

Evidence Discussion (ONC 2.8-2.9 and 31.3)

Evidence Summary for Meningiomas (Intracranial and Intraspinal) (ONC-2.8)

Meningiomas are the most frequent primary central nervous system tumors, accounting for approximately 34% of all primary brain and spine tumors. Meningiomas are extra-axial, dural-based tumors that are derived from the dura and occur throughout the neuroaxis. Meningiomas are a heterogeneous group of tumors that have been classified in three histologic grades, WHO Grades I (benign), II and III (aggressive). Meningiomas can involve bone resulting in bone overgrowth or infiltration into bony structures. Meningiomas are associated with genetic syndromes and molecular alterations. Approaches for classification are evolving to incorporate histopathologic, genetic and molecular characteristics.

Evicore guidelines align with NCCN guidelines. The standard imaging modality is MRI without and with contrast. CT imaging is supported, as there is potential for bone involvement. Meningioma overexpresses somatostatin receptors. PET imaging using various radiolabeled somatostatin receptor ligands (SSAs) such as ⁶⁸Ga-DOTA-Tyr3-octreotide (DOTATOC), ⁶⁸Ga-DOTA-d-Phe1-Tyr3-octreotide (DOTATATE), or ⁶⁸Ga-DOTA-I-Nal3-octreotide (DOTANOC) have been used for the diagnostic evaluation of meningioma. PET imaging with these ligands is supported for restaging to clarify inconclusive findings on MRI imaging. ¹¹¹In-octreotide scintigraphy (octreotide) imaging has a similar imaging indication as ⁶⁸Ga-DOTATATE PET/CT. In surveillance, the schedule for follow-up MRI/CT imaging is based on tumor grade and extent of residual disease. .

References

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Han S, Suh CH, Woo S, Kim YJ, Lee JJ. Performance of ⁶⁸Ga-DOTA-conjugated somatostatin receptor-targeting peptide PET in detection of pheochromocytoma and paraganglioma: a systematic review and metaanalysis. *J Nucl Med*. 2019; 60:369–376.

Evidence Summary for Spinal Cord Tumors (Benign and Malignant) ONC 2.9

Primary spine tumors are classified according to their anatomic location and histology. Spinal cord tumors account for 2-4% of all primary central nervous system tumors. . Primary spinal cord tumors included in this section are classified as intramedullary tumors that arise within the spinal cord. Intramedullary tumors are predominately ependymomas or astrocytomas. Intradural extra medullary tumors occur adjacent to the spinal cord and include meningioma as well as nerve sheath tumors. The most common primary spinal cord tumors are meningioma, tumors of the spinal nerves and ependymoma.

The imaging guidelines are based on the histologic diagnosis of the tumor:

For low-grade gliomas, imaging guidelines are delineated in **ONC 2.2 Low Grade Gliomas**.

For high-grade gliomas, imaging guidelines are delineated in **ONC 2.3 High Grade Gliomas**

For spinal cord tumors found in individuals with Neurofibromatosis type 1 and 2, imaging guidelines are delineated in **PEDONC 2.3 Neurofibromatosis 1 and 2 (NF1 and NF2)**.

For other malignant spinal cord tumors, imaging guidelines are delineated in **PEDONC 4.9**

Spinal cord compression is a complication of this group of tumors. The imaging modalities indicated, based on neurologic signs and symptoms, are outlined in **eviCore ONC 31.6 Spinal Cord Compression**.

References

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Evidence summary for Brain metastases (ONC 31.3)

Brain metastases are the most common malignant intracranial tumors with an incidence 10-fold higher than primary central brain tumors. Common presenting signs and symptoms of brain metastases include headache, nausea, vomiting, focal neurologic deficits, and mental status changes. The most common cancer associated with brain metastases is lung cancer approaching 50% of the cases. Melanoma is associated with the highest incidence of brain metastases.

Evicore guidelines align with NCCN guidelines, and support MRI brain without and with contrast as the standard imaging modality for evaluation of an individual with suspected or known brain metastases. The post-treatment monitoring after surgery or radiation is based on NCCN guidelines. Specifically for stereotactic radiosurgery planning, a diagnostic MRI is not supported and the MRI request is based on an unlisted procedure code. Advanced imaging with MR perfusion imaging is a problem-solving tool, complementing a standard MRI brain, to distinguish between radiation necrosis and tumor progression. PET Metabolic Brain imaging is a useful tool to distinguish between radiation necrosis and tumor progression with recent indeterminate MRI brain and MR perfusion study.

In individuals who present with brain metastases and no known primary tumor, an evaluation to define a primary cancer is supported. Imaging studies that are supported include CT Chest and CT Abdomen and Pelvis with contrast. Mammography is supported for this staging in female individuals. PET/CT is indicated for inconclusive standard imaging, for evaluation of other metastatic disease or for staging if supported by primary cancer guideline. Biopsy or resection of a suspicious lesion is needed to establish a definitive diagnosis.

References

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