WHAT IS THE CORRECT DIAGNOSIS FOR MR. OH’S WORSENING BACK PAIN?

A  Lateral femoral cutaneous nerve entrapment
B  Intradural extramedullary metastasis
C  Degenerative disc disease with nerve root impingement
WHAT IS THE CORRECT DIAGNOSIS FOR MR. OH’S WORSENING BACK PAIN?

A Lateral femoral cutaneous nerve entrapment
B Intradural extramedullary metastasis (correct answer)
C Degenerative disc disease with nerve root impingement

A Lateral Femoral Cutaneous Nerve Entrapment. Patients will experience radiating pain down the thigh, and in advanced stages, fixed sensory loss on the lateral thigh. Those with obesity, diabetes mellitus, advanced age, and those who are pregnant or postpartum are predisposed to meralgia paresthetica (Parisi, Mandrekar, Dyck, & Klein, 2011). Mr. OH does not possess any of the above mentioned risk factors, which essentially eliminates the possibility and should only be considered after the integrity of the spine has been evaluated.

B Intradural Extramedullary Metastasis. Seen in fewer than 5% of those autopsied after death from cancer, intradural extramedullary metastasis is typically caused by drop lesions, prostate cancer, breast cancer, melanoma, or lymphoma (Traul, Shaffrey, & Schiff, 2007). Radicular pain may be the only symptom, as the tumors develop outside of the vertebra. Any number of mechanisms could be the cause for metastatic spread; however, etiology is irrelevant once intradural metastasis is indicated. The patient is then in an advanced disease state and prognosis is poor no matter the cause (Land, Bowden, Morpeth, & DeVine, 2019). Mr. OH’s clinical picture is consistent with intradural metastasis and diagnosis was confirmed based on a lumbar puncture with positive cerebral spinal fluid for malignant cells consistent with small cell lung cancer.

C Degenerative Disc Disease With Nerve Root Impingement. Because more than 85% of patients seen in primary care complain of non-specific low back pain (Deyo & Weinstein, 2001), providers must have knowledge of the most common locations of degenerative disc disease in order to distinguish cancerous from noncancerous-related back pain. Degenerative disc disease is most often found in the cervical spine and lumbar spine, while spinal metastasis is found at the thoracic vertebra (60%–80%), lumbar spine (15%–30%), and cervical vertebra (< 10%; Maccauro et al., 2011). To adequately distinguish between degenerative disc disease and bone metastasis, MRI is needed and is considered the gold standard in the evaluation.

FOLLOW-UP
Mr. OH underwent MRI of the cervical thoracic and lumbosacral spine. An enhancing intradural mass was found at the level of the L1 to L2 measuring 1.5 × 1.0 cm. Mr. OH’s MRI results of the spine are consistent with intradural spinal metastasis as the result of drop metastasis from his previously treated brain lesion. Subsequently, a lumbar puncture was performed and sent for cytology. The cytology came back consistent with small cell lung cancer. Following the identification of the drop metastasis, Mr. OH underwent subsequent stereotactic radiation therapy. Mr. OH had a short-term response and eventually succumbed to the cancer with disease progression within 5 months (Figure 1).

DISCUSSION
The majority of metastatic spine tumors are extradural, occurring in the osseous structures outside of the dural sac. These tumors can result in neurologic complications by directly invading the spinal cord or by causing pathologic fracture of the vertebrae, with resultant neurologic compromise. Less commonly, metastatic tumors can arise in the intradural space, either intramedullary (within the spinal cord) or extramedullary (outside the spinal cord but within the dura). In some cases, intradural metastasis can result from downward spread of intracranial or spinal...
cord tumors, and method of spread termed drop metastasis. While rare, it most commonly occurs in patients who have had some type of surgical intervention performed on a tumor within the central nervous system. As a result, it is believed that the seeding of the tumor occurs via cerebral spinal fluid and that gravity possibly plays a role in the development of drop metastasis most commonly seen in the lumbosacral spine (Choi & Shapera, 2006). Confirming the diagnosis can be challenging due to frequent negative cytology results from cerebrospinal fluid. MRI imaging along with clinical presentation can assist in the diagnosis if surgical intervention is not being considered.

The prognosis for patients with drop metastasis is most commonly very poor. The median overall survival typically ranges from 4 to 15 months based on retrospective data collected from various cancer types (Akhavan, Mehrabaniyan, Jarahi, & Navabii, 2012). Unfortunately, there are no prospective trials comparing commonly used modalities to manage intradural metastasis. Most data are based on case studies involving decompressive laminectomies, radiotherapy, chemotherapy, or a combination of these treatments. Each patient’s care requires interdisciplinary collaboration and individualized treatment management based on radiosensitivity of the tumor and overall prognosis (Delank, Wendtner, Eich, & Eysel, 2011).

Disclosure
Mr. Davis has consulted for Amgen, Celgene, Incyte, Janssen, and Takeda.

References
Akhavan, A., Mehrabaniyan, M. R., Jarahi, M., & Navabii, H. (2012). Intradural extramedullary metastasis from papillary carcinoma of thyroid. BMJ Case Reports, 2012. https://doi.org/10.1136/bcr.02.2012.5801
Choi, P. P., & Shapera, S. (2006). Drop metastases. Canadian Medical Association Journal, 175(5), 475. https://doi.org/10.1503/cmaj.060308
Delank, K. S., Wendtner, C., Eich, E. T. & Eysel, P. (2011). The treatment of spinal metastases. Deutsches Arzteblatt International, 108(5), 71–79. https://doi.org/10.3238/arztebl.2011.0071
Deyo, R. A., & Weinstein, J. N. (2001). Low back pain. New England Journal of Medicine, 344(5), 363–370. https://www.nejm.org/doi/full/10.1056/NEJM200102013440508
Land, C. F., Bowden, B. D., Morpeth, B. G., & DeVine, J. G. (2019). Intradural extramedullary metastasis: A review of literature and case report. Spinal Cord Series and Cases, 5, Article number: 41. https://doi.org/10.1038/s41394-019-0181-0
Maccnarro, G., Spinelli, M. S., Mauro, S., Perisano, C., Graci, C., & Rosa, M. A. (2011). Physiopathology of spine metastasis. International Journal of Surgical Oncology, 2011, 1–8. https://doi.org/10.1155/2011/107969
Parisi, T. J., Mandrekar, J., Dyck, J. B., & Klein, C. J. (2011). Meralgia paresthetica: Relation to obesity, advanced age, and diabetes mellitus. Neurology, 77(16), 1538–1542. https://doi.org/10.1212/WNL.0b013e318233b356
Traul, D. E., Shaffrey, M. E., & Schiff, D. (2007). Spinal cord neoplasms—intradural neoplasms. The Lancet Oncology, 8(1), 35–45. https://doi.org/10.1016/S1470-2045(06)71009-9