Table 2: Scintimammography results according to number of axillary nodes involved

N° involved nodes/axilla	N° axillas False-Negative	N° axillas True-Positive
1	12	6
2–5	31	*
6–10	14	*
11–20	4	*
>20	4	*
Total	65	25

* Individual group data is not available (2 nodes or more subgroups = 19 nodes)

The sensitivity of scintimammography in the group with palpable axillary nodes was significantly higher than in the non palpable group (p:0.036). They corresponded to 39.0% [CI = 8.8–32] versus 18.4% [CI = 24.2–55.5]. Specificities were 100% [CI = 66.4–100] versus 90,2% [CI = 78.6–92.7]; positive LR was 3.9 versus 1.87 and negative LR 0.61 versus 0.91, respectively. See Figure 1.

There was no difference between early and delayed diagnostic values in the 95 patients with both exams performed in identical conditions (p:0.65). See Figure 2.

Discussion

These results support that planar imaging with scintimammography and Tc99m- sestamibi should be definitively excluded or considered cautiously for axillary evaluation protocols in breast cancer.

Different techniques for axillary evaluation

Yutani et al. [15] in their comparative study between FDG PET and sestamibi-SPECT reported sensitivities of 50.0 and 37.5%, respectively, for axillary detection in 40 consecutive patients with head to head comparison. Their results with tomographic images are relatively concordant with ours. However, in this setting, theirs and our sensitivity values were disappointingly low and are clearly opposed to several prior reports with either planar or SPECT techniques (See Table 2; [15-28]). This could be explained by the size and depth of the lesions, their relative low uptake and especially by the equipment resolution. Our lower detection rate compared with other reports may be explained, in part, by the method of robust blind reading with no interpretation bias.

It is interesting to mention that sestamibi is helpful for the diagnosis of melanoma lymph node assessment [29], contrary to the observed situation discussed in breast cancer. The reason for this fact could be the most superficial and somehow easier to locate melanomatous involved nodes. The nodes in axillas are deeply positioned which can probably contribute to the lower sestamibi uptake in breast cancer.

PET FDG has been proposed in order to reduce the proportion of patients requiring axillary dissection with variable results, but until now the technique cannot adequately assess the number of nodes involved. However, it could be very helpful in the evaluation of internal mammary chain in upper medial quadrant primary tumours, as well as in patients with large lesions. According to Danforth et al. [30] in 495 patients its global sensitivity for axillary involvement was 89% [95%CI = 86–92], with a specificity of 87% [95%CI = 84–90]. Yutani et al. [15] reported that FDG is sufficiently sensitive to rule out lymph node metastasis. Greco et al. [5] reported in 167 patients FDG sensitivity of 94%, specificity 86% and accuracy of 90% for axillary evaluation.

We agree with other authors [15,23] who have published that planar scintimammography is not recommended for axillary evaluation. Tolmos et al. [20] do not consider the test as reliable (they observed a kappa value of 0.49 for interobserver agreement). Even though, there are posterior and recent publications with new results still reporting relatively good values [17,25-28]. Limachi et al. [27] reported lower sensitivity if fewer nodes were affected, similar to our findings (in patients with <3 metastases, sensitivity was 69.7%, and only one out of six patients with a single lesion had a positive scan). See Table 3.

Other compounds labeled with Tc99m

Regarding data with other compounds labeled with Tc99m, commonly used, especially tetrofosmin also a cationic lipophilic molecule, the values are similar to sestamibi in breast cancer evaluation [19,31]. Akcay [19] found comparable diagnostic value for both in a small number of patients with involved axillary nodes. The experience with SPECT is significantly better including small primary breast tumours [32]. Tc99m diphosphonates (MDP) proposed as an interesting alternative as well as pentavalent DMSA, have less diagnostic value than sestamibi for breast primary lesions and also for axillary node evaluation, according to our group results and others [13,26].