



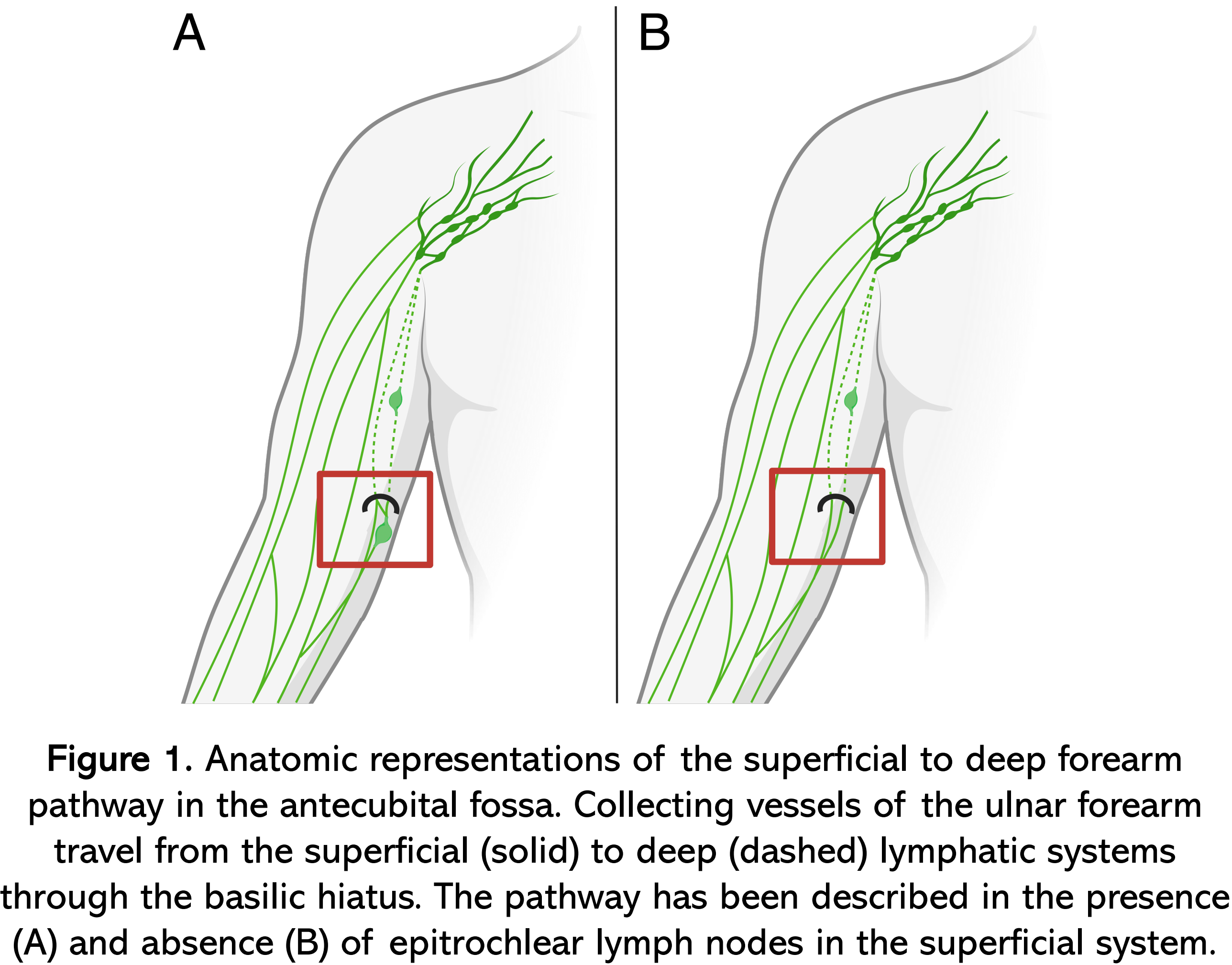
Epitrochlear and Humeral Lymph Nodes: A Biomarker for Deep Lymphatic Function and Implications for Breast Cancer-Related Lymphedema Risk

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Background

- Lymphatic drainage of the hand and forearm drainage from the superficial to deep systems can occur in the antecubital fossa (Figure 1) and may be protective against breast cancer-related lymphedema (BCRL).
- Humeral lymph nodes are a marker for deep lymphatic drainage. Epitrochlear lymph nodes enable superficial to deep drainage through the basilic hiatus.
- Functional connectivity between epitrochlear and humeral lymph nodes remains unexamined with in-vivo imaging.
- We utilized lymphoscintigraphy to document epitrochlear and humeral lymph node drainage in healthy volunteers.



Methods

- Both arms (n=72) of 36 healthy female volunteers received four intradermal hand/wrist injections of 0.1 mCi 99-Tcm filtered sulfur radiocolloid to each upper extremity and were imaged with SPECT/CT at 2 hours.
- Two nuclear medicine physicians independently reviewed the SPECT/CT scans to document lymph nodes with tracer uptake.
- A chi square test was performed to assess the correlation between functional epitrochlear and humeral lymph node drainage.

Results

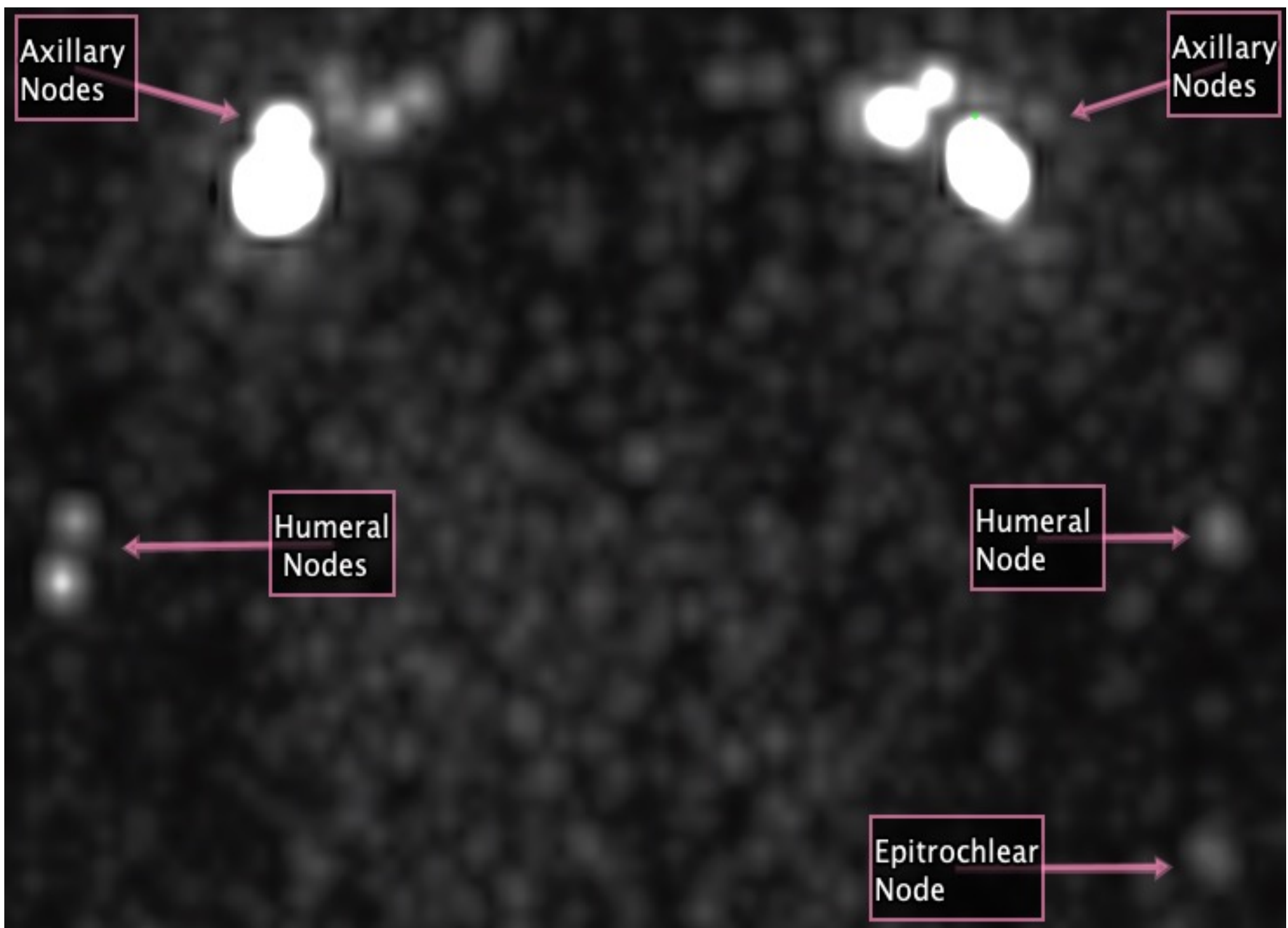


Figure 2. Lymphoscintigram of a healthy female volunteer after four intradermal injections of 99-Tcm sulfur colloid in the hand/wrist bilaterally imaged two hours after injection. The volunteer demonstrated bilateral humeral lymph node drainage and unilateral epitrochlear lymph node drainage, representing two variations of function in the superficial to deep pathway between the arms.

- Drainage to epitrochlear and humeral lymph nodes was observed in 57% (41/72) and 51% (37/72) of arms, respectively.
- Drainage to both epitrochlear and humeral lymph nodes was observed in 40% (29/72) of arms.
- Epitrochlear and humeral lymph node drainage were both absent in 32% (27/72) of arms.
- Humeral lymph node drainage was significantly greater in arms with (71%, 29/41) versus without (26%, 8/31) epitrochlear lymph node drainage ($X^2 = 14.262$ (1), $p < 0.001$).

Discussion and Conclusion

- Epitrochlear and humeral lymph node drainage are significantly correlated, suggesting a superficial to deep pathway may function at baseline in 40% of arms.
- The absence of epitrochlear and humeral lymph node drainage may represent a biomarker for BCRL risk.