American College of Radiology™

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Soft Tissue-RADS™ v2025 — Assessment Categories

Soft Tissue-RADS Category	Meaning	Risk of Malignancy	Typical Imaging Characteristics	Management
0	Incomplete imaging, limiting diagnostic interpretation	NA	NA	Recall for additional imaging and/or request prior examinations. Additional imaging may include missing pre- or postcontrast MRI sequence, US to assess for vascular flow, or radiography or CT to assess for possible mineralization (e.g., heterotopic ossification or phleboliths).
1	No soft-tissue tumor or tumor-like lesion identified on imaging	NA	NA	No further imaging follow-up recommended.
2	Imaging findings classic for a specific definitely benign soft-tissue tumor or tumor-like lesion	Very low (nearly zero)	Lipomatous lesion measuring up to 10 cm with thin or no septations, appearance similar to subcutaneous fat, absence of nodules, and less than 10% increase in signal intensity between precontrast and postcontrast images. Cyst-like or high-water-content lesion that communicates with joint, tendon sheath, or bursa (e.g., epidermoid cyst, vascular malformations [characterized by flow voids, phleboliths, and intense contrast enhancement]), with cutaneous or subcutaneous location, or with intraneural location. Solid lesion with typical imaging features of benign peripheral nerve sheath tumor (e.g., target sign and fascicular sign) Solid lesion (e.g., hypointensity on T2W images) that is classic for benign tumor (e.g., plantar or palmar fibroma). Mean ADC >1.5 x 10-3mm2/s.	Imaging follow-up at the clinical team's discretion. Treatment of benign tumors (e.g., PNST) or tumor-like lesions is based on clinical findings. Consultation with a vascular interventionist is advised for vascular malformations.
3	Imaging findings classic for a specific definitely benign soft-tissue tumor or tumor-like lesion although with some doubt about the true histology, *or* imaging findings suggestive of a probably benign soft-tissue tumor or tumor-like lesion	Low	Lesion containing predominantly fat and vessels, such as angiolipoma, intraarticular or tendon sheath-related tumor (e.g., TSGCT based on hemosiderin staining) Muscle lesion (e.g., intramuscular myxoma) in a younger patient. Lesion containing mixed fatty and nonfatty tissue, in periscapular location in an adult that shows high [18F] FDG uptake (e.g., hibernoma). Nerve tumor with cystic, hemorrhagic, or calcific changes, without history of NF1 or with ADC of 1.1-1.5 mm2/s. Ill-defined muscular and/or adjacent fascial signal alterations and contrast enhancement, such as suspected heterotopic ossification in noncalcified phase. Fluid-intensity lesion in the muscle with variable enhancement or peritumoral edema, such as cysticercosis or complex expanding hematoma.	Imaging follow-up can be considered at 6 weeks to 3 months, 6 months, 1 year, and 2 years, unless the lesion resolves or significantly regresses during this time. Imaging or clinical follow-up to resolution should be performed for lesions consistent with hematomas. Additional options, depending on specific imaging findings, include biopsy, resection, or sarcoma specialist referral.
4	Imaging findings suspicious for a malignant or locally aggressive soft-tissue tumor or tumor-like lesion	Intermediate	Lipomatous lesion with thick septations or >10% increase in signal intensity between precontrast and postcontrast images (e.g. ALT/WDL). Cystic or markedly T2-hyperintense lesion with enhancing septations or small mural nodules (e.g., cystic peripheral nerve sheath tumor with edema, cysticercosis, hydatid cyst). Muscle lesion (intramuscular myxoma) in an older patient. Solid lesion (e.g., hypointensity on T2W images) with suspicious features (e.g., lesion in periscapular, abdominal wall, or paraspinal location, with hypointense septations or heterogeneous enhancement).	Follow-up options include image-guided biopsy, open biopsy, or follow-up imaging at 4–6 weeks with subsequent regular interval follow-up imaging for up to 2 years. Tissue diagnosis or referral to a sarcoma center should be performed for lesions measuring ≥5 cm (and for smaller lesions in certain anatomic regions with smaller volume and surface area). If biopsy is performed and is negative for malignancy, then a multidisciplinary review of radiology-pathology concordance is advised.
5	Imaging findings highly suspicious (essentially pathognomonic) for a sarcoma or other malignant soft-tissue tumor	High	Large mass with perilesional edema, internal necrosis or hemorrhage, fascial tail sign, crossing of fascial compartments, rapid increase in size or symptoms, or locoregional or distant metastases. Lipomatous lesion with hyperintense myxoid areas or solid nodules on T2W images, heterogeneous signal on both T1W and T2W images, or presence of fascial tail sign. Lesion consistent with malignant PNST (size > 4 cm, perilesional edema, necrosis, absence of target sign, rapid increase in size, growth up and down the nerve, crossing of compartments). Mean ADC <1.1 mm2/s	Tissue diagnosis and referral to a sarcoma center.
6	Known soft-tissue tumor or tumor-like lesion that is receiving treatment or that has undergone prior treatment	NA	6A: No imaging evidence of residual soft-tissue tumor or tumor-like lesion. Imaging shows expected posttreatment changes with no or diffuse edema; enhancement may be present, albeit without focal or diffuse mass or substantial diffusion restriction.	6A: For histologically confirmed malignant tumors, follow-up imaging can be considered at 6 weeks to 3 months, 6 months, 1 year, and 2 years. For benign lesions, follow-up imaging can be performed if lesion

			6B: Residual soft-tissue tumor or tumor-like lesion. Imaging shows evidence of residual soft-tissue lesion with characteristics similar to the original lesion. Focal or diffuse mass with up to 20% increase in the largest dimension since pretreatment imaging. Similar or increased ADC in comparison with before treatment. Expected posttreatment changes may also be present. 6C: Recurrent or progressive soft-tissue tumor or tumor-like lesion, with or without metastasis. Imaging shows evidence of residual lesion with progression (e.g., >20% increase in the largest dimension since pretreatment imaging; increased diffusion restriction). Regional or distant metastasis may be present. Expected posttreatment changes may also be present.	becomes clinically symptomatic or otherwise at intervals of 6 months to 1 year. 6B and 6C: Surgical excision or other further medical treatment, as clinically appropriate. In the absence of such interventions, follow-up imaging can be considered at 6 weeks to 3 months, 6 months, 1 year, and 2 years.

NA = not applicable; US = ultrasound; T2W = T2-weighted; T1W = T1-weighted; PNST = peripheral nerve sheath tumor; TSGCT = tenosynovial giant cell tumor; NF1 = neurofibromatosis 1; ALT/WDL = atypical lipomatous tumor or well-differentiated liposarcoma.