

Evidence Discussion (ONC 12.1-12.4)



Initial staging of both soft tissue and bone sarcomas

- The choice of imaging modality is driven by the primary tumor site. EviCore guidelines align with NCCN recommendations for cross sectional imaging of the primary site with MRI with and without contrast or CT with contrast for best illustration of anatomic detail and vascular and nodal involvement and provides flexibility for clinician discretion for choice of modality for all sites for maximum tumor definition with consideration of minimizing radiation exposure. (Mehren, Biermann, NCCN 2024). CT is superior for evaluation for metastatic disease of the lung, which is supported for all patients with a newly diagnosed malignant sarcoma in alignment with NCCN Guidelines and ACR appropriateness criteria. ACR appropriateness criteria do not support imaging both with and without contrast for evaluation of metastatic disease to the lung, as this exposes patients to higher radiation doses without significant clinical benefit (ACR 2024).

Soft Tissue Sarcomas

See general initial staging information above for primary tumor site and lung.

- PET/CT is a level 2B (not 2A) NCCN recommendation, though it is noted to be useful for grading and prognostication. Thus PET/CT is supported where the grade of tumor is in doubt following biopsy or to confirm oligometastatic disease amenable to local treatment, to support treatment decision making. (Mehren, NCCN 2024).
- Different subtypes of soft tissue sarcomas have different patterns of spread, thus a histologic diagnosis is essential to determine imaging strategy.
- Abdominal and pelvic imaging is not supported for extremity, trunk or head and neck primary sites, unless documented histologies with propensity for lymphatic spread (Zagars 2003). Due to the propensity of myxoid and round cell liposarcomas for leptomeningeal spread, initial evaluation of the spine with MRI is supported. MRI of the brain is supported for those with CNS signs and symptoms, and for all patients with angiosaroma and alveolar soft part sarcomas (Mehren, with NCCN 2024).
- For Desmoid tumors, disease biology and patterns of recurrence do not support metastatic disease workup, CT chest or body areas outside of the primary site subject patients to additional radiation and incidental finding risk. (Peng 2012)
- For Dermatofibrosarcoma Protuberans (DFSP), CT chest is supported for sarcomatous differentiation as noted for other sarcoma histologies above, or for pulmonary symptoms. In the absence of these features, CT exposes to risk with no statistically significant clinical benefit (Schmultz, NCCN 2024, Akram 2014)

Restaging

- Local therapy is a cornerstone of treatment for sarcomas. Cross-sectional imaging of primary site, with modality used at diagnosis specific to tumor site, is supported after pre-operative radiotherapy, and after resection of adjuvant radiotherapy to determine response, as well as for pre-operative planning prior to resection and every two cycles of treatment during active therapy. In the absence of known lung involvement or pulmonary symptoms, restaging of lung on active treatment does not provide benefit in most histologies and exposes patient to additional radiation and risk of incidental findings. (Mehren,NCCN 2024)
- PET/CT is listed as 'may be useful' for therapy response. Patients with baseline tumor SUVmax ≥ 6 and $<40\%$ decrease in FDG avidity after neoadjuvant therapy are at high risk for disease recurrence. Pretreatment tumor SUVmax and change in SUV max after neoadjuvant therapy has been shown to identify patients at high risk of tumor recurrence and may be used to identify patients most likely to benefit from additional chemotherapy (Schuetze 2005). PET/CT is supported to assess neoadjuvant therapy response, to differentiate scarring from disease, or to confirm oligometastatic disease prior to resection (Mehren,NCCN 2024, Schuetze SM, et al. 2005).

Surveillance

- Timeframes, modality and body site for surveillance by histology generally align with the wider end of NCCN recommendations, which are level 2A recommendations, and based on tumor recurrence patterns specific to primary site and tumor biology (Mehren,NCCN 2024, Peng 2012, Akram 2014). PET/CT is not supported for asymptomatic surveillance, as this can lead to unnecessary radiation exposure and invasive procedures or excess treatment. (ASCO choosing wisely)

References

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