site and extent of the interface between the mass and spinal cord.

Total resection is the treatment of choice. it is almost impossible without some injury to neural tissue. Partial resection produces long term improvement in most cases. It is important to resect as much of the tumour as possible while preserving all neural tissue.[1,4,5,7]

As a conclusion, we discussed a very rare intraspinal teratoma case with characteristic neuroimaging and histopathological properties. MRI helps correct diagnosis by demonstrating different signal characteristics of tissue components. It is useful not only in diagnosis but also in demonstrating the anatomic localization, extension and relation to neighbouring neural structures. CT and X-ray demonstrates the bony changes accurately.

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