

OSNA IN THE PREDICTION OF AXILLARY STATUS IN BREAST CANCER PATIENTS: POSSIBLE INTRA-OPERATIVE IMPLICATIONS.

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AIMS

After ACOSG-Z0011 study, axillary dissection (AD) in patients with overtly metastatic sentinel lymph node (SLN) has been a matter of strong debate. We aimed to investigate if a molecular, rather than morphological, approach to SLN may help to recognize patients who may really benefit of AD, at the time of surgical procedure.

METHOD

Among 1000 breast cancer patients who have received SLN examination at our Institution since 2012, the molecular method OSNA recognized a metastatic fingerprint (i.e. CK19 mRNA copies) in 267 cases (27%). After the following AD, 180 (67%) patients had no further involvement, 56 (21%) had 1 or 2 additional metastatic nodes, and 31 (12%) had ≥ 3 positive nodes. The last group of patients were considered "high risk" as opposite to patients with 0, 1 or 2 additional metastatic nodes ("low risk"). Clinical, pathological and molecular features of the primary tumor and SLN involvement, available either before/during or after surgical procedure, were then compared to the two risk categories to elucidate any possible relationship. Among data available before or acquired during surgical procedure were considered clinical size of the tumor (<1; 1-2; >2 cm), number of the tumors at imaging (1; >1), number of positive SLN (1; 2-3) and amount of CK19 mRNA copies in positive SLN. Post surgical data were represented by grade of the tumor, vascular invasion, hormonal status and "molecular" classification (luminal A, B, triple negative, HER2 rich).

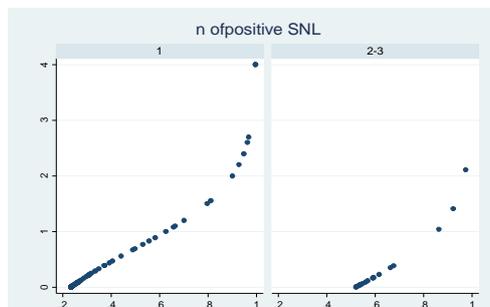


Figure 1. Impact of number of positive SLN and total amount of CK19 mRNA copies in the risk of positive axilla.

RESULTS

At univariate analysis the "high risk" (≥ 3 positive nodes at dissection) group was related to:
- clinical size of tumor ($p < 0.05$), total amount of CK19 mRNA copies in positive SLN ($p < 0.01$) and number of positive SLN ($p < 0.01$), among variables available before/during surgery;
- grade ($p < 0.01$), vascular invasion ($p < 0.01$), proliferative activity (Ki67 > 20%; $p < 0.03$) and HER2+ ($p < 0.04$) among variables accessible after surgery.

The multivariate analysis highlighted that vascular invasion [OR 2.75 (1.50-5.06)], total amount of CK19 mRNA copies in positive SLN [OR 2.97 (1.87-4.70)] and number of positive SLN [OR 1.94 (0.94-3.96)] predict additional nodal metastasis at AD.

Figure 1 shows the impact of CK19 mRNA copies in patients with 1 or 2-3 positive SLN in terms of risk of harbouring additional metastasis at AD.

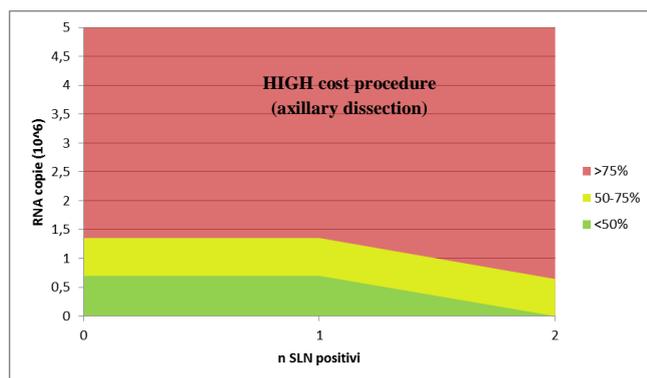


Figure 2. Price to be paid by breast cancer patients with positive SLN according to their number and the total amount of CK19 mRNA

According to these results, and focusing only on the data available at the time of surgery, we elaborated the risk map, shown in Figure 2.

Number of positive SLN and CK19 mRNA copies, like for a metro ticket, impact on the cost for the patients: the greater the values, the higher the price to be paid. Thus, patients at "high risk", might be suitable for an "expensive" procedure such as complete AD.

CONCLUSION

The number of positive SLN and the total amount of CK19 mRNA copies in the SLN, as detected by OSNA molecular approach, are the best predictors of additional axillary nodal metastasis in patients affected by breast cancer. These data, available during intra-operative time, might help the surgeon to select patients to be addressed to a "high cost" procedure such as axillary dissection.