CHRONIC GRANULOMATOUS MASTITIS- A DILEMMA

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ABSTRACT

BACKGROUND

Chronic granulomatous mastitis is a benign inflammatory disease of breast. It presents as a lump in breast with granulomatous changes around the lobules and ducts. This study discusses the clinical presentation, radiological examination results and its correlation with histopathological results of 50 cases diagnosed with granulomatous mastitis.

MATERIALS AND METHODS

We conducted a study on 50 patients that were diagnosed with granulomatous mastitis after a histopathological examination in Krishna Institute of Medical Sciences, Karad, India from Feb 2015 - July 2017.

RESULTS

Out of the 50 cases with clinical features of granulomatous mastitis, 47 were diagnosed as Idiopathic granulomatous mastitis on their histological examination and 3 cases were diagnosed as Tuberculosis. 45 of these cases were referred with the initial diagnosis of inflammatory breast carcinoma. H and E (Gram) and Ehrlich Ziehl-Neelsen (ZN) staining results were negative for all cases.

CONCLUSION

Chronic granulomatous mastitis is seen mostly in young females of the reproductive age group, which may be misdiagnosed as breast carcinoma in clinical and radiological examinations which is proved otherwise in histopathological reports; hence, a complete evaluation of the lump is necessary. A medical line of management has proved to be more fruitful rather than mastectomy in our research.

KEYWORDS

Chronic granulomatous mastitis, breast, granulomatous inflammation, tuberculosis.

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BACKGROUND

"Chronic Granulomatous Mastitis (CGM)" or "Idiopathic Granulomatous Mastitis" (IGM) is a benign breast disease of unknown aetiology which tends to occur in young females of reproductive age group and was first described by Kessler and Wolloch in 1972.[1] They reported five women with breast masses characterised by florid granulomatous mastitis which was not associated with trauma, specific infections or exogenous materials. It is usually characterised by a lump in the breast which is firm to hard and tender, at times fixed, mimicking the clinical and radiological features of carcinoma breast. Although, it is a benign entity, CGM clinically mimics breast cancer in terms of clinical and radiological findings, often leading to disastrous consequences. The diagnosis may be made by identifying granulomatous inflammation without caseous necrosis in the lobules via histopathological examination and by excluding all other reasons which may cause granulomatous inflammation of the breast.[2,3] At present, the definitive diagnosis of CGM can only be established and confirmed by histopathology.[4]

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Aims and Objectives

The aims of this study were to examine the reports and to review the clinical presentation of 50 cases that were histopathologically diagnosed as granulomatous mastitis, to discuss the general approach to granulomatous inflammation in the breast and to focus on the features of CGM which may be misdiagnosed as carcinoma.

MATERIALS AND METHODS

A retrospective study included 50 women who had the required clinicopathological criteria of CGM and who were treated between Dec 2015 - July 2017. This study was performed in a medical institute. The patients were ones who presented in the outpatient department of the hospital or referred from peripheral government/ private health clinics. A series of investigations was done including the blood and radiological studies like ESR, Tuberculin test and Chest x-ray. The diagnosis was confirmed either by Core needle biopsy or FNAC for the suspicious breast lesions and also from excision biopsy of the lump as well as from the biopsy taken from the abscess wall during drainage. Clinical data of the presentation, histopathology and management were analysed by review of medical records. Follow-up information was obtained from the patients when they came to the outpatient department for regular follow-up at monthly intervals. The types of symptoms, severity and duration were documented. The data collected were then studied and the various parameters were compared retrospectively.

RESULTS

Complete follow-up information for all patients diagnosed with CGM with regard to the clinical presentation, radiological findings,[5] histology report and management was obtained for all 50 patients. The patients ranged in age from 25 to 47 years. Median age being 35.8 years.

Clinical Findings	No. of Cases	%
Lump	43	86%
Abscess	5	10%
Axillary mass	2	4%
Skin thickening	26	52%
Sinus formation	1	2%
Lump with inflammatory changes	7	14%

Fig. 1 Clinical Findings

	No of Patients	Percentage
Duct ectasia	34	68%
Mastitis	15	30%
Lobulated or irregular mass	43	86%
Axillary adenopathy	5	10%
Asymmetric density	24	48%
Skin thickening	26	52%

Fig. 2 Mammography Findings

Chronic inflammation	32	64%
Idiopathic granulomatous mastitis	15	30%
Tuberculosis	3	6%

Fig. 3 Histopathology Findings

1.	**Infection**
	Mycobacterium tuberculosis
	Blastomycosis
	Cryptococcosis
	Histoplasmosis
	Actinomycosis
	Filarial infections
	Corynebacterium
2.	**Autoimmune Disease**
	Wegener granulomatosis
	Giant cell arteritis
	Foreign body reaction
3.	**Ductal Ectasia**
	Plasma cell mastitis
	Subareolar granuloma
	Periductal mastitis
4.	**Diabetes Mellitus**
5.	**Sarcoidosis**
6.	**Fat Necrosis**
7.	**Idiopathic**

Table 1. Aetiology in Granulomatous Lesion of Breast

Clinically[6]

Five of 50 patients had undergone incision and drainage (I and D) on presentation. Symptoms persisted in spite of several courses of various antibiotics. Fluoroquinolones being avoided. The duration of symptoms ranged from 2 days to 8 months. The most common presenting symptoms were a mass in the breast (43/50, 86%) and pain, erythema and inflammation (7/50, 14%). Draining sinus tracts were seen in 1 women at initial presentation and axillary adenopathy was noted in 2 of 50 (28%) women (Fig. 1). The mass was hard on palpation in 60% of the women and clinically measured 1.0 - 4.2 cm. None of the women had any systemic disorder or history of a specific infection.

Radiologically[7,8]

Forty-three of 50 (86%) patients showed a heterogeneously dense or with an irregular or lobulated mass on mammography. Twenty-four women showed a large focal asymmetric density (Fig. 2). Three women had diffusely increased density of the affected breast. Associated skin thickening or axillary adenopathy was seen in 26 women (Fig. 2). Ultrasound examination showed lesions in all 50 women. A large irregular hypoechoic mass with multiple tubular extensions was identified in 32 women (59%). Duct ectasia was seen in 34 women (33%). All masses were heterogeneously hypoechoic with the mean diameter ranging from 0.8 to 4 cm. Parenchymal distortion with acoustic shadowing and no discrete mass was noted in four women (7%). We observed skin thickening in 26 women (52%) and axillary adenopathy in 5 (Fig. 2).

Histopathologically

Microscopic findings of 35 cases suggested chronic inflammation. It was then considered that the patient could be diagnosed with IGM after excluding all diseases that could lead to granulomatous inflammation in the breast, which turned out to be 15.

Tuberculosis was considered in the microscopic examination of 3 cases out of 35, and pathology reports recommended further examination for granulomatous diseases, particularly tuberculosis like AFB and ZN staining. One of the cases was diagnosed as granulomatous mastitis and was microscopically defined as having a tendency for tubercular granuloma formation. In all 3 patients, PAS and ZN staining results were negative. Sinus formation to the skin was present in 1 case, whose initial diagnosis suggested tuberculosis (Fig. 3). The lesions in all cases were unilateral and axillary involvement, if any was ipsilateral; masses were located either in the right breast or the left breast. In 2 cases, it was located in the retroareolar area.

The information about the localisation of the lesion within the breast in these cases revealed that the lesion could be in different quadrants and there was no specificity related to the disease. The microscopic examination of the cases revealed perilobular granulomatous inflammation including polymorphonuclear leukocytes, epithelioid histiocytes, multinuclear giant cells of the Langhans type, lymphocytes and plasma cells.

DISCUSSION

Many pathological processes are responsible for the granulomatous inflammation of the breasts. These are examined under the overarching title of granulomatous mastitis. In addition to tuberculosis, leprous and bacterial infections such as brucella, fungal infections and parasitic infections and foreign substance reactions may also lead to granulomatous mastitis. Another cause of granulomatous mastitis is a rare chronic disease of unknown aetiology, which is accompanied by perilobular granulomatous inflammation.

It is thought to be a cellular reaction to breast secretion flowing to perilobular connective tissue secondary to epithelial damage as a result of infection, trauma or a

chemical event; however, no specific antigen has been shown. Even though some studies have claimed that CGM develops within 2 years after childbirth and is associated with nursing, oral contraceptive use and hyperprolactinaemia it is not true for all cases.

CGM may be seen in women aged between 17 and 82 with a mean occurrence age of 30 - 34 yrs. Hamissa et al[9] studied 10 IGM cases and identified the mean age as 36.4 yrs. It was 35.8 yrs. in our patient study with only one above the age of 45 yrs.

Bilateral involvement is seen in one-fourth of IGM cases and the lesion may be located in any quadrant of the breast; however, in all the cases that we studied it was found to be unilateral involvement. Thus, there is no specificity of the side as far as the involvement of breast is considered.

For the diagnosis to be made it is crucial that all granulomatous mastitis reasons, primarily tuberculosis be excluded after the detection of chronic granulomatous inflammation in the histopathological examination. The presence of fungi and bacteria should be excluded by using radiological and clinical tests; culture and histochemical staining methods. Tuberculosis bacilli DNA in the tissue should be sought by using the polymerase chain reaction (PCR) method. Another granulomatous disease with no known aetiology, sarcoidosis should also be included in the differential diagnosis. It can be excluded with radiological tests, Kveim test, serum ACE and lysozyme levels.[4] The absence of caseification necrosis in the 18 cases interpreted as IGM in our series and the presence of suppurative granulomatous inflammation in 15 of them discards the diagnosis of tuberculosis (Fig. 3). At the same time tuberculosis and fungal infections were discarded in all patients by using EZN and PAS staining, which revealed no acid resistant bacilli or mycotic agent. We have also examined for serum prolactin levels, which showed presence of hyperprolactinaemia in 12 cases. However, histopathological findings alone are not enough to exclude other reasons for granulomatous inflammation. Particularly, in endemic regions such as in India a breast mass in a female patient with signs of chronic inflammation could always lead to the possibility of tuberculosis. Therefore, even though the morphological findings in the pathology reports of our cases may have been consistent with CGM, the need to exclude all our granulomatous mastitis causes for a definitive diagnosis has been stressed upon.

The most distinctive feature of CGM is the clinical and radiological suggestion of breast carcinoma in more than half of the patients. When the patient presents to the doctor with a breast mass whose diameter ranges between 1 and 8 cm (mean diameter 3 cm), inflammation on the breast skin and ulceration, the clinical and radiological tests may lead to the misdiagnosis of carcinoma (inflammatory).

Mastectomy may unnecessarily be performed on these patients due to false positive results of fine needle aspiration cytology.[10] There are studies considering the use of Methotrexate for the treatment of CGM, but with little success.[11] Steroids have also been used in the past in these circumstances. However, we have avoided the use of Fluoroquinolones in the management in our studies, as it is one of the second line drugs for granulomatous/ tuberculosis treatment regimen. There have been studies with the use of prednisolone by Dehertogh DA in 1980, still not an efficient measure to treat IGM.[12] Some patients in our studies underwent aggressive surgical management, but have shown a high recurrence rate in the same breast or the opposite breast after few weeks or months. Whereas, on the other hand the medical or conservative management has lasted for 3 weeks to 10 months without any significant outcome in few cases. Thus, it is a dilemma whether to go for the aggressive surgical management or to go for the conservative line of management.[13]

CONCLUSION

It has proved fruitful to have a medical line of management rather than surgical in most of the cases in our research. Thus, it is better to go for complete evaluation of the breast lump and the inflammation than to prophylactically go for mastectomy. Hence, unnecessary mastectomies can be avoided and conservative line of management should be considered.

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