The value of contrast enhanced ultrasound in the location of sentinel lymph node in breast cancer

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Sentinel lymph node (SLN) location and biopsy was designed to minimize side effects of axillary dissection with equivalent outcomes.

Objective: To explore the detection rate and the accuracy of sentinel lymph node (SLN) in breast cancer by percutaneous injection of ultrasound contrast agent in mammary areola region.

Methods: 400 breast cancer patients in our breast surgery department from July 2017 to November 2018 were involved, all patients with preoperative contrast-enhanced ultrasound (CEUS), that respectively intracutaneous injection ultrasonic contrast agent 1ml at 3,6 o 'clock and subcutaneous injection ultrasonic contrast agent 1ml at 9, 12 o 'clock. Tracing enhanced SLNs along the enhanced lymphatic vessels from mammary areola after massage for one minute. Recording the number of enhanced SLN and marking the first SLN with injecting nanocarbon into the SLN under the guidance of CEUS. Intraoperative dye method (methylene blue) was used to track SLNs and compare the results with CEUS.

Results: 395 of 400 patients with breast cancer injected with ultrasound contrast agents had detected a total of 818 enhanced SLNs (range 1-5, 2.045±1.139), the detection rate is 98.75%. In the 395 cases, 386 cases' first SLNs with the location of the CEUS matched with the first SLNs observed in the intraoperative dye method, the accuracy is 97.72%. There were 5 patients who were found interrupted lymphatic vessel and no enhanced SLN in CEUS. 3 of them, whose pathological results of axillary lymph node dissection showed that axillary lymph nodes with cancer metastasis, observed interrupted lymphatic vessel and no dyeing lymph node in the intraoperative dye method. While 2 of the 5 patients observed dyeing lymph nodes along the dyeing lymphatic vessels in the intraoperative dye method, and they didn't metastasis.

Conclusion: Percutaneous injection of ultrasound contrast agent in mammary areola region has certain application value to detect and locate the SLNs in breast cancer patient.

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