Lymphovascular Invasion (LVI) Quick Reference Guide

LVI is recognized as a marker of tumor malignancy, suggesting aggressive biological behavior and increased probability of metastatic disease. However, the criteria used to distinguish LVI from pseudo-vascular invasion and retraction artifacts are often not reported. At least one of the following criteria is required to verify LVI. If LVI is identified, the following components should be included in the report. Consult full guideline for more details and complete reference list.[6]

Criteria used to determine lymphovascular invasion:

_____ Thrombus adherent to intravascular tumor

_____ Tumor cells invading through a vessel wall and endothelium

_____ Neoplastic cells within a space lined by lymphatic or blood vascular endothelium

_____ Neoplastic cells in a structure confirmed to be lymphatic or blood vessel using immunohistochemistry (indicate antibody used)

Comment: The first two criteria are considered strict and may be more likely to predict metastases than the latter two and must be reported.[4] Regardless, each should be examined for and reported.

Site of lymphovascular invasion:

_____ Intratumoral _____Peritumoral

Comment: In studies of human tumors, the risk of metastasis was more closely associated with peritumoral, not intratumoral, lymphovascular invasion.[1,5]

Number of foci of lymphovascular invasion within all sections examined:

_____Few (< 5 foci) _____Moderate (5 – 10 foci) _____Many (> 10 foci)

Comment: For certain human tumors, most notably thyroid follicular cell carcinoma, the number of sites of vascular invasion has been associated with the risk of metastasis.[2]

LVI must be distinguished from pseudo-vascular invasion and retraction artifact.[3,6]

SELECTED REFERENCES:

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3. Ehrensing G, Craig LE. Intravascular neoplastic cells in canine cutaneous plasmacytomas. *J Vet Diagn Invest*. 2018;30**:** 329-332.
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5. Pak KH, Jo A, Choi HJ, Choi Y, Kim H, Cheong J-H. The different role of intratumoral and peritumoral lymphangiogenesis in gastric cancer progression and prognosis. *BMC cancer*. 2015;15**:** 498.
6. Moore FM et al. Lymphovascular InvasionGuideline, version 1.0. Veterinary Cancer Guidelines and Protocols. http.//vcgp.org