Breast Stereotaxic Biopsy

Biopsia estereotáxica mamaria

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Summary

Objectives: Characterize a cohort of patients with breast cancer diagnosed by stereotaxic guidance, and confirmed by pathology. Describe the benefits of the method from the safety and ambulatory point of view, diagnostic help and guidance for the oncologist surgeon. ***Materials and methods:*** Descriptive observational study of a retrospective cohort. We reviewed all the records of patients who attended for suspected of breast lesions who underwent a biopsy guided by stereotaxis (BGS) in the period between May 2016 and December 2017, with standard mammography technique. The distribution of the quantitative variables was evaluated with the Kolmogorov-Smirnov test. Exploratory crosses were made between the findings of the BGS and the pathological diagnosis with the Chi-square test; for the comparison of quantitative variables following a nonparametric distribution the Mann Whitney U test was used. ***Results:*** We included 36 women with a median age of 56.5 years, the total of the sample had a radiological classification pre-biopsy BIRADS 4b (27.8%), followed by BIRADS 3 (25%). The most frequent lesions described in the BGS were microcalcifications (55.6%). The pathology was carcinoma *in situ* in 47.2%. No significant differences were found in the age distribution by pathology (p = 0.109). ***Conclusions:*** Stereotactic-guided breast biopsy is a safe and reliable method for the diagnosis of patients with breast cancer, with an excellent correlation between the findings according to the BI-RADS category and the pathology, as a guide for therapeutic intervention by the oncologist surgeon.

Resumen

Objetivos: Caracterizar una cohorte de pacientes con cáncer de mama diagnosticadas por guía estereotáxica y confirmadas por patología. Describir las bondades del método desde el punto de vista de seguridad y ambulatorio, ayuda diagnóstica y guía para el cirujano oncólogo. ***Materiales y métodos:*** Estudio observacional descriptivo de cohorte retrospectiva. Se revisaron los registros de las pacientes que asistieron por sospecha de lesiones mamarias a quienes se les realizó una biopsia guiada por estereotaxia (BGE) entre mayo de 2016 y diciembre de 2017, con técnica mamográfica estándar. Se evaluó la distribución de las variables cuantitativas con el test de Kolmogorov-Smirnov. Se realizaron cruces exploratorios entre los hallazgos de la BGE y el diagnóstico patológico con el test Chi-cuadrado; para la comparación de variables cuantitativas por seguir una distribución no paramétrica se utilizó el test de U de Mann Whitney. ***Resultados:*** Se incluyeron 36 mujeres con una mediana de edad de 56,5 años, el total de la muestra tuvo una clasificación radiológica prebiopsia BI-RADS 4b (27,8 %), seguido de BI-RADS 3 (25 %). Las lesiones más frecuentes de la BGE fueron microcalcificaciones (55,6 %). La patología fue carcinoma *in situ* en un 47,2 %. No se encontraron diferencias significativas en la distribución de edad por patología. ***Conclusiones:*** La biopsia de mama guiada por estereotaxia es un método seguro y confiable para el diagnóstico de pacientes con cáncer de mama, con una excelente correlación entre los hallazgos del BI-RADS y la patología, como guía para la intervención terapéutica del cirujano oncólogo.

Introduction

Breast cancer is the most frequent cancer in women, both in developed and developing countries. In Colombia, in the period 2015-2016 it ranked first among the most frequent malignant tumors, with a total of 43,846 women affected. There were 3,954 patients during the period of analysis, representing an incidence of 14 %. Mortality from this pathology was 2,055 patients (1).

Early detection remains the cornerstone of breast cancer control, because it improves the prognosis and survival of affected patients (2). Clinical examination, mammography and ultrasonography are used for the initial evaluation of the breast (3, 4). When microcalcifications are identified on mammography without palpable lesion, Stereotactic Breast Biopsy (SBB) can establish a diagnosis (5-7). This research highlights the general characteristics of the experience in the application of this procedure in the institution where the study was performed, in patients with these characteristics, with a confirmatory histopathological diagnosis for breast cancer.

When a lesion is suspected, regardless of the imaging method used, the indication is to perform a

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biopsy (5, 8-10). Generally, abnormalities detected by mammography correspond to microcalcifications, masses or distortions of the architecture (3, 7). In these cases, cancer findings represent approximately 33% and stereotactic biopsy is the ideal procedure (5, 6). In the remaining patients the biopsy findings will be benign and, with the exception of atypical hyperplasia, will not require additional interventions (3, 11-13).

Stereotactic-guided biopsy uses imaging technology to obtain lesion samples without the need for surgery, does not require general anesthesia or hospitalization, and helps to identify the histological type of the lesion for therapeutic planning (5, 13). In addition, it has a lower cost compared to excisional biopsy, and can even replace it (7).

In palpable breast masses, SBB helps to provide pre-surgical information, histology, immunohistochemical staining for estrogen and progesterone receptors, HER2 expression, and can be useful in planning the surgical procedure (5, 6).

In the experience of the multidisciplinary team, this postulate has been demonstrated: In mammographic alterations of suspicious lesions, such as microcalcifications, in which adequate representation is not demonstrated in the ultrasound evaluation, the guidance of sampling by this method is limited (14), so the possibility of having the equipment to perform breast biopsies guided by stereotaxy, makes possible the derivation towards this technique.

Materials and methods

Retrospective cohort descriptive observational study. All records of patients attending for suspected occult or palpable breast lesions who underwent SBB in the period from May 2016 to December 2017 were reviewed. All biopsies were taken under stereotaxy guidance, an average of 6 samples were extracted for histopathological study. During the evaluated period, 342 stereotactically guided biopsies were performed. Inclusion and exclusion criteria were applied for a final sample used for analysis of 36 patients. Quantitative variables were described as medians and interquartile range for analysis, for qualitative variables frequencies and percentages were calculated, the results were presented as graphs and distribution tables. Comparisons between stereotactic-guided biopsy findings and pathologic diagnosis were performed with the Chi-square test, and the Mann Whitney U test was used for the comparison of quantitative variables because they followed a nonparametric distribution.

Results

Thirty-six women with a median age of 56.5 (RIQ 51.5-63.0) years were included, the total sample had a pathology-confirmed malignant diagnosis, mostly with a prebiopsy radiological classification BI-RADS 4b (27.8 %), followed by BI-RADS 3 (25 %). Similar frequencies were found in the location of the lesions, in the right breast 50.0 % and left breast 47.2 %, mainly affecting the upper outer quadrant 41.7 % (Table 1). The most frequently described lesions in SBB were microcalcifications (55.6 %), followed by asymmetry (Table 1 and Figure 1). Regarding the pathology outcome, 47.2 % of the cases corresponded to carcinoma in situ, followed by canalicular carcinoma with 25.0 % (Table 1 and Figure 2). Microcalcifications were the most frequent finding in stereotactic-guided biopsy among patients diagnosed with carcinoma in situ, canalicular and ductal carcinoma (15); while asymmetry occurred more frequently among patients with infiltrating carcinoma; however, these differences were not statistically significant (p = 0.501) (Table 2). When the age distribution by BI-RADS was evaluated, it was found that women with older age presented BI-RADS 4; however, these differences were not statistically significant (p = 0.909) (Figure 3). No significant differences were found in the age distribution by pathology (p = 0.109) (Figure 4).

Table 1. General characteristics of the sample

Age, years		56.5 (51.5-63.0)
Breast	Right	18 (50.0)
	Left	17 (47.2)
	Bilateral	1 (2.8)
Quadrant	Upper outer quadrant	15 (41.7)
	Inner inferior quadrant	9 (25.0)
	Upper inner quadrant	4 (11.1)
	Retroareolar	4 (11.1)
	Outer quadrant	2 (5.6)
	Lower outer quadrant	2 (5.6)
BI-RADS	3	9 (25.0)
	4	3 (8.3)
	4A	4 (11.1)
	4B	10 (27.8)
	4C	4 (11.1)
	5	6 (16.7)
Pathological diagnosis	*In situ*	17 (47.2)
	Canalicular	9 (25.0)
	Ductal	7 (19.4)
	Not special	3 (8.3)
SBB Findings	Microcalcifications	20 (55.6)
	Asymmetry	5 (13.9)
	Asymmetry with microcalcifications	3 (8.3)
	Clustered microcalcifications	2 (5.6)
	Distortion with calcification	1 (2.8)
	Axillary node and microcalcifications	1 (2.8)
	Nodule with microcalcifications	1 (2.8)
	Microcalcifications. distortion of architecture, spiculated	1 (2.8)
	Nodule	1 (2.8)
	Irregular nodule	1 (2.8)

Table 2. Pathologic diagnosis vs. SBB findings

		Pathologic diagnosis				*p* value
		In situ	**Not special**	**Canalicular**	**Ductal**	
SBB findings	Asymmetry	1(2.8)	2(5.6)	1(2.8)	1(2.8)	0.501
	Asymmetry with microcalcifications	2(5.6)	0(0)	1(2.8)	0(0)	
	Distortion with calcification	0(0)	0(0)	1(2.8)	0(0)	
	Axillary node and microcalcifications	1(2.8)	0(0)	0(0)	0(0)	
	Nodule with microcalcifications	0(0)	0(0)	1(2.8)	0(0)	
	Microcalcifications, distortion of architecture, spiculation	0(0)	0(0)	0(0)	1(2.8)	
	Microcalcifications	11(30.6)	1(2.8)	4(11.1)	4(11.1)	
	Clustered microcalcifications	1(2.8)	0(0)	1(2.8)	0(0)	
	Nodule	0(0)	0(0)	0(0)	1(2.8)	
	Irregular nodule	1(2.8)	0(0)	0(0)	0(0)	

Figure 1. Distribution of SBB findings

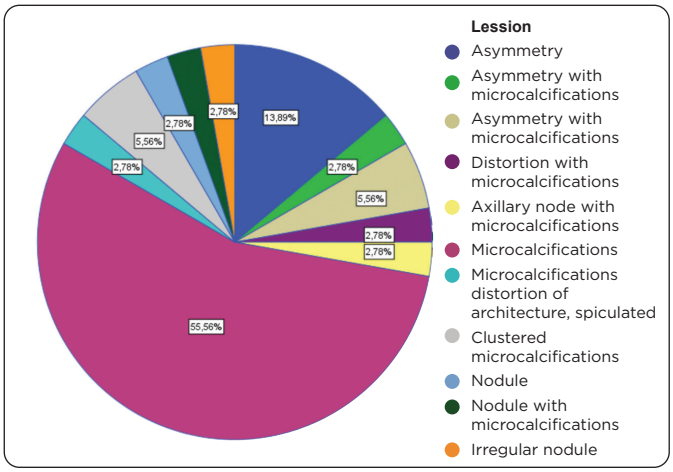


Figure 2. Distribution of pathological findings

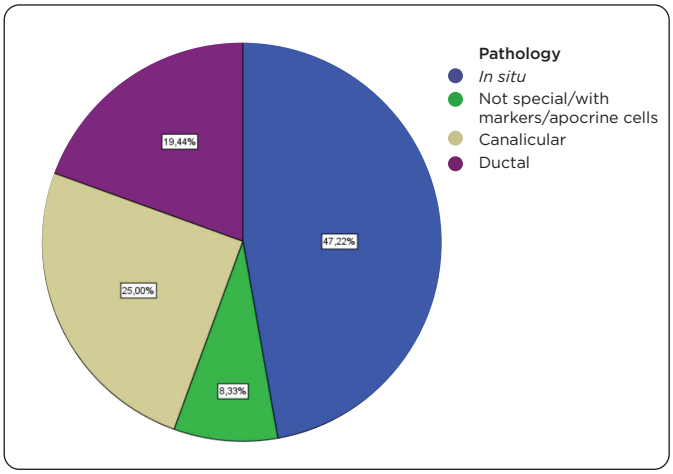
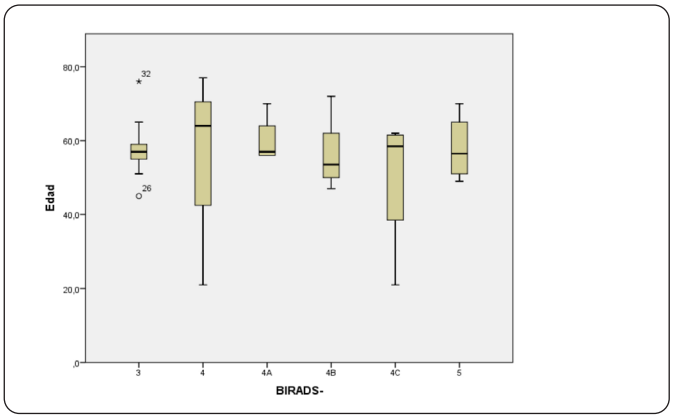
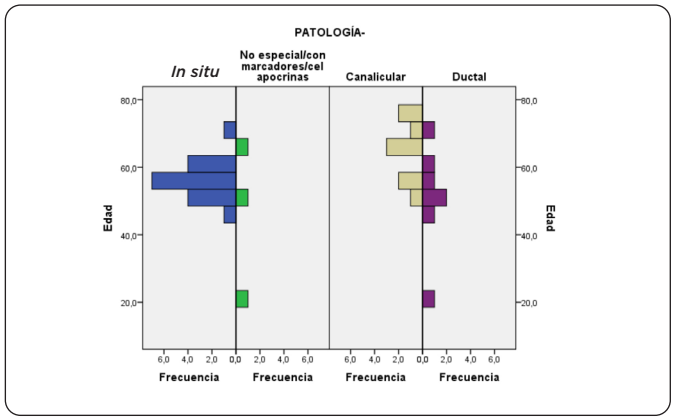


Figure 3. Age distribution by BI-RADS classification



Kruskal Wallis p = 0.909

Figure 4. Age distribution by pathology



Kruskal Wallis p = 0.09.

Discussion

Breast cancer is a frequent pathology with a high mortality rate if not diagnosed in early stages. For this, mammography has intervened positively and in conjunction with BI-RADS classification can detect lesions suggestive of neoplasms that require biopsy. SBB is among the techniques used for the sampling of calcifications observed in mammography without palpable lesion with an excellent concordance of 96% between the previous imaging study and the previous biopsy.

96% agreement between the previous imaging study and the histopathological study of the sample obtained by this technique (15). In this cohort the total sample had a malignant diagnosis confirmed by pathology, but carcinoma in situ was prevalent in 47.2 % of the cases, indicating a good correlation between the mammographic findings, the sample obtained under stereotactic guidance and the pathology, which is consistent with the literature.

Conclusion

Stereotactically guided breast biopsy is a safe and reliable method that locates lesions with geometric precision, for the diagnosis of patients with breast cancer, with an excellent correlation between BI-RADS findings and pathology, as a guide for the therapeutic intervention of the oncologic surgeon.

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