

Evidence Discussion (ONC 10.1-10.4)

Malignant Pleural Mesothelioma

Imaging for asbestos exposure with suspected mesothelioma is addressed in the evidence summary guideline section CH 9.1.

Initial staging

Initial staging guidelines are based on National Comprehensive Cancer Network (NCCN) recommendations. Contrast CT chest and CT abdomen are supported for initial staging once mesothelioma is proven with lung fluid cytology or tissue biopsy. Contrast allows better evaluation of nodal disease in addition to parenchymal disease and offers improved characterization of direct extrapulmonary tumor invasion. MRI is inferior for parenchymal lung imaging thus CT is essential. Anatomic soft tissue detail, differentiation from progressive benign fibrosis, and brachiocephalic vascular involvement may be better demonstrated on MRI without and with contrast, so this study is supported for preoperative planning. The most common site of metastatic disease outside the chest is the liver, so CT abdomen is an important part of the initial workup. However, pelvic disease is rare and pelvic CT exposes to additional radiation and is low yield in patients without pelvic signs and symptoms. Pelvis may be added to contrasted CT in patients with signs and symptoms of pelvic involvement, including direct abdominoperitoneal invasion. National Cancer Database review of over 40,000 patients treated between 2004 and 2020 reveals that 50% of patients are metastatic upon presentation. Signs and symptoms of metastatic disease in body areas not addressed in ONC 10 may be imaged according to their respective sections in eviCore guidelines ONC 31, for which separate evidence summaries are provided.

PET/CT is not first line imaging for mesothelioma as it is inadequate for differentiating benign vs malignant changes in exposure-related progressive massive pulmonary fibrosis, but of which take up FDG in unpredictable fashions. Understaging of the primary site is common with PET/CT alone. Conventional imaging is essential. However, PET/CT is supported to confirm the absence of metastatic disease on conventional imaging (negative or inconclusive) prior to resection, as up to 29% of patients initially identified as operable may be reclassified as inoperable due to identification of distant metastatic disease on PET/CT during pre-operative evaluation.

Restaging

For patients on chemotherapy, contrasted CT of chest and abdomen are supported every 2 cycles. Pelvic imaging may be added for signs and symptoms of peritoneal/pelvic disease or known pelvic/peritoneal disease as noted in the initial staging section. The same logic applies to any patients with signs and symptoms of recurrence. For patients receiving induction chemotherapy, CT chest and abdomen (with pelvis if previously reviewed indications are present) are supported at end of induction. Response is categorized by validated mRECIST

criteria on CT. If there is no metastatic disease, this may again be confirmed with PET/CT prior to attempted resection, ensuring the patient is not subjected to futile invasive surgery when RT or further systemic therapy may be more appropriate. If CT chest is inconclusive, MRI chest without and with contrast is supported. MRI chest may differentiate between treatment –related changes (fibrosis) and persistent mesothelioma, which is not well-differentiated on PET/CT as both may have unpredictable FDG uptake.

Surveillance

There is no clear consensus for surveillance imaging for malignant pleural mesothelioma, and the NCCN offers no guidance on this topic. The European Society of Medical Oncology (ESMO) advises CT for surveillance without a specific timeframe. Given the known value of CT in assessing primary mesothelioma and abdomino/periitoneal metastatic disease, eviCore guidelines support CT for surveillance. The timeframe is based on National Cancer Database survival statistics for malignant pleural mesothelioma. In review of 40,000+ patients treated between 2004 and 2020, patients undergoing surgery had a median survival time for 19.8 months, compared with 7.9 months in those who had not undergone surgery. The 2 year survival for those who underwent surgery was 44%, with 18% 2 year survival in unresectable patients. 5-year survival is 5% in unresected patients, and 16% in those who underwent surgery. EviCore supports CT chest and abdomen with contrast every 3 months for the first 2 years, then annually. As noted in the restaging section, CT imaging is always supported for new signs and symptoms.

References

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