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Original Research Article

Interest of the sentinel node in the case of infiltrating T1 luminal a breast carcinoma: retrospective study at the gynaecology department of the Francois Quesnay Mante-La-Jolie hospital, France

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ABSTRACT

Background: During these last twenty years, technic of sentinel lymph node (SLN) stayed the gold standard for axillary exploration, an alternative to axillary dissection in the surgical management of breast cancer. Objective of the study was to make an inventory of the technic of the sentinel lymph node technique in forms T1 Luminal A breast cancers.
Methods: It was a retrospective, descriptive and analytical study over a period of one year (March 2022 to March 2023) in the Gynecology department, François Quesnay hospital, in Mantes-La Jolie (France). Out of 103 files studied, we included 50 patients who had undergone sentinel lymph node excision for T1 luminal A breast cancers with non-palpable and non-detectable lymph nodes on imaging. The parameters studied were epidemiological data, clinical data and paraclinical data. The Chi^2 test (α=5%) made it possible to compare the groups ($p<0.05$ and CI=95%).
Results: The sentinel lymph node excision rate was 48.5%. The median age was 59 years. The epidemiological profile was as follows: Postmenopausal patients (70%), with family history of breast cancer (36%). The circumstances of discovery were: The perception of a breast mass (94%) and the screening examination (34%). The histological lesions were infiltrating ductal carcinomas in 94% of cases and 60% located in the right breast. There were 12 (24%) lymph node metastatic lesions, including 5 macrometastases and 7 micrometastases. There was no link between metastatic involvement of sentinel lymph nodes and age, menopause, family history of breast cancer, concept of screening, histological type. The Chi square was respectively 0; 1.34; 0.05; 0.41; 1.01. There was a link when the cancer was located in the right breast (chi^2=10.52 and p=0.001), [CI = (12.16-35.84)].
Conclusions: There was no link between metastatic involvement of sentinel lymph nodes and luminal histological type A, T1. Furthermore, there was a link between metastatic involvement of the sentinel lymph node and the right-sided location of breast cancer. Is this linked to the predominance of cancer in the right breast?

Keywords: Breast cancer, Luminal A, Sentinel lymph node, Surgical excision

INTRODUCTION

With 65,659 new cases estimated in France in 2022, breast cancer represents a little more than a third of women's cancers and ranks first among cancers.[1] Mortality (standardized rate) has been decreasing since the 1990s, while incidence (standardized rate) is increasing. The standardized incidence rate worldwide is 99.9 cases per 100,000 person-years.[2] In terms of mortality, breast cancer is the leading cause of cancer mortality in women with 14,739 deaths per year (2022) in France.[1] Over the past twenty years, sentinel lymph node (SLN) sampling has

become the standard for axillary exploration as an alternative to axillary dissection (AC) for small, unifocal tumors.[3] In 2005, the American Society of Clinical Oncology (ASCO) and the French expert committee of Saint Paul-de-Vence issued recommendations for the practice of sentinel lymph node testing in the management of breast cancer.[4] The sentinel lymph node technique as a tool for evaluating lymph node involvement is less aggressive than a radical surgical excision. This is the concept of therapeutic downscaling in the management of breast cancer. The principle of the sentinel node is based on the identification and anatomopathological analysis of the first relay node of the lymphatic drainage territory of the organ as a reflection of the invasion of the lymph node area. This principle is based on the hypothesis of step-by-step dissemination of neoplastic cells within the lymphatic network by the first lymph node relay(s) which drain the mammary gland. The sentinel lymph node has a major benefit in terms of reducing short- and long-term morbidity compared to axillary dissection.[4] The evaluation of the sentinel lymph node technique has a dual interest, on the one hand in evaluating its effect on overall survival and, on the other hand, in measuring the detection rate. The objective is to reduce the morbidity linked to axillary dissection through the sentinel lymph node procedure.[4]

Based on this observation, it seemed appropriate to carry out this study, the general objective of which was to take stock of the sentinel lymph node technique in T1 Luminal A breast cancer. The specific objectives were to indicate the epidemiological characteristics of breast cancer, specify the clinical data of patients with breast cancer, describe the anatomopathological results of the sentinel lymph nodes and analyze the relationship between the state of the sentinel lymph nodes and the clinical and paraclinical epidemiological data.

METHODS

It was a retrospective, descriptive and analytical study over a period of one year (March 2022 to March 2023) in the Gynecology department, François Quesnay hospital in Mantes-La Jolie (France). Out of 103 files studied, we selected 50 patients who had undergone sentinel lymph node resection. The following were included in the study: tumors less than 2 cm, lobular or ductal infiltrating or non-specific, with positive hormone receptors (estrogen and progesterone), negative HER 2, Ki 67 less than or equal to 15% and sentinel lymph nodes not palpable on physical examination and not detectable on imaging. Multifocal tumors, recurrences of invasive cancer and neoadjuvant treatment started were not included in the study. Patients were recruited based on anatomopathological diagnosis after microbiopsy and immunohistochemistry (estrogen-progesterone receptor, HER 2, Ki 67). The sentinel node identification technique was performed using a dual method: the isotopic method (rhenium sulfide labeled with technetium 99) and the patent blue colorimetric method. The parameters studied were epidemiological data (age, menopausal status, personal obstetric and family history of cancer), clinical data (circumstances of discovery), paraclinical data (histology) and sentinel node excision (metastatic involvement of the sentinel node, microscopic or macroscopic appearance, number affected). The analysis was performed using word software for text entry, Excel for tables and graphs. The statistical test used for comparison of numbers was the CHI^2 test (α=5%) with $p < 0.05$ and a 95% confidence interval.

RESULTS

Descriptive study

During our study period; we retained 50 cases of sentinel lymph node ablation out of 103 files studied. The reported rate was 48.5%. The median age was 59 years with extremes of 36 and 82 years. Primiparous (36%) and pauciparous (46%) constituted more than half of the population. More than two thirds of the patients were postmenopausal, i.e. 70%. The family history of breast cancer was 36%. The perception of mass (94%) and screening (34%) were the main circumstances of discovery, 94% of the histological lesions were infiltrating ductal carcinomas, and located in 60% of cases in the right breast. In our series, 12 sentinel lymph nodes had metastatic lesions, i.e. 24%. Of these, 5 were macrometastases and 7 were micrometastases (Table 1).

Table 1: Epidemiological clinical and paraclinical data.

Epidemiological-clinical and paraclinical data		N	Percentage (%)
Age (years)	(61-70)	17	34
Parity	Primiparous	18	36
	Pauciparous	23	46
Meno-pause	Yes	35	70
Familial breast cancer	Yes	18	36
Screening	Yes	17	34
Histological type	Ductal	47	94
SG impairment	Yes	12	24
Aspect GS achieved	Microscopic	7	58.3
	Macroscopic	5	41.7

Analytical study

There was no significant link between metastatic involvement of sentinel lymph nodes and age, menopause, family history of breast cancer, screening, histological type. The chi-square test at the 5% threshold was respectively 0.001; 1.34; 0.05; 0.41; 1.01; with a confidence interval (CI=95% and $p<0.05$). Concerning the location, the difference was significant with a chi-square at 10.52 and p=0.001 when the cancer was on the right. The confidence interval was 12.16 to 35.84 (CI=95% and $p<0.05$) (Table 2).

Table 2: Analytical data.

Analytical data	Chi^2 (α=5%)	P (<0.05)	Confidence interval (95%)	Interpretation
Age	0	0.97	(12.16-35.84)	Not significant
Menopause	1.34	0.24		Not significant
Familial breast cancer	0.05	0.82		Not significant
Screening	0.41	0.51		Not significant
Ductal carcinoma	1.01	0.31		Not significant
Location (right breast)	10.52	0.001		Significant

Table 3: Lymph node metastasis according to the laterality of breast cancer.

Laterality of breast cancer	Lymph node metastasis	No lymph node metastasis total	Total
Right breast	12 (40%)	18 (60%)	30
Left breast	0 (0%)	20 (100%)	20
Total	12	38	50

DISCUSSION

Descriptive study

Epidemiological data

During our study period; we retained 50 cases of sentinel lymph node excision out of 103 files studied. The reported rate was 48.5%. This rate was below the rates found in the literature.[4,6] This observation was in line with our inclusion criteria. and not in correlation with the recommendations of learned societies and experts. Indeed, over the past ten years, the indications for the sentinel lymph node technique in breast cancer have progressed enormously. Thus, the American Society of Clinical Oncology (ASCO) and the French expert committee of Saint Paul-de-Vence have issued the following recommendations concerning the indications of the sentinel lymph node: in adjuvant situation, in patients without clinically suspicious axillary invasion, in case of invasive carcinoma of less than 5 cm (T1-2), in case of tumor in place or previously resected, in cases of unifocal or multiple tumors and in cases of non-inflammatory tumors.[4,6] The most represented age group was between 61 and 70 years with a frequency of 34%. The median age was 59 years with extremes of 36 and 82 years. This distribution was similar to the European series, particularly in the studies of Mosbah et al (median age = 55 years), Jankowski et al (median age of 63 years) and Bézu et al (median age of 58 years).[2,3,8] Unlike African studies where the median age was most often below 55 years. As demonstrated by the work of Fouhi et al in Morocco and Engbang et al in Cameroon.[9,10] The respective median ages were 52 and 46 years. In the literature, we did not find any determinants to explain a higher prevalence of breast cancer in the young African population (median age 46 years) versus an older European population (median age 52 years). However, multiparity would be a factor in the occurrence of breast cancer.[6] Multiparity remains the common denominator of African societies. The profile of our patients was as follows: postmenopausal patient, pauciparous, with a family history of breast cancer. This was the profile found in the literature. For these authors, women whose menopause occurs after the age of 55 have a risk twice as high of developing breast cancer than women who menopause before the age of 45.[11] More recently, it has been shown that there is a transient increase in the risk of breast cancer after each pregnancy; preceding the decrease in risk in the longer term.[6] Similarly, the existence of a family history of breast cancer in the mother, sister or daughter multiplies the risk of breast cancer by a factor of 2 to 3.[6]

Clinical and paraclinical data

Mass perception and screening were the main circumstances of breast cancer discovery, respectively 94% and 34%. As for screening; the beneficial effects have been reported in the literature. Sancho-Garnie et al reported that in their study the rates of tumors diagnosed at the low-severe stage (T1 N0 M0) increased significantly.[12] According to these authors, the reduction in late stages associated with the development of new treatments may have led to an improvement in survival and thus a steady decline in mortality since the 1995s. Cutuli et al in 2015 cited by Sancho-Garnie compared the stages at diagnosis for the periods 2001–2002 and 2007–2008, T0 which increased from 8% to 27% and T1 from 19% to 27%. As well as Molinié et al in 2016 cited by Sancho-Garnie et al showed a 22% decrease in cancers larger than 20 mm in a population of women aged 50 to 74 who participated in organized screening.[12] Almost all of the histological lesions were infiltrating ductal carcinomas, i.e. 94%. This finding was similar in the majority of studies. In a WHO classification of the histological type of breast cancers in 2012, infiltrating or non-specific ductal carcinoma represented 80% of all tumors, followed by infiltrating lobar carcinoma (15%). Other histological types were much rarer (5%).[13] African authors such as Sahraoui et al in Tunisia and Engbang et al; in their series also found a predominance of infiltrating ductal carcinoma.[10,14] Breast cancer was located in 60% of cases

in the right breast. In the literature, breast cancer was generally unilateral and a little more often on the left side. El Fouhi et al, and Engbang et al had made the same observation.[9,10] They found 50.2% and 52% respectively. In our series, 12 sentinel lymph nodes had metastatic lesions, i.e. 24%. Among them, 5 were macrometastases and 7 micrometastases. These terms are defined by the American joint committee on cancer as follows, macrometastases greater than 2.0 mm, micrometastases greater than 0.2 mm but not greater than 2.0 mm and isolated tumor cells not greater than 0.2 mm.[15] Additional axillary curettage after metastatic involvement of the sentinel lymph node is no longer systematic. International recommendations (ASCO, NCCN) and the St. Gallen expert consensus do not recommend performing additional axillary curettage in the event of macro- or micrometastatic invasion of sentinel lymph nodes if all the inclusion criteria of ACOSOG Z0011 are met.[2] These criteria are as follows: one or two invaded SLNs; absence of capsular rupture; irradiation of the entire mammary gland (by opposing tangential fields) or indication for wall irradiation; systemic treatment by hormone therapy and/or chemotherapy.[16-19]

Analytical study

There was no significant difference between metastatic involvement of sentinel lymph nodes and age, menopause, family history of breast cancer, screening status, histological type. The chi-square test (α=5%) was respectively 0.001; 1.34; 0.05; 0.41; 1.01; with a confidence interval (CI=95% and p<0.05). The difference was significant with a chi-square at 10.52 and p=0.001 when the cancer was located in the right breast. The confidence interval was 12.16 to 35.84 (CI=95% and p<0.05). This significant difference could be explained by the fact that breast cancer was located in the right breast in 60% of cases. For the other parameters, the absence of a link could be related to the size of our sample. We recommend a study with a large sample size to establish the need or not to perform sentinel lymph node resection in T1 Luminal A breast cancers. After reviewing the literature where the recommendations of learned societies and experts are taken, the indications for the sentinel lymph node technique remain very broad.[6] In our study, we limited ourselves to certain criteria, namely T1 size, unifocal lesions, and the absence of recurrence.

CONCLUSION

The sentinel lymph node technique has revolutionized the management of localized breast cancers. The risk factors for the occurrence of breast cancer remain the same in the literature. Emphasis should be placed on screening in order to improve the management of breast cancer and reduce mortality. Infiltrating ductal carcinoma is the most common histological type. Metastatic involvement of the metastatic lymph node is no longer systematically accompanied by additional lymph node dissection according to the recommendations of learned societies and experts. At the end of our study, apart from the location on the right of the breast cancer, we have not established a link between metastatic involvement of the sentinel lymph node and risk factors, the histological type. Hence the need to carry out a study on a large sample size.

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