PREOPERATIVE ULTRASOUND ASSESSMENT OF AXILLARY LYMPH NODES IN BREAST CANCER: HISTOPATHOLOGICAL CORRELATION IN 100 CASES

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Introduction

For the accurate assessment and appropriate treatment of breast cancer, the status of the ipsilateral axillary lymph nodes must be established. These nodes are positive in 20-50% of patients when axillary clearance or sampling is carried out[1]. However this operation carries a substantial risk of lymphoedema and other complications such as reduction in arm mobility. With the development of the sentinel lymph node biopsy (SLNB) technique women who are node-negative can avoid major axillary surgery. However those who have a positive sentinel lymph node require definitive axillary surgery and will hence have at least two operations. Also there is some evidence that axillary surgery following SLNB may be more difficult, and actually lead to an increase in the complications SLNB was intended to avoid. Therefore if the node-positive patients can be identified pre-operatively, they can proceed directly to single-stage breast and axillary surgery without SNLB. The aim of this study was to assess the accuracy of ultrasound in this setting.

Methods

For several years it has been departmental policy to scan the ipsilateral axilla in all cases of suspected breast cancer. If nodes are identified, note is made of length/width ratio, cortical thickness, size, and absence/presence of fatty hilum[2]. Ultrasound level of suspicion is recorded from U1 to U5. Details are given in the figure on the right.

Consecutive symptomatic patients from the unit's breast cancer register were selected. One hundred eligible patients were selected over a 7 month period. Just prior to this time sentinel lymph node biopsy had being introduced, but as this was still the audit phase all patients received axillary clearance or sampling as they would have done in the past. Fine needle aspiration cytology (FNA) was carried out on all abnormal nodes (U3-U5). The ultrasound and cytology results were correlated with the histopathological findings at resection.

Exclusions:

- neoadjuvant chemotherapy as lymph nodes status could alter between initial diagnostic workup and excision.
- primary endocrine therapy as there would be no axillary resection specimen.
- previous axillary surgery.

Results

All patients were female. Ages ranged from 28 to 93 with a mean of 59 years. The number of lymph nodes excised ranged from 1 to 26 with a mean of 12. 56 patients were node-negative at surgery, and 44 were node-positive. The ultrasound and cytology results correlated with histopathology are summarised in the table.

Fourteen patients had definitive C5 prior to surgery and underwent immediate axillary clearance.
All five patients with suspicious or malignant appearances but without C5 cytology had positive nodes. Two were not sampled for technical reasons, one had C1 which was not repeated, and two had a falsely reassuring C2. Four out of six C1s had positive nodes. Seven of nineteen C2s were ultimately positive. 57 patients were considered to have benign or normal nodes on ultrasound, 16 of these went on to have involved lymph nodes.

For a U3-U5 result, the positive predictive value for involved nodes was 65%, and the negative predictive value 73%. Sensitivity was 63% and specificity 73%.

Total	No with positive nodes	No Cytology		C1 Inadequate		C2 Benign		C3 Indeterminate		C4 Suspicious		C5 Malignant	
U1 Normal		48	13	Cytology not carried out if nodes appear normal or benign									
U2 Benign		9	3										
U3 Indeterminate				5	3	17	5	1	1			6	6
U4 Suspicious		2	2			2	2					4	4
U5 Malignant				1	1					1	1	4	4

Discussion

The discrepancy between the number of nodes present in the axilla and the number seen on ultrasound means that there will always be sampling error. In addition, many lymph node metastases are too small to be distinguished from surrounding normal nodal tissue ultrasonically. Nevertheless it is a useful test and in this series it detected about one third of involved axillae. As all patients who had nodes which appeared suspicious or malignant in this study did indeed have positive axillae, a policy of repeating C1-C4 FNAs in this category should increase the diagnostic rate. One third of U3 results with cytology of C1-3 were positive and there may be benefit from repeating these too. Almost a third of those considered normal or benign were involved and there may be an argument for aspirating any nodes seen in breast cancer patients, regardless of morphology, particularly in larger tumours where the chance of metastasis is felt to be greater. A C2 result falsely reassured in seven of 17 cases, most of which were U3. Core biopsy is not routinely used for lymph node biopsy in our unit but may increase the yield of positive results.

References

1. Forrest A P M et al. The Edinburgh randomised trail of axillary sampling or clearance after mastectomy. Br J Surg 1995; 82: 1504-8
2. Damera A et al. Diagnosis of axillary nodal metastases by ultrasound-guided core biopsy in primary operable breast cancer. Br J Cancer 2003; 89: 1310–1313

Ultrasound Evaluation of Axillary Nodes

U1 No nodes seen or fatty nodes with very thin cortex

U2 Cortex more prominent but still <2mm

U3 Increased cortical thickness ≥2mm

U4 Increased or eccentric cortex, decreased length/width ratio, enlarged size

U5 Loss of fatty hilum and marked increase in node size