Marianjoy Rehabilitation Hospital
part of Northwestern Medicine

Thoracic Hemangiopericytoma Recurrence: A Spinal Cord Injury Case Report

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Background

- Spinal Hemangiopericytomas (HPCs) are considered to be extremely rare tumors with few case reports documented on a global level
- In total, hemangiopericytomas are considered to be rare as they account for only 1% of all central nervous system (CNS) tumors, and of those, are more commonly found within the brain and less so within the spine (1).
- Originally thought to be a tumor of the central nervous system that originated from pericytes (cells surrounding blood vessels); however, as recently as 2006, the World Health Organization considered these tumors within those of the meninges, and/or of mesenchymal origin (1)
- Re-classified to be within a category of solitary fibrous tumors
- Presentation: Painless masses that do not cause symptoms organically. For this reason, they may also be undetected for extended periods of time, especially considering that in soft tissue where they originate, it is usually flexible and thereby can accommodate an expanding mass more easily
- Symptoms arising from hemangiopericytomas in the spine are typically due to the size of the mass itself. Compression of the spinal cord can lead to tetra- or paraplegia depending on location, in addition to paresthesias, ataxia, loss of proprioception, and pain—all contributing to decreased functional mobility and ability to perform activities of daily living (ADLs).
- The local recurrence rate of HPC is estimated at 60%, whereas the metastatic rate of hemangiopericytomas is 23% (2). Primary treatment of HPCs is surgical removal (3)
- Intervention: Gamma Knife radiosurgery, in which highly-focused laser radiation beams target the site of the tumor (4). This is usually a favorable option for people with residual tumor after surgical intervention. If surgery is decided upon, it can be followed by radiation or chemotherapy (5).
- This case highlights this disease as a non-traumatic spinal cord injury, specifically as it pertains to ADLs (activities of daily living) and mobility—a topic that has not been highlighted extensively in literature to this point

References

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Case Presentation

- 69 year old male with a past medical history of thoracic hemangiopericytoma status -post multiple resections, hypertension, hyperlipidemia, type 2 diabetes mellitus, and urinary retention
- Mechanical fall in 2001 —> the original diagnosis of hemangiopericytoma. At that time he already had a gait impairment of the right leg, leading to the first T6-T8 laminectomy for resection
- Since then he had undergone multiple interventions for resection, including Cyberknife and radiation therapy.
- Routine Neurosurgery follow-up at the University of Chicago in 2020: MRI Thoracic Spine showed enlargement of the expansile enhancing tumor at T7, and an increase in size of the enhancing intradural extramedullary tumor at T11-T12. Repeat surgical intervention was recommended. He underwent T6-T8 laminectomy for tumor resection
- Following surgery, there was a decrease in strength and sensation in both of his lower extremities, rated at 0/5 bilaterally. Follow-up MRI of the Thoracic and Lumbar spine revealed slightly increased lesional/post-operative cord edema
- He was admitted to Marianjoy Rehabilitation Hospital for acute rehabilitation admission.
- Before this hospitalization, he used self straight catheterization fives times daily for urinary retention
- He lived at home with his wife in a 1-story townhouse with ramp entrance, and was able to perform basic ADLs independently with assistive equipment. He ambulated with a rolling walker and manual wheelchair but was reporting difficulty over the previous few weeks
- Inpatient rehabilitation course was complicated by an episode of autonomic dysreflexia secondary to a urinary tract infection
- He was graded on the American Spinal Injury Association (ASIA) Impairment Scale as a T6 AIS C Incomplete Paraplegia. He was discharged to a Subacute Rehabilitation Facility.

	Evaluation	Discharge
Eating	Independent	Independent
Oral Hygiene	Set-Up	Independent
Toileting	Total Assist	Maximal Assist
Shower/Bathing	Moderate Assist	Moderate Assist
Upper Body Dressing	Minimal Assist	Independent (Wheelchair Level)
Lower Body Dressing	Total Assist	Minimum Assist (at bed level)
Putting On/Taking Off Footwear	Total Assist	Independent
Toilet Transfer	Total Assist	Total Assist (used lift to rolling shower chair)
Sit-to-Supine	Total Assist	Minimal Assist
Mobility	80 ft. Minimal Assist at wheelchair level	200 ft. Independent at wheelchair level
Transfers	Board Total Assist	Board Minimal Assist

Discussion

- Spinal HPC is not only a rare disorder, but also has a relatively high recurrence rate
- Patients must often endure multiple interventions. His progress in acute rehab per the table above was attributable to an interdisciplinary approach
- His decreased bilateral lower extremity strength after the latest surgery presented a large barrier, but with physical and occupational therapy, he was able to complete all ADLs (except for showering and toileting) at least with minimal assist at the wheelchair level. This was also due to increased endurance over the course of his rehab
- Despite his progress, this patient still required Moderate Assist for bathing and Maximal Assist for toileting which contributed to his discharge to Subacute Rehabilitation as opposed to his home
- Another barrier was his ability to transfer, as he required either a transfer board or a mechanical lift, which presented a problem to be discharged directly to home.
- As a rare disorder that required multiple interventions, Spinal HPC can also cause a psychological burden. It would be reasonable to believe that other patients with a similar diagnosis and treatment course would benefit from continued psychological support. Having a psychologist is therefore integral to providing comprehensive care
- The advantage of having a nursing and physiatry team that is adept and seasoned in treating spinal cord injuries allowed for swift treatment of autonomic dysreflexia that occurred during admission and prevented further complications.

Conclusion

- Hemangiopericytomas are very rarely diagnosed tumors, comprising only 1% of all CNS tumors (1)
- There is still very limited published literature on their effects on a patient's ADLs and mobility. This patient is an example of the progress that can be made during acute rehab with appropriate treatment
- This patient was discharged to Subacute Rehab. Nevertheless, acute rehab afforded him the ability to operate at a predominantly independent level from a wheelchair
- While this case presented as an acute decline for a chronic HPC patient, it may have differed from a rehab course of a new spinal HPC patient
- Due to the recurrence rate, patients often undergo multiple interventions which may increase psychologic stress
- Having a multidisciplinary approach to care with PT, OT, Psychology, nursing, and Physiatry is crucial to maximizing the chance for increased independence.