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Ultramammographic Evaluation of Isolated Mastodynia in Women: A Retrospective Study of 925 Cases in Lomé (Togo)

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Abstract

Purpose: To review the results of echomammographic imaging of isolated mastodynia in Lomé. **Material and Methods:** We did a retrospective case series study from 1 January 2017 to 30 June 2020, i.e. over 42 months, covering the records of patients who consulted for isolated mastodynia and who underwent mammo-echography. **Results:** The proportion of isolated mastodynia on ultrasound mammography was 25.8%, in 925 cases. The mean age of the patients was 43.3 ± 10.7 years. Mastodynia was more diffuse than focal (92.9% versus 7.1%). Lesions were classified as benign BIRADS 1 and 2 (91.3%, n = 844/925), probably benign BIRADS 3 (5.8%, n = 54/925), suspicious BIRADS 4 (2.3%, n = 21/925) and highly suggestive of malignancy BIRADS 5 (0.6%, n = 6/925). These women had BIRADS type A and B breasts in 81.6% of cases versus 18.4% BIRADS C and D. **Conclusions**: Mastodynia is a frequent indication for mammography in Lomé. Isolated, it is rarely associated with malignancy.

Keywords

Isolated Mastodynia, Ultrasound, Mammography, BIRADS, Malignancy

1. Introduction

Mastodynia, also known as mastalgia, is defined as breast tenderness and pain [1]. It is considered isolated when there are no accompanying signs. It has been re-

ported that over 70% of women will experience at least one episode of breast pain in their lifetime [2]. The pain generally disappears spontaneously, but in some cases it may persist and lead the patient to consult a doctor. The reduced quality of life caused by mastodynia is a source of anxiety and depression, generated and maintained by the fear of breast cancer [3] [4]. This fear of cancer therefore leads many treating physicians to refer a large number of these patients to a breast imaging centre, not only for a more in-depth assessment of mastodynia, but also to provide reassurance [4].

Although there are many causes of mastodynia, they are generally benign [5]. However, some cancers can be revealed by breast pain [6] [7]. This means that breast pain must be taken seriously by healthcare staff. There is some debate in the literature about the value of imaging mastodynia. Some believe that examination of isolated breast pain may be superfluous and therefore unnecessary, and may lead to overuse of healthcare resources [8]-[10]. Others emphasise the importance of mammography and find that it is more than sufficient to explore isolated mastodynia [11].

In Africa in general, and in Togo in particular, few studies have been devoted purely to isolated breast pain in women, although studies have shown that breast cancers rank first, accounting for 21.2% of cancers in women [12]. The general aim of this study was to review the results of echomammographic imaging in the investigation of isolated mastodynia in women. The specific objectives were to determine the epidemiological characteristics of the patients and to list and classify according to the Breast Imaging Reporting and Data System (BIRADS) the different lesions observed in the investigation of isolated mastodynia in our population.

2. Patients and Methods

This was a retrospective case series involving the records of patients who consulted for isolated mastodynia between 1 January 2017 and 30 June 2020, a period of three and a half years. According to the French Society of Senology and Breast Pathology (SFSPM), isolated mastodynia is defined as breast pain that:

- is not associated with a palpable tumor,
- is not accompanied by other signs or symptoms of disease (discharge, redness, skin changes, or others),
- has been present for less than 6 months,
- may be cyclical (related to the menstrual cycle) or non-cyclical [13].

The results of the mammo-ultrasound exploration of the patients were studied. The interpretation of the images was carried out by 5 radiologists whose professional experience ranged from 10 to 30 years. It took place in the radiology and medical imaging department of the Autel d'Elie Clinic in Lomé (Togo). We included in this study all the records of female patients aged 15 and over who had undergone mammography and ultrasound for mastodynia during the study period. Incomplete records and cases of mastodynia associated with another symp-

tom were excluded from this study.

The variables studied were: age, whether the pain was unilateral or bilateral, focal or diffuse, mammographic breast density, lesions found and their classification in the Breast Imaging Reporting and Data System (BIRADS) lexicon developed by the American College of Radiology (ACR). The BIRADS system classifies results into 6 categories, namely: BIRADS 0 (incomplete exam requiring additional investigation), BIRADS 1 (normal exam), BIRADS 2 (benign lesion), BIRADS 3 (probably benign lesion), BIRADS 4 (suspicious lesion subdivided into 4A, 4B, and 4C), BIRADS 5 (highly suspicious of malignancy), and BIRADS 6 (cancer proven by histology) [14]. This system also classifies breast density into 4 types, namely: type A (homogeneously fatty breasts), type B (heterogeneously fatty breasts), type C (heterogeneously dense breasts), and type D (homogeneously dense breasts) [14]. The study was authorized by the clinic management. Confidentiality was scrupulously respected, in accordance with the Declaration of Helsinki.

The statistical analysis was carried out using Epi Info Version 7.2.6 software. It consists of a descriptive analysis of the population and a comparative analysis. For the descriptive analysis of the characteristics collected in general, the results were expressed in terms of numbers and percentages. For the comparative analysis, the statistical test used was the Chi 2 exact test. The significance level chosen was 0.05.

3. Results

A total of 925 cases of isolated mastodynia were selected out of a total of 3582 ultrasound mammography cases, representing a proportion of 25.8%. The flow chart is shown in Figure 1.

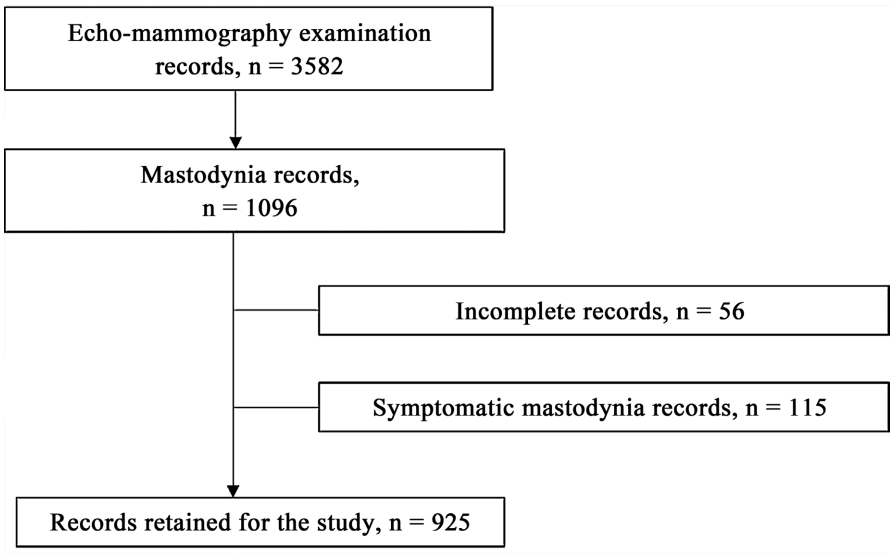

Figure 1. Patient flow diagram.

Patients ranged in age from 15 to 80 years, with an average age of 43.3 ± 10.7 years. The most common age group was 40 to 59, with a proportion of 54.8%, as

shown in Figure 2.

Mastodynia was bilateral in 575 patients (62.2%). Focal breast pain was noted in only 66 patients (7.1%) as shown in Table 1.

Homogeneous light breasts (BIRADS Type A) and heterogeneous light breasts (Type B) accounted for 81.6% (755) of cases on mammography (Table 2).

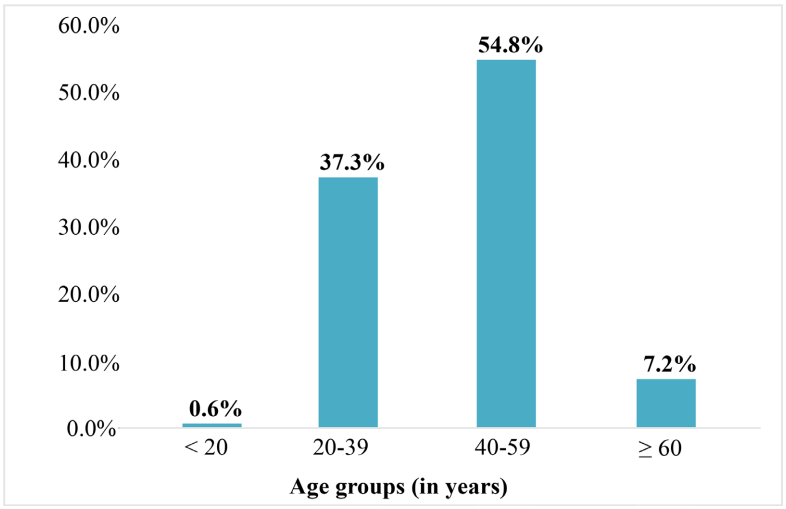

Figure 2. Breakdown of patients by age group.

Table 1. Breakdown of patients by type and location of breast pain.

	Workforce	Percentage
Type of mastodynia		
Diffuse	859	92.9
Focal length	66	7.1
Location		
Bilateral	575	62.2
One-sided right	150	16.2
Unilateral left	200	21.6

Table 2. Distribution of patients according to mammographic breast density.

	Workforce	Percentage
Type A	348	37.6
Type B	407	44.0
Type C	136	14.7
Type D	34	3.7
Total	**925**	**100.0**

Analysis of the 925 files showed that mammography and ultrasound were normal in 773 cases (83.6%) and 683 cases (73.8%), respectively. Mammographic ab-

normalities were dominated by masses (n = 117, 12.6%) followed by axillary adenopathy (n = 109, 11.8%) and microcalcifications (n = 38, 4.1%). Ultrasound findings were mainly masses in 160 cases (17.3%) and abnormalities of the milk ducts in 81 cases (8.8%). For the comparison, the exact Chi-square test used showed that the ultrasound had detected more lesion masses than mammography (p = 0.002). The anomalies observed by the two modalities are listed in Table 3.

In the BIRADS classification of lesions, suspicious lesions were classified in 21 cases (2.3%) and 6 cases (0.6%) in BIRADS 4 and BIRADS 5 respectively (Table 4).

Table 3. Mammography and ultrasound results.

	Workforce	Percentage
Mammography		
Normal	773	83.6
Mass	117	12.6
Density asymmetry	4	0.4
Microcalcifications	38	4.1
Adenopathies	109	11.8
Ultrasound		
Normal	683	73.8
Mass	160	17.3
Inflammatory abnormalities	11	1.2
Galactophore anomalies	81	8.8
Adenopathies	56	6.1

Table 4. Distribution of patients according to ACR* classification of lesions found.

	Workforce	Percentage
BIRADS* 1 lesion	639	69.1
BIRADS* 2 lesion	205	22.2
BIRADS* 3 lesion	54	5.8
BIRADS* 4 lesion	21	2.3
BIRADS* 5 lesion	6	0.6
Total	**925**	**100**

*American College of Radiology; **Braest Imaging Reporting And Data System.

4. Discussion

The limitations of this study were firstly its retrospective nature, as we recorded many files with missing data, and also its single-center nature. We also believe

that the lack of detail on whether the breast pain was cyclical or not could be a source of selection bias. However, the duration of the study period of more than 3 years, the status of the radiologists, each with a minimum of 10 years of experience, and the status of the Autel d'Elie clinic as a nationally recognized imaging center, despite being a private facility, are strengths supporting the validity of our results.

Isolated mastodynia is a frequent reason for consultation in clinical practice. In our study, it represented 25.8% of the reasons for breast imaging. According to studies, it accounts for 66% of consultations for breast symptoms and is the first indication for diagnostic mammography [15] [16]. The age of the patients in our population ranged from 15 to 80 years, with an average of 43.3 years. Other studies prior to this one had reported an average age of around 40 years. Indeed, Eni and *al.* in Nigeria found an average age of 42 years [17]. Howard and *al.* found an average age of 39 in the United States [18]. Balleyguier and *al* [7] reported an average age of 40 years in France. In our study, mastodynia was often bilateral (62.2%). It was focal in only 7.1% of cases. The cyclical or non-cyclical nature of the pain had not been established in this study. It is normally important to distinguish between cyclical and non-cyclical pain, as cyclical mastodynia is the most common type, accounting for 2/3 of cases of breast pain [7]. Generally, in cyclic mastodynia, the pain is bilateral and symmetrical, mainly in the external quadrants and increases during the luteal phase of the cycle [2] [19].

The fear of breast cancer is the main reason for exploring breast pain in medical imaging. Mammography is still the most widely used method of detecting breast cancer. It is currently the only breast cancer screening tool that has reduced breast cancer-related deaths through early detection in women at average risk [20]. However, the detection of any lesion on mammography is influenced by breast density. Mammographic density refers to the percentage of dense tissue in a whole breast. This percentage of mammographic density is based on the appearance of the mammographic image in accordance with the different X-ray attenuation characteristics of the breast tissue composition [21]. In the present study, high density breasts accounted for 14.7% and 3.7% for type C and D breasts respectively, making a total of 18.4%. Al-Mousa and *al.* in Jordan reported 13.7% of type D breasts [22] , whereas in the United States, Checka *et al.* observed 55.4% [23]. In Pakistan, Shamsi and *al.* observed 41.5% for type C and 21.2% for type D [24]. In Iraq, Ali and *al* found that 54.3% of breasts were classified as dense [25]. Dense breasts in mammography pose a problem in that they reduce the sensitivity of detection in screening mammography [26] [27]. Studies have reported that dense breasts are an independent risk factor for breast cancer [28]-[30]. Ultrasound is often performed in addition to mammography. In this study, ultrasound detected more lesions than mammography, with a statistically significant difference. Previous studies have also shown increased detection of breast cancer by complementary ultrasound, particularly in women with dense breasts on mammography [31] [32].

As part of a quality approach to healthcare, it is important to determine whether

imaging exploration of patients with breast pain is useful in reassuring patients and providers. The overuse of diagnostic imaging is now a concern, especially as healthcare reform requires efforts to reduce it [18]. For example, according to Mohallem Fonseca and *al*, radiological assessment of isolated breast pain may be unnecessary and lead to overuse of healthcare resources [33]. As a result, the value of investigating breast pain using medical imaging is currently the subject of much debate. The proportion of pathological findings in this study was 16.4% for mammography and 26.2% for ultrasound. In the BIRADS classification, lesions suspected of malignancy were found in 2.3% and 0.6% of cases, for BIRADS classes 4 and 5 respectively. Most lesions were benign in appearance (91.3%). This result is in line with the literature, which reports that isolated breast pain is the main symptom of benign lesions [5] [34]-[36]. Martín-Díaz and *al*. reported that there is a low prevalence of breast cancer in patients presenting with painful breasts with a negative physical examination [37]. According to the criteria of the American College of Radiology, evaluation by imaging is not generally indicated if the pain is cyclical or non-focal, but for non-cyclical focal pain, imaging may be appropriate, mainly to reassure and identify treatable causes [38]. However, he recommended that ultrasound should be performed as the first-line method of assessing mastodynia in women under the age of 30 [38]. Thus, when performed in conjunction with mammography for the assessment of focal breast pain in women with non-dense breasts, it is of little use and may contribute to unnecessary intervention due to chance findings [39]. As the majority of our population was over 30 years of age, with low-density breasts, mammography alone was sufficient to detect masses in general and suspicious lesions in particular.

5. Conclusion

This retrospective study showed that mastodynia is a frequent reason for radiological exploration of the breasts in the practice of a private clinic in Lomé. Imaging did not explain the etiology of mastalgia in most women. Although breast pain is a common symptom in women referred for imaging, the results are reassuring because the lesions observed are often benign. So patients complaining of mastalgia should not fear cancer. However, the clinician must discuss the advantages and disadvantages of imaging to decide whether it is worth carrying out. If imaging is to be carried out, ultrasound should be preferred in younger women and mammography in older women. To generalize these results, a repeat of this study, this time multicentric at the scale of the city of Lomé or even nationally, is necessary.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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