

Original Research Article

A descriptive study of chronic granulomatous mastitis in Central India

Bhupesh Harish Tirpude*, Ashwini Annamwar, Raj Gajbhiye, Gayatri Deshpande

Department of Surgery, Government Medical College, Nagpur, Maharashtra, India

Received: 19 July 2022

Revised: 08 August 2022

Accepted: 20 September 2022

*Correspondence:

Dr. Bhupesh Harish Tirpude,

E-mail: btirpude@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Chronic granulomatous mastitis is a rare benign breast condition that can mimic breast cancer. The present study was undertaken to assess the demographics, clinical presentation, etiology, diagnostic tools and management of patients with CGM.

Methods: This descriptive observational study was conducted in total 83 women who presented with breast lump with tenderness associated with fever for more than 4 weeks of duration in the Department of General Surgery at Tertiary Care Centre from June 2018 to December 2020.

Results: In all cases breast lump was chief complaint, of maximum (38.5%) had this illness since last 1 to 4 months. 48 patients had past history of tuberculosis. Axillary lymph node was enlarged in 24.1% and body temperature was raised in 57.8% of cases. Skins over the lump were presented with indurated with multiple pus discharging sinuses (50.6%) and palpable mass with erythema and ulcerative skin lesion (49.4%). On biopsy all the patients presented with granulomatous mastitis and on USG, hypoechoic mass was presents in all cases. Patients were managed medically by IV antibiotic and AKT (57.8%) and IV antibiotic with oral corticosteroid (42.2%). Incision and drainage were done in 74 cases while 8 required wide local excision and in 1 patient mastectomy was done.

Conclusions: The histopathology remains the optimal diagnostic tool. Corticosteroid therapy has been shown to be efficacious for CGM, but in the existence of many complications, surgical treatment has been first method of choice. We consider that wide local excision is the better treatment choice if possible.

Keywords: Chronic granulomatous mastitis, Breast cancer, Lump, Tuberculosis, Axillary lymph node, Biopsy, Antibiotic, Corticosteroid, Mastectomy

INTRODUCTION

Granulomatous mastitis (GM) is an uncommon benign inflammatory condition of the breast. Idiopathic granulomatous mastitis (IGM) represents a sub-group of GM with unknown etiology, first described by Kessler and Wolloch in 1972, and is most commonly seen in women of childbearing age.¹ It is frequently associated with lactation or hyperprolactinemia, and an increased incidence in non-white women has been proposed.^{2,3} Although its exact prevalence is unknown, IGM is considered to be very rare. It has been suggested that the

incidence may vary across geographic distributions and populations.^{4,5} Moreover, it is characterized by chronic granulomatous inflammation of the lobes without necrosis and its clinical signs and symptoms can be so variable ranging from pain, fistula and secretion to the presence of a mass or tumor of the breast.⁶ The etiology is uncertain, and an autoimmune association has been suggested with the diagnosis usually made by exclusion. However, it poses a diagnostic and treatment dilemma; also, it clinically and mammographically mimics breast cancer, especially inflammatory type and hence confirmed early diagnosis is required to avoid misdiagnosis and unnecessary delay in the treatment.⁷⁻⁹ In

addition, the finding of axillary lymphadenopathy seen in some of the patients with idiopathic granulomatous mastitis is concerning as it is also seen in cases of breast malignancy with nodal metastatic disease. Histologically, idiopathic granulomatous mastitis is characterized by formation of well-defined non-necrotizing granulomas.¹ On the other hand, due to lack of a definitive treatment plan, complications of empiric treatment, such as allergic reaction to antibiotics and poor cosmetic procedures result in following repeated surgical interventions which threaten the patients.⁷⁻⁹ In present study, we discuss the clinical manifestations, imaging findings on ultrasound, and histopathological findings of this rare inflammatory condition of the breast.

METHODS

Written informed consent from patients/their relatives was taken. This descriptive observational study was conducted in the Department of General Surgery at Government medical college, Nagpur, Maharashtra, India from June 2018 to December 2020. Total 83 women who presented with breast lump with tenderness associated with fever for more than four weeks of duration were included. Patients with benign breast lump and breast malignancy as well as if anyone fails to sign the written informed consent were excluded from the study. After selection of patient was interviewed and standard form was used to record the data. A detailed medical history was taken and clinical examination comprises of general examination, breast examination and systemic examination was done. Diagnosis of the patient was based on the clinical, pathological and radiological investigations. After that patient was intervened by incision and drainage or wide local excision with IV antibiotics followed by oral antibiotics. After histopathology of breast tissue biopsy report confirmation of granulomatous mastitis was intervened by various medical approach like oral corticosteroids (prednisolone 0.5 mg/kg/day) for 2 weeks, dose was tapered according to improvement OR AKT as per RNTCP protocol (IP: 2 months HRZE and CP: 4 months HRE). The procedure was performed in accordance with the ethical standard & photographs were taken with patients and relatives with full consent.

Statistical analysis

Data was entered in Microsoft excel sheet and analyzed using statistical software epi info (7.2.1.0). Appropriate statistical test was applied. Chi square test was applied for categorical data, $p < 0.05$ was considered statistically significant.

RESULTS

A total of 83 cases admitted in a Tertiary Care Centre were studied during the study period from June 2018 to December 2020. The most of the patients (43.3%) were

in the age group of 30-39 years (43.3%) followed by 20-29 years (30.2%) as shown in (Table 1).

Table 1: Distribution of patients according to their age.

Age (years)	N	%
20-29	25	30.2
30-39	36	43.3
40-49	20	24.1
>50	02	2.4
Total	83	100

Breast lump was presenting complaint in all subjects followed by fever, pain and discharge as depicted in (Figure 1). Most of the subjects had illness since last 1 to 4 months (32; 38.5%) followed by for 5-8 months (28; 33.7%) and 9-12 months (23; 27.7%). 48 subjects had a past history of tuberculosis, while 18 had no past history, 10 patients were lactating mothers and 7 were on OC pills. On general examination, most of the patients had raised temperature (57.8%). On inspection, indurated and multiple pus discharging sinuses were seen in 42 and palpable mass with erythema and ulcerative skin lesion was seen in 41 cases. Majority of patients presented with the lump of size 4cm to 6 cm (41; 49.4%) followed by 7-9 cm (31; 37.4%) and 11 (13.2%) patients had lump size of >9 cm. On biopsy all the patients presented with granulomatous mastitis and on USG, hypoechoic mass was presents in all the cases. On PUS routine microscopy, acid fast bacilli (AFB) were seen in 12 patients followed by gram positive bacilli in 10 as shown in (Table 2).

Table 2: Diagnosis of the patient (clinical, pathological & radiological investigations).

Clinical, pathological & radiological investigations		N	%
General examination	Axillary lymphadenopathy	20	24.1
	Raised Temperature	48	57.8
Skin over lump on inspection finding	Indurated with multiple pus discharging sinuses	42	50.6
	Palpable mass with erythema and ulcerative skin lesion	41	49.4
Biopsy finding	Granulomatous mastitis	83	100
USG finding	Hypoechoic mass	83	100
PUS Microscopy	Acid Fast Bacilli	12	14.5
	Gram positive Bacilli	10	12.1
	No organism	61	73.5

Patients were managed medically by IV antibiotic and AKT (48; 57.8%) and IV antibiotic with oral corticosteroid (35; 42.2%). Incision and drainage were done in 74 (89.1%) patients while 8 (9.6%) patients required wide local excision and in 1 (1.2%) patient

mastectomy was done. Out of 48 cases on IV antibiotic and AKT, 42 required incision and drainage and 6 subjects required wide local excision. Likewise, out of 35 cases on IV antibiotic and IV corticosteroid, 33 patients required incision and drainage and 2 patients required wide local excision (Table 3).

Table 3: Distribution of patients according to their medical management.

Medical management	Surgical management		Total
	Incision and drainage	Wide local incision	
IV antibiotic and AKT	42	06	48
IV antibiotic with IV corticosteroid	33	02	35
Total	75	08	83

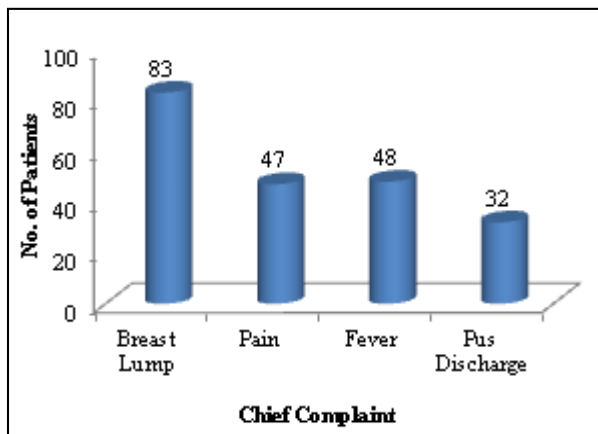


Figure 1: Distribution of patients according to chief complaint.

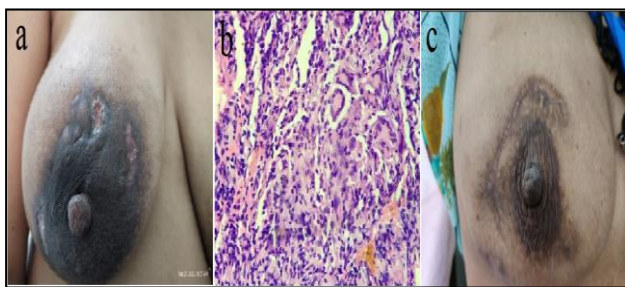


Figure 2: a) Pre-operative images; b) Histopathology of the lesion; c) Post-operative image after AKT.

DISCUSSION

Chronic granulomatous mastitis is a rare benign breast disease characterized by a chronic necrotizing granulomatous condition. It is said to occur predominantly in women of childbearing age but can affect women in post-menopausal period.¹⁰ In the present

study most of the patients (43.3%) were in the age group of 30-39 years followed by 20-29 years (30.2%) which is comparable to the previous studies.¹¹⁻¹³ CGM may manifest itself in two ways: first, as an abscess and second, mimicking a breast carcinoma. The cause of the disease is unknown the general consensus is that reproductive age, recent pregnancy, breast feeding and history of OCP use are the most associated conditions with the disease, as shown in our finding.

It is generally emerged with the clinical symptoms of breast mass, abscess, inflammation and mammary duct fistula. The most common presenting sign is a defined hard lump of the breast as observed in all of our cases (chief complaint was breast lump) which is comparable with the study conducted by Linda et al and Fei Zhou et al.^{12,14} The majority of patients i.e. 48 patients had past history of tuberculosis, 10 were lactating mothers and 7 patients were on OC pills. On examination 48 patients had raised temperature and 20 showed the axillary lymphadenopathy. On inspection, indurated and multiple pus discharging sinuses were seen in 42 cases and palpable mass with erythema and ulcerative skin lesion was seen in 41 patients.

These findings are correlated with the study done by Linda et al.¹² As mentioned previously, neither U/S nor mammography can differentiate IGM from malignant or other benign lesions, especially inflammatory breast cancers.^{9,15} Because of U/S and mammographic failure, some authors suggested MRI in diagnosis of IGM, but studies have shown that MRI does not provide additional findings for differentiation of IGM from breast cancer.⁹ In view of the non-definitive clinical and imaging findings, histopathology is the cornerstone of definitive diagnosis.^{4,15}

Histopathologic diagnosis was obtained from excisional and incisional biopsies. Biopsy of breast tissue for histopathology showed fibrofatty tissue containing granuloma comprised of epithelioid cells, langhans giant cells, and and lymphocytes suggestive of granulomatous mastitis was seen in all 83 patients and on USG, lesion in all cases showed the heterogeneously hypoechoic mass. Similar finding is seen in a study conducted by Linda et al.¹² We have not preferred FNAC. Inflammatory reaction with granulomas which were composed of epithelioid, histiocytes, Langhans giant cells accompanied by lymphocytes, plasma cells, and occasional eosinophils centered on lobules was seen on histopathologic examination.

The treatment of idiopathic granulomatous mastitis is still controversial, probably due to its low incidence and lack of understanding its pathophysiology and its prevalence in impoverished patients.¹⁶ The treatment-using mastectomy should be avoided as much as possible because GM is not a cancer and neither a disease with the possibility of metastasis. Previous studies obtained different results in terms of the treatment of these patients

that suggested corticosteroids and methotrexate with surgery or treatment with corticosteroid and azithromycin, and administration of steroids in lesions in these patients.^{17,18} The present study was aimed to help solve the dilemma of treatment and diagnosis of idiopathic granulomatous mastitis and answer to the question of which method can be useful for treating and diagnosing such patients, in fact we used the steroid therapy method for treating patients and applied both MG and U/S for diagnosing such patients, and compared these methods together. Incision and drainage were required in 74 patients while 8 patients required wide local excision of lesion. All patients received IV inj. Augmentin 1.2 gm iv BD for 3 days followed by oral tablet Augmentin 625mg BD for 5 days after histopathology biopsy confirmation of GM. 48 patients received AKT as per RNTCP protocol (IP: 2 months HRZE and CP: 4 months HRE) and remaining 35 patients received oral corticosteroid (prednisolone 0.5 mg/kg/day) for 2 weeks and doses were tapered according to improvement. One patient who showed multiple pus discharging sinuses with large breast lump and which was not improved with oral corticosteroids, underwent mastectomy. These findings are comparable with the other studies.^{12,13,19}

CONCLUSION

In conclusion, chronic granulomatous mastitis is a rare benign breast condition that may be misdiagnosed as breast carcinoma. Because clinical or imaging diagnosis has often been difficult and inconclusive, histopathology remains the optimal diagnostic tool. Corticosteroid therapy has been shown to be efficacious for IGM, but in the existence of complications such as abscess formation, fistulae, and persistent wound infection, surgical treatment has been the first method of choice. We consider that wide local excision is the better treatment choice if possible. After wide local excision, usually further therapy is not needed. More study should be done in a large sample to identify specific clinical and imagery finding which might lead to the improvement of its management. Awareness among surgeons and pathologists should also be emphasized to avoid unnecessary misdiagnosis.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kessler E, Wolloch Y. Granulomatous mastitis: a lesion clinically simulating carcinoma. *Am J Clin Pathol.* 1972;58(6):642-6.
2. Gautier N, Lalonde L, Tran-Thanh D. Chronic granulomatous mastitis: imaging, pathology and management. *Eur J Radiol.* 2013;82(4):e165-75.
3. Al-Khaffaf B, Knox F, Bundred NJ. Idiopathic granulomatous mastitis: a 25 year experience. *J Am Coll Surg.* 2008;206(2):269-73.
4. Patel RA, Strickland P, Sankara IR, Pinkston G, Many W, Rodriguez M. Idiopathic granulomatous mastitis: Case reports and review of literature. *J Gen Intern Med.* 2010;25:270-3.
5. Sheybani F, Sarvghad M, Naderi HR, Gharib M. Treatment for and clinical characteristics of granulomatous mastitis. *Obstet Gynecol.* 2015;125:801-7.
6. Topete, A, Carrasco O, Barrera G, Garzón J, Gutierrez E, Márquez C, et al. Granulomatous Mastitis: Incidence and Experience in a Mexican Institute. *J Biosci Med.* 2019;7:24-32.
7. Garcia-Rodriguez JA, Pattullo A. Idiopathic granulomatous mastitis: a mimicking disease in a pregnant woman: a case report. *BMC Res Notes.* 2013;6:95.
8. Kalaycı TÖ, Koruyucu MB, Apaydın M, Etit D, Varer M. Idiopathic Granulomatous Mastitis Associated with Erythema Nodosum. *Balkan Med J.* 2016;33(2):228-31.
9. Gurleyik G, Aktekin A, Aker F, Karagulle H, Saglamc A. Medical and Surgical Treatment of Idiopathic Granulomatous Lobular Mastitis: A Benign Inflammatory Disease Mimicking Invasive Carcinoma. *J Breast Cancer.* 2012;15(1):119-23.
10. Chabrol A. Mastite granulomateuse: problèmes diagnostiques et thérapeutiques”. *Revue de Médecine Interne.* 2008;29(110):1.
11. Manogna P, Dev B, Joseph LD, et al. Idiopathic granulomatous mastitis-our experience. *Egypt J Radiol Nucl Med.* 2020;51:15.
12. Linda J. Hovanessian larsen banafsheh peyvandi nancy klipfel edward grant geeta iyengar granulomatous lobular mastitis: imaging, diagnosis, and treatment. *AJR.* 2009;193:574-81.
13. Liu L, Fei Z, Liu XZS, Liyuan L, Yujuan X, Mingming G, et al. Granulomatous lobular mastitis: antituberculous treatment and outcome in 22 patients. *Breast Care.* 2018;13:359-63.
14. Fei Z, Li-Xiang Y, Zhong-Bing M, Zhi-Gang Y. Granulomatous lobular mastitis chronic diseases and translational medicine. *Med Care.* 2016;2:17-21.
15. Ergin AB, Cristofanilli M, Daw H, Tahan G, Gong Y. Recurrent granulomatous mastitis mimicking inflammatory breast cancer. *BMJ Case Rep.* 2011.
16. Conte AB, Barick A, Alaoui FZF, Sanoh AA, Jayi S, Soule HM, et al. Granulomatous mastitis: a descriptive study of 08 cases observed in the department of gynecology-obstetrics ii of the HASSAN II teaching hospital of fez. *EC Gynaecol.* 2021;10(4):30-4.
17. Sheybani F, Sarvghad M, Naderi HR, Gharib M. Treatment for and clinical characteristics of granulomatous mastitis. *Obstet Gynecol.* 2015;125(4):801-7.
18. Salehi M, Salehi M, Kalbasi N, Hakamifard A, Salehi H, Salehi MM, et al. Corticosteroid and azithromycin

in idiopathic granulomatous mastitis. *Adv Biomed Res.* 2017;6:8.

19. Xiaojia M, Xiaoli M, Chang Y. Different treatments for granulomatous lobular mastitis: a systematic review and meta-analysis. *Breast Care.* 2020;15:60-6.

Cite this article as: Tirpude BH, Annamwar A, Gajbhiye R, Deshpande G. A descriptive study of chronic granulomatous mastitis in Central India *Int Surg J* 2022;9:1715-9.