

Primary Spinal Germ Cell Tumors: An Unusual Case Analysis

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Abstract: Primary spinal cord germinoma are rare group of tumors. Most commonly seen in thoracic spine and thoracolumbar spine as intramedullary mass. On imaging primary spinal germ cell tumors shows unspecific imaging characteristics, and only few tumors secrete markers. Histopathology examination can give us the specific diagnosis. Here we present a case of a 2-year-old male with intramedullary spinal cord germinoma who presented to our department with history of fall followed by swelling over the back with bowel and bladder incontinence and loss of lower limb strength.

Key Words •germinoma •spinal cord •pediatric •intramedullary tumor

I. INTRODUCTION

Germinal cells of the genital organs and germ cell tumors are similar in histology. In CNS germ cell tumor occur in the pineal or suprasellar regions. They are uncommon in the thalamus, basal ganglia, or ventricles regions. Spinal seeding of a germ cell tumor occurs in the form of drop metastases. Rarely germ cell tumor may be seen in the spinal cord as primary tumor.

Case history:

2 year old boy came with history of fall 15 days back followed by swelling over the back with bowel and bladder incontinence and loss of lower limb strength.

MRI

MRI spine with gadolinium was performed in a Siemens Magnetom Avanto 1.5 Tesla scanner.

The study reveals heterogeneously hyperintense lesion seen on T2/STIR sequences appearing hypointense on T1 involving lower thoracic and lumbar spinal canal extending from T9 to L4 level. Significant widening of the canal noted at this level. Superiorly the lesion is seen encasing and displacing the conus and filum terminale anteriorly. Widening of the neural foramina from T10 to L3 level bilaterally with extension across the foramina into the paraspinal soft tissue. Further lesion seen infiltrating the bilateral psoas muscle upto L3-4 level. Psoas muscle on its entire length shows T2/STIR hyperintensities with heterogeneous post contrast enhancement. The components of the lesion within the psoas muscle indenting the medial aspect of kidney with loss of fat planes. Also there is anterior extension of the lesion in the anterior midline partially encasing aorta and IVC. Posteriorly there is infiltration of paraspinal muscle bilaterally from T10 to L4 level. Patchy T1 hyperintense areas seen in the intracanal components of lesion suggestive of hemorrhage. There is intense heterogeneous enhancement of lesion within the canal and paraspinal components. Also areas of diffusion restriction noted within the lesion. Altered marrow signal intensity appearing hyperintense on T2/STIR noted in the body of from T10-L4 vertebra. Decreased height of body of L1 vertebra with irregularity noted in the end plates suggestive of compression fracture. Liver mildly enlarged with span of 10cm. Lungs shows multiple small (less than 5mm) T2/STIR hyperintense nodules in bilateral lung fields.

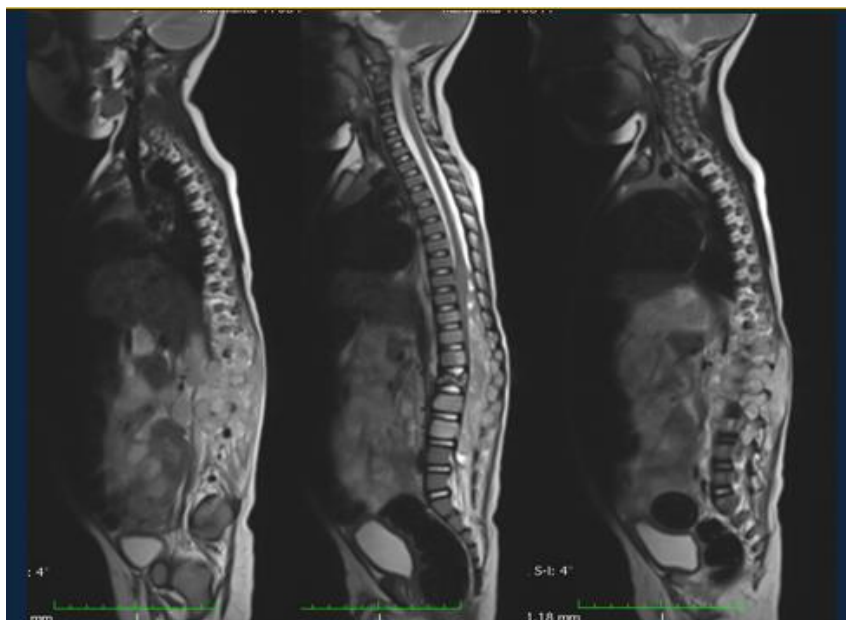


Figure 1:Sagittal T2WI shows heterogeneously hyperintense lesion seen involving lower thoracic and lumbar spinal canal extending from T9 to L4 level.

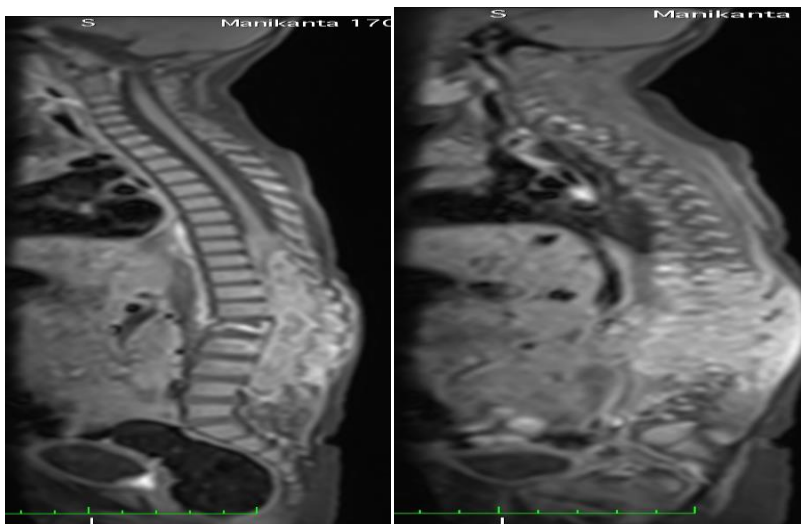


Figure 2:Sagittal post contrast images shows intense heterogeneous enhancement of lesion within the canal and paraspinal components.

Histopathological findings:

Multiple sections studied show skeletal muscle tissue and cystic areas comprising of branching papillary lesion lined by cuboidal epithelium with areas of stratification. The cells have a round to oval nucleus. The small cystic spaces contain the tumor cells. Adjacent to the cysts, plenty of muscle tissue is seen. Areas of necrosis and hemorrhage is seen. Perineural invasion and vascular emboli are also seen. At places sheets of foamy cells having vacuolated cytoplasm is seen. Areas of hemorrhage with plenty of cholesterol clefts are also seen.

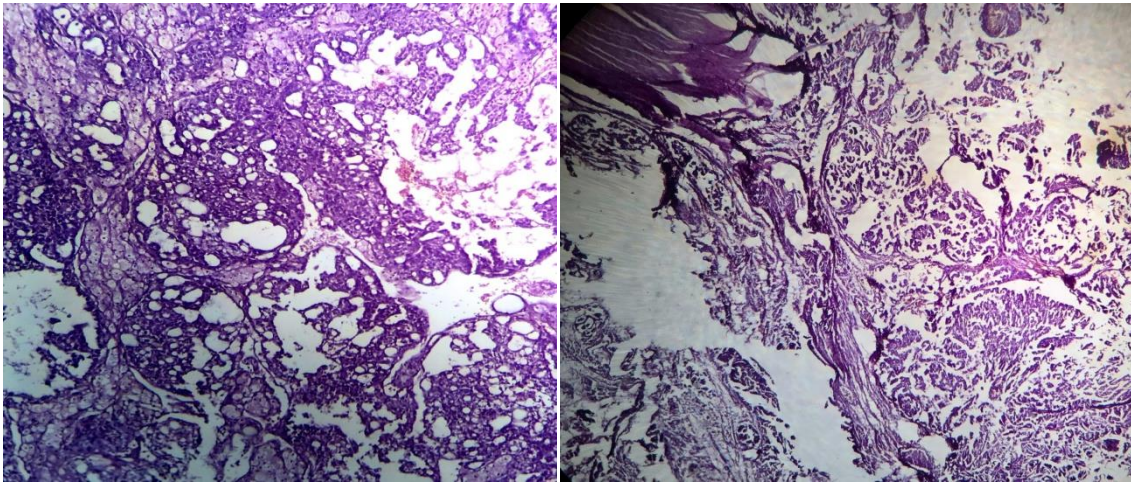


Figure 3: Sections showed skeletal muscle tissue and cystic areas comprising branching papillary lesion lined by cuboidal epithelium with stratification. Nucleus are round to oval with tumor cells. Areas of hemorrhage are also seen.

Discussion:

Thoracic spinal cord is the most common location for spinal germinomas followed by the thoracolumbar area and the lumbar area. These tumours rarely occurs in cervical spinal cord. Primarily seen intramedullary in 75% of the cases. On imaging it is difficult to distinguish primary spinal germ tumors from other spinal neoplasm. Definitive diagnosis can only be made by histological examination. Tumours of germ cell origin (GCT) generally arise in the gonads. Very occasionally, however, they can be encountered as extragonadal primaries involving posterior midline structures in the mediastinal, retroperitoneal or sacrococcygeal regions. Intracranial GCTs spread via the cerebrospinal fluid, causing drop metastases to the spinal cord. A primary GCT originating in the spinal cord, on the other hand, is extremely rare. Other rare primary sites include the nasopharynx and the orbit.

Conclusion:

Though spinal germ cell tumor is a rarity, a high index of suspicion is needed in the presence of rapid neurological deterioration in a radiologically proven spinal cord tumor. Pre-operative biopsy should be done whenever feasible and the neurosurgeon and the oncologist should form a policy of partial resection followed by upfront local radiotherapy and adjuvant chemotherapy.

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