January 2021

NI-RADS™ PET/CT Category Descriptors, Imaging Findings, and Management

Category	Primary Site	Neck	Imaging Findings		Management
			Primary Site	Neck	
Incomplete	**0**	**0**	• New baseline study without any prior imaging available ***AND*** knowledge that prior imaging exists and will become available as comparison		Assign score in addendum after prior imaging examinations become available
No evidence of recurrence	**1**	**1**	• Expected post treatment changes • Non-mass-like distortion of soft tissues • Low-density post-treatment mucosal edema • Diffuse linear mucosal enhancement or FDG • If residual nodal tissue, no FDG uptake or enhancement		Routine surveillance
Low suspicion	**2a**	**2**	• Focal mucosal enhancement or FDG uptake on initial post treatment scan*	• Mild/ mod FDG in residual nodal tissue or persistent areas of heterogenous enhancement • Enlarging or new lymph node without definitive abnormal morphologic features * • Any discordance between PET & CECT: enlarging lymph node but little to no FDG uptake **	2a: Direct visual inspection
	2b		• Deep, ill-defined soft tissue, with only mild/ mod FDG if PET available • Any discordance between PET & CECT: discrete CECT abnormality but little to no FDG uptake or focal FDG uptake but no CT correlate**		2b or neck 2: Short interval follow-up (3 months) or PET if scoring on CECT alone
High suspicion	**3**	**3**	• Discrete nodule or mass at the primary site with intense focal FDG uptake if PET available • Residual nodal tissue with intense FDG • New enlarged lymph node or enlarging lymph node with abnormal morphologic features*** on CECT only or focal intense FDG uptake if PET available		Image guided or clinical biopsy if clinically indicated
Definitive recurrence	**4**	**4**	• Pathologically proven or definite radiologic and clinical progression		Clinical management

*Focal mucosal abnormalities have a high likelihood of being treatment related, especially on the initial post-treatment PET/CECT, so that in most cases, it is prudent to assign a "2a" and let surgeons or oncologists directly inspect. If a more mass-like or nodular mucosal abnormality develops later in the time course of surveillance, it may warrant a "3".

**This guideline for PET and CECT discordance only applies if the original tumor was FDG avid

**Morphologically abnormal features which are definitive= new necrosis or gross extra nodal extension (ENE) as evidenced by invasion of adjacent structures

- "Residual nodal tissue" = node that was abnormal and identified on pre-treatment scan. In these cases, hypo enhancement and irregular borders are not unexpected and are likely a sign of treatment response, especially if there is no FDG uptake.
- "New or enlarging node" = node that develops DURING surveillance (not on pre-treatment scan). In these nodes, irregular borders or necrosis are definitively abnormal features.

+ If Primary tumor is unknown, then authors suggest designating "P-unknown primary", if the primary cannot be assessed (dental artifact, motion or other technical reasons or outside FOV), then authors suggest P-x

+ NI-RADS categories designed for use after definitive/ curative treatment for H&N cancer, and therefore not designed to be used during treatment