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Breast surgery and sentinel node biopsy. Our experience

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SUMMARY: Breast surgery and sentinel node biopsy. Our experience.

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Massive campaigns of screening of breast pathologies improved early diagnosis of breast cancers. Most of these cancers are small-sized (T1) and seldom show intraoperative nodal involvement. Sentinel node biopsy is the elective choice in the abovementioned cases because, if negative, it avoids axillary dissection. International literature reports rates of false negative sentinel node biopsy ranging among 4,5 and 12%; results in our experience account for almost 6%.

As a consequence, there is the definite risk of potentially positive axillas that will not be dissected with subsequent risk of axillary recurrence within 24 months. The reason of that could be related to the fact that in Referral Centers this technique is performed in strictly selected patients, so as to gain a diagnostic accuracy of 98%. The rate of axillary recurrences does not justify the routine axillary dissection, since this is just a staging, not a therapeutic procedure. In case of doubt, it can be recommended a close and careful follow-up of the axilla.

RIASSUNTO: Chirurgia della mammella e linfonodo sentinella. Nostra esperienza.

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L'avvento delle campagne di screening per le malattie della mammella ha incrementato la diagnosi precoce di carcinomi. La maggior parte di questi ultimi sono di piccole dimensioni (T1) e verosimilmente non presentano all'atto operatorio metastasi linfonodali. La biopsia del linfonodo sentinella è divenuta metodica di elezione in tutti i casi sopracitati poiché, in caso di negatività, evita la dissezione ascellare. Non sempre questo obiettivo viene raggiunto; la letteratura internazionale riporta quote di falsi negativi comprese tra il 4,5 ed il 12%; i risultati della nostra esperienza si attestano intorno al 6%.

La conseguenza di percentuali così elevate si traduce nel mancato trattamento di cavi ascellari potenzialmente positivi con il rischio di recidiva ascellare entro 24 mesi. La causa va forse ricercata nel fatto che nei Centri d'Eccellenza questa metodica viene eseguita secondo tutte le raccomandazioni dettate dalle Società Scientifiche e dalle Linee Guida Internazionali così da avere una accuratezza diagnostica del 98%, mentre in altri Centri viene eseguita con i mezzi a disposizione che non sempre permettono l'adempimento di tutte le raccomandazioni sopracitate. La percentuale di incidenza di recidive ascellari non giustifica comunque la dissezione ascellare di principio essendo quest'ultimo un atto prettamente stadiativo e non terapeutico; nel sospetto si può ricorrere ad un accurato follow up clinico e strumentale dell'ascella.

KEY WORDS: Breast surgery - Sentinel node - Axillary dissection.
Chirurgia mammaria - Linfonodo sentinella - Dissezione ascellare.

Introduction

Patients with clinically occult breast cancer with nodal involvement account for almost 10-12% of

cases. With the increasing rates of mammography X-rays and tumour screening programs, very small tumours are early detected with lower rates of nodal involvement. It has been demonstrated that axillary dissection is indicated only in patients with nodal involvement, in order to decrease the rate of complications related to the procedure.

Sentinel node biopsy relies on the issue that the first node draining a body district will be involved in case of invasive ductal carcinoma. If this node is histopathologically negative, then we can assume that the axilla is free from metastasis.

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This procedure has been gaining acceptance from 10 years in order to ensure patients complete recovery, avoiding axillary dissection. Nevertheless, yet this technique is far from being perfect since it relies on the type of marker used, site of injection, need for adequate structures and skilled surgical staff.

McMaster in 1988 edited a review from 11 reports concerning sentinel node biopsy that showed a clear identification of the sentinel node in 86% of cases (range 6-98%). Among 1385 females the range was so wide because of the kind of marker used. Also the rate of false negatives was as high as 6,2% (range 4,7-12,5%) after immunoistochemistry. From then on this values showed a remarkable decrease gaining up to 98% of diagnostic accuracy if performed according to the recommendations suggested by Scientific Societies and International Guidelines.

Patients and methods

During 2003-2004 in our Unit of Breast Surgery 178 quadrantectomies with sentinel node biopsies in patients with stage T1 breast cancer and clinically negative axillary nodes were performed. In all cases we performed the standard double procedure with subdermal injection of labeled $^{99\text{Tc}}$ albumin and vital colour Blue Patent around the tumour 15-20 minutes before surgery.

The axilla was always detected by gamma-camera 30-45 minutes after the injection and in 3 cases the sentinel node was detected along the internal mammary chain. In these last two cases (carcinomas of the central gland), we performed sentinel node biopsy through Chamberlain's minimal anterior mediastinotomy with nodal recruitment after division of the internal mammary veins; in one of this two cases the biopsy led to minimal opening of the parietal pleura and subsequent drainage of the iatrogenic pneumothorax.

All the patients did not undergo previous breast surgery and 152 of them underwent stereotactic biopsy by *Mammotome* ten days before.

Results

Overall incidence of nodal involvement after sentinel node biopsy was 10% in our experience, which, added to the 3 cases (2%) where no sentinel node at all was found, raises to 11%. Therefore in 161 patients with early ductal carcinoma we found a negative sentinel node. In 90% of cases it was a first level node (161), in 8% (14) there were first and second level nodes (1) and in three cases (2%) there was an internal mammary node with no sentinel node along the interpectoral and third level lymphatic chains; in 87% of cases we found only one sentinel node.

Only in 40% of positive sentinel nodes metastases were detected intraoperatively; in the remaining 60% we had to wait for the paraffin inclusion, full nodal sections and immunoistochemistry to confirm the presence of micrometastasis (in 5 of 9 nodes); this result led us to perform a second-step axillary dissection.

Discussion

Nowadays breast cancers are early detected and often not palpable; the wide diffusion of screening programs allowed an early diagnosis in most of patients rather than ten years ago. As a result, breast conservative surgery has widely spread, mostly for what it concerns the axilla.

We reviewed charts from our series because we firmly believe that the prognosis of breast cancer is strictly related to the tumour itself and the risk of axillary metastases depends on the size and the growth of the tumour. The low incidence of nodal metastases in our patients in T1a-T1b stages led us to take into account the opportunity to perform the sentinel node biopsy in selected patients. Since 7 years several reports in literature appeared supporting the hypothesis of avoiding the treatment of the axilla in breast cancers. In 1997, Huffy et al. (2) edited data concerning their series of 955 patients suffering from breast cancers with a long-lasting follow-up: 565 among these patients underwent axillary dissection; 360 did not receive any axillary treatment at all. The data collected did not evidence any suspect node at follow-up in patients who did not receive axillary surgery but radiotherapy of the internal mammary, upperclavicular and axillary chains.

The rate of locoregional or distant metastases, so as overall survival, were overlappable among the two groups. Soon after Fein edited data concerning a series of 1598 patients suffering from stage I and stage II carcinomas concluding that axillary dissection could be avoided in all T1a tumours detected at mammography, in T1b patients detected at mammography and in patients aged less than 40 or in cases of tubular adenocarcinoma up to 1 cm of diameter.

In 2002 Fisher (4) edited data from a 25-year follow-up of a randomized trial comparing modified radical mastectomy, simple mastectomy plus radiotherapy or simple mastectomy without radiotherapy and subsequent axillary dissection in case of axillary recurrence. There was no difference among the three groups in terms of disease-free survival, local and distant disease-free survival and overall survival. The Author concluded that removing clinically occult positive nodes at surgery does not add advantage at all.

Thus, based on the fact that negativity for hormone receptors, high mitotic index, aneuploidy and *c-erb2* overexpression condition a worse prognosis, even in absence of nodal involvement, we can conclude that for stage T1 breast cancers an accurate histopathologic and biomolecular anamnesis can replace the prognostic value of the axillary dissection (5).

If we really believe in the staging role of axillary surgery, we could choose not to perform axillary dissection but only radiotherapy in those patients with clinically negative axilla in order to perform adjuvant the-

rapy not on the basis of nodal status but of biologic factors tested on the primary tumour (6, 7).

In an early future we could suggest that sentinel node biopsy could not be associated with axillary surgery, but with a close and careful follow-up in patients with early stage breast cancer.

Lastly, it could be also suggested lymphoscintigraphy-which is already used for the detection of sentinel node-as means to lead biologically active therapeutic radionuclides directed towards tumour receptors (monoclonal antibodies, peptides, avidine-biotine, etc) into the target tissue.

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