

Advantages of upright position imaging with medium-energy collimator for sentinel node lymphoscintigraphy in breast cancer patients

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Objective: To evaluate the advantage of upright position imaging with a medium-energy collimator for the detection of sentinel lymph node (SLN). **Methods:** Thirty-four patients with operable breast cancer underwent sentinel node lymphoscintigraphy with ^{99m}Tc -tin colloid. Images were obtained in 5 different positions and paired images from the same patient were compared using side-by-side interpretation. Images were compared in 3 groups: group 1 (anterior view); supine (SAV) vs. upright (UAV), group 2 (oblique view); supine (SOV) vs. upright (UOV), and group 3 (oblique view); modified supine (MOV) vs. UOV. Image quality was evaluated using a 3-grade scale of clear, faint, and equivocal depiction, and correlated to 3 parameters: distance from injection site to lymph node (hot node), counts in hot node, and image contrast. Parameters in group 1 were compared by classifying the primary tumor site into 4 subregions. **Results:** Image quality in all 3 groups was more enhanced on the image obtained in the upright position than that in the supine position. Obtaining images in an upright position increased the mean distances by 1.5–3.2 cm, and mean contrasts were significantly increased by 0.13–0.31 ($p < 0.05$). It was shown that image quality was more greatly affected by image contrast than by counts in the hot node. Image contrast of 0.5 seemed an appropriate threshold level for detection of the hot node. On comparison of tumor sites, the upper outer quadrant (C) region of the 4 subregions demonstrated greater contrast enhancement on upright position images. **Conclusion:** Clinical images obtained in an upright position with a medium-energy collimator were superior to those obtained in a supine position. Use of this procedure is recommended to enhance lymph node detection on sentinel node lymphoscintigraphy.

Key words: sentinel lymph node, breast cancer, lymphoscintigraphy, upright position, visual detection