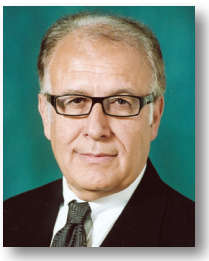
Lower Back Pain Due To Cauda Equina Tumors



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Patient Presentation

Patient is a 17-year-old female in normal health until one month prior to admission at Northridge Hospital. Following horse-back riding, she developed lower back pain with radiation to both lower extremities, including buttocks, posterior thigh, and front and back of her legs, which was more severe on the right side. Her symptoms did not subside.

An MRI scan of the lumbar spine disclosed a very extensive intradural mass occupying the entire thecal sac, extending from L2 canal into upper S1 level measuring 10cm x 1½ cm. The mass also extended into the inferior portion of the conus, displacing all the nerve roots laterally. Enhancements were noted in the inferior thecal sac at S1 and S2, suspicious for drop metastasis. They were also seen at the surface of the distal thoracic cord, which was felt to be reflecting enlarged vasculatures.

Initially, her examination revealed no gross neurological deficits, and the patient and family members deferred any surgical treatment. However, within 24 hours the patient presented herself to Northridge Hospital's Emergency Department, indicating excruciating lower back and increasing right lower extremity pain with sense of numbness and sharp shooting pain. An examination revealed hypalgesia of the entire right lower extremity, nondermatomal in pattern with equivocal sense of position of her right big toe and some loss of strength of both lower extremities below her waist, strength of 5-/5. Her straight leg raised about 20-30 degrees.

> Pain is the most common presenting symptom of a tumor of the cauda equina and may precede any demonstrable neurological deficits by several years.

Procedure

Due to the rapid worsening of her neurological exam, consistent with early cauda equina syndrome, and the presence of a massive intradural enhancing lesion, emergency surgical resection of the lesion was performed. Total microscopic resection of the solid mass was achieved with preservation of all the cauda equina nerve roots without sacrificing any neural elements. There was significant improvement of her somatosensory-evoked potential, as well as motor-evoked potential studies of the lower extremities and blood loss was less than 100 ml. The anal sphincter-evoked potential studies remained stable throughout the entire procedure. At the conclusion of the surgery, improvement of amplitude of the right tibialis anterior, gastrocnemius and anal sphincter was noted. Post-operatively, the patient's neurological examination revealed no deficits. Recovery was uncomplicated, and the patient was discharged after surgical pain was controlled. Patient was able to ambulate normally, and there was no evidence of bowel or bladder dysfunction, nor deficits in the saddle area. Immunohistological chemistry examination of the surgical specimen was found to be consistent with myxopapillary ependymoma, which are considered grade I neoplasm in the WHO classification, and rarely recur or disseminate.

Follow-up

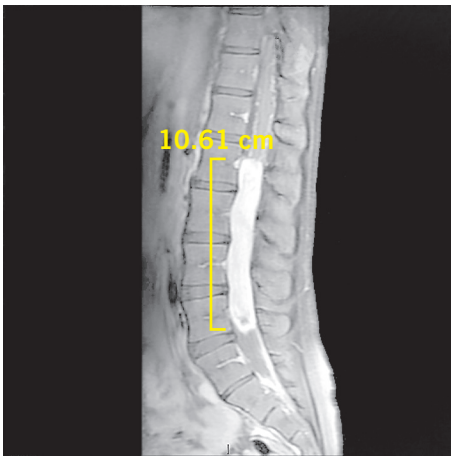
Eighteen-month follow-up MRI scan of the lumbar and thoracic spine revealed no tumor recurrence and CSF cytology was negative with normal protein and glucose levels.

Cauda Equina Tumors

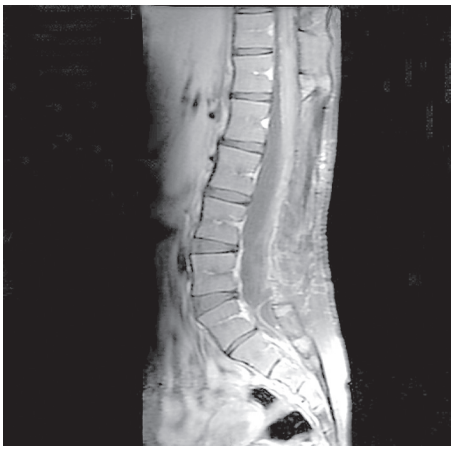
Tumors of the cauda equina include empendymoma, Schwannoma, meningiomas, lipoma, metastatic tumors and paraganglioma. Usually these tumors present in the cauda

equina with symptoms related to mass effect. Myxopapillary ependymomas are usually restricted to the filum terminale. Occasionally, the tumors also occur in presacral soft tissue. These tumors are more common in adults than children and are usually red in appearance because of the rich vascularity. These tumors have papillary structures with numerous hyelinized vessels surrounded by mucin and an outside layer of tumor cells. Usually, the prognosis of the patient is excellent, particularly when the tumor capsule is found intact intraoperatively. Myxopapillary ependymoma may metastasize to the lungs or other parts of the body, despite its benign appearance.

The paraganglioma arises from the autonomic nervous system, rarely at the filum terminale but often in other systemic sites. Myxopapillary ependymoma may be more likely to behave aggressively in children. As a result, adjunct radiotherapy in the pediatric population may be necessary. Ependymomas of the conus medullaris and filum terminale are usually of the myxopapillary subtype, WHO grade I, and are usually solitary. Histology is papillary with microcystic vacuoles and mucosubstance connective tissue. There is no anaplasia in the majority of these tumors, but



Pre-op MRI scan of the lumbar spine T1 sagittal images with contrast reveals densely enhancing lesion occupying the entire lumbar canal L2-L5



Eighteen-month post-op MRI scan reveals total resection of tumor mass with no recurrence

CSF dissemination may occur rarely. Intracranial myxopapillary ependymoma is rare, although this could happen after resection of tumors at the cauda equina level. Rarely, this tumor may be found outside the CNS in sacrococcygeal subcutaneous tissue from hetrotopic rests of empendymomal cells.

Pain is the most common presenting symptom of a tumor of the cauda equina and may precede any demonstrable neurological deficits by several years. **For approximately 50% of the patients, the pain becomes more severe at night or when the patient assumes a recumbent position for any length of time**. Likely more common is musculoskeletal back pain, which is not relieved by shifting position while the patient remains recumbent. The pain is only mitigated when the patient stands or sits up. Frequently, the patient will report sleeping at night in a sitting position. **Patients with a tumor of the cauda equina may present with cauda equina syndrome, which classically includes lumbar pain, urinary retention, saddle anesthesia, and less frequently painless progressive lower extremity weakness**.

Myxopapillary ependymoma has a peak incidence in the 4th decade of life and is generally confined to the lumbosacral spine. Usually it represents close to 30% of empendymomas that occur in the spinal axis. Sometimes, the tumor may envelope the roots of the cauda equina or erode the surrounding bone with its expansile growth.