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Granulomatous Mastitis — Clinicopathological Review of 38 Cases: A 3 Year Study with a Brief Review of Literature

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Abstract

Introduction: Granulomatous mastitis (GM) is a rare, chronic inflammatory condition of obscure etiology, varied clinical and pathological features. *Methods:* This was a restrospective, three-year analysis, of the clinical and histological parameters of diagnosed cases of GM. *Results:* An analysis of age at presentation revealed the mean age as 35.3 yr. Clinical data was available for 26 patients and the mean lesional size was 5.3 x 4.3 cm. The most common presenting complaint was as a lump, with diffuse swelling and nipple discharge next in frequency. Clinical diagnosis varied widely from benign to malignant. Treatment administered included incision and curettage, lumpectomy and simple mastectomy. Thirty-eight cases reviewed showed granulomas in all the cases. Caseous necrosis was absent. Special stains for tubercular bacilli and fungi had been done in 26 cases and were negative. Follow-up ranged from 3–5.5 years. Recurrence was documented in 57.6% of patients. *Conclusion:* GM, generally, is a disease of young women that is of particular significance since it can easily be mistaken for malignancy. Histopathological diagnosis is confirmatory.

Keywords: Corticosteroids; Granuloma; Lobulocentric; Mastitis; Necrosis.

Introduction

Granulomatous mastitis (GM) is a rare, chronic inflammatory disease of the breast, of obscure etiology and varied clinicopathological features. Initially described by Kessler and Wooloch[1] in 1972, and further elaborated by Cohen[2] in 1977, GM characteristically affects women in the reproductive age group, and is also associated with use of oral contraceptives. An immune basis for the disease is also postulated. The histopathological picture is characterised by lobulocentric non-necrotizing granulomatous inflammation. The clinical and radiologic findings of GM can be mistaken for breast cancer, leading to misdiagnosis and erroneous treatment. Thirty-eight cases of granulomatous mastitis were reviewed. Clinical and pathologic features of GM are discussed along with a brief review of literature.

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Materials and Methods

This study was approved by the Manipal Institutional Ethical committee (IEC no 482-2019). A retrospective review of records from our institute for a period of three years yielded 38 cases of GM between the ages of 23 and 66. Clinical details were available for 26 patients. The archived histopathological (H & E) slides for all 38 patients were analyzed. Special stains for tubercular bacilli and fungi were also accessed.

Results

GM constituted 38 cases (2.37%) of total breast specimens received during the three-year-period.

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Mean patient age was 35.3 years (range 23–66 yr). Mean lesional size was 5.3 x 4.3 cm. Presentation with breast lump, fever and pain were noted in 20, 10 and 17 cases respectively. Symptomatology ranged from a week to 6 months. Associated diabetes and hypothyroidism in was recorded in 2 cases respectively. No history of specific infection or oral contraceptive use was obtained. Diffuse swelling was noted in 6 and nipple discharge in 5 cases. Erythema (n = 8), retraction of nipple (n = 4), sinus formation (n = 2) and peau d' orange appearance (n = 2) were recorded. Axillary lymphadenopathy was present in 4 cases. Clinical suspicions varied widely abscess (n = 13), tubercular mastitis (n = 1), galactocele (n = 1), fibroadenoma (n = 1) and carcinoma (n = 5). Ultrasonography and mammography were done in 10 and 3 cases respectively with suspicion ranging from benign disease to carcinoma. Fine needle aspiration cytology was done in 8 cases with 2/8 showing GM, benign cystic disease (n = 1), epitheliosis with atypia (n = 1), abscess (n = 3) and 1 case was suspicious of malignancy. Incision and curettage, lumpectomy and simple mastectomy were done in 12, 13 and 1 cases respectively.Histologically, 38 cases reviewed showed a lymphocyte predominant infiltrate in 26 cases, with neutrophils, plasma cells and histiocytes predominating in 10, 1 and 1 cases respectively Granulomas were universal. Multinucleated giant cells were present in 37 cases, abscess in 30, fibrosis in 24 and dystrophic calcification in 1 case. Caseous necrosis was conspicuously absent. Special stains for tubercular bacilli and fungi available in 26 cases were negative. Surgical treatment formed the mainstay and was the sole mode of treatment in 17 cases, with added ATT and steroids in 6 and 3 cases respectively. Follow up ranged from 3–5.5 years. 57.6% of patients developed recurrence.

Discussion

GM is a rare inflammatory disease of the breast. As it is often unreported, the exact incidence is unknown.[3] In our series, GM constituted 2.37% of total breast specimens. According to Tuli et al.[4] most reports of GM have come from outside the United States and the reason for this is lower prevalence or under diagnosis in developed countries or increased index of suspicion in developing countries, or a combination of both.

GM usually afflicts women in the reproductive age group.[3,5] The mean age reported in literature is variable, but the average age of presentation is in the third decade of life with a wide range of 11 to 83 years. Symptoms are often recorded a few years subsequent to pregnancy.[4–7] In our study the mean age of presentation was 35.3.

The etiology of GM is obscure. An autoimmune reaction, triggered by proteinaceous duct secretions has been suggested and the response to steroid therapy supports this hypothesis. Associations with the use of oral contraceptives, pregnancy, hyperprolactinemia and alpha-1-antitrypsin deficiency have been postulated. The documented percentages of patients of GM using oral contraception ranges from 0% to 33%.[4–6] however none of our cases were on oral contraceptives.

GM usually presents as a painful breast mass. Chronicity may lead to development of abscesses, sinus, inversion of the nipple, skin inflammation, thickening and ulceration with axillary adenopathy.[5] Lai et al.[8] concluded that all women with a histopathological diagnosis of GM presented with palpable breast masses and 56% were had a clinical suspicion of malignancy. This parallels most of the other studies.[5,6] In our study 20 cases presented with breast lump while 6 had diffuse breast swelling. Malignancy was suspected in 5 cases (13.2%).

GM may mimic carcinoma in mammography, ultrasound and even in fine needle aspiration cytology leading to unnecessary mastectomies.[4,5] This attributes a level of importance to the initial correct diagnosis. In our study FNA was diagnostic in 25% cases. Other studies have documented diagnostic FNA in 21%[5] of cases studied. In a study by Kocaoglu et al.[9] the possible utility of dynamic contrast enhanced MRI in diagnosing GM was suggested, along with limitations in diagnostic utility, observed by other authors.[6]

GM is characterized by lobulocentric non-necrotizing granulomas (Figs. 1,2,3) along with a chronic inflammatory infiltrate composed of lymphocytes, plasma cells, epithelioid histiocytes, multinucleated giant cells and neutrophils (Fig. 4). Granulomas may be confluent, obliterating lobulocentricity. Microabscess formation involving the entire lobule, intense fibroblastic activity and metaplastic squamous change of lobular and ductal epithelium may also occur.[4–6] In 1 case calcification was noted (Fig. 5). The diagnosis of GM is one of exclusion, and the differential diagnosis includes infectious etiology like bacteria, mycobacteria or fungi which can be confirmed by culture and special stains. Non infectious conditions include sarcoidosis which has characteristic naked granulomas, traumatic fat necrosis which has

foamy macrophages and non-lobular pattern of involvement, ruptured cyst which has non-lobular pattern, duct ectasia with characteristic periductal fibrosis, plasma cell mastitis, polyangiitis with granulomatosis which is usually associated with vasculitis, and most importantly carcinoma which has characteristic histology.[5]

Treatment options remain a subject of controversy. Histopathological confirmation of GM is of paramount in the prevention of inappropriate and unnecessary treatment. Currently, treatment includes the options of surgical management, systemic steroids, or methotrexate. More research remains to be done to determine the best treatment option associated with the lowest recurrence rates Nearly 50% of cases undergo spontaneous resolution.[4,10–13]

When medicolegal aspect of mastitis is considered, whether granulomatous or other verity, the prompt, early and accurate diagnosis is important. The delay or missed diagnosis itself is the reason for potential litigation. Granulomatous mastitis usually presenting as a breast mass greatly misdiagnosed as breast cancer and core biopsy and histology are the only definitive diagnostic techniques left in absence of specific radiologic features.[14,15] Hence the role of a pathologist is important in managing these cases.

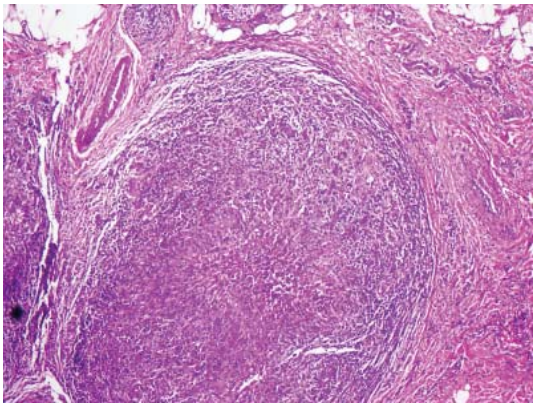

Fig. 1: Lobulocentric involvement of the lesion H&E, X40

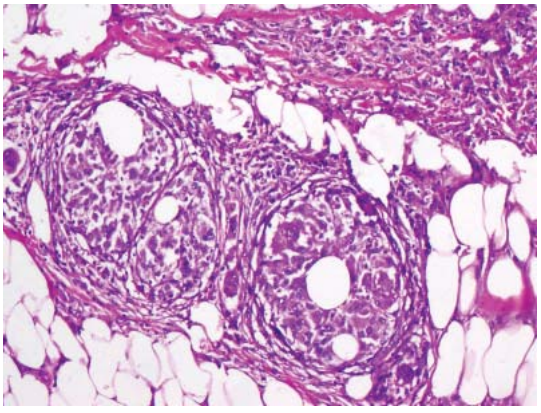

Fig. 2: Non-caseating granulomas H&E, X100

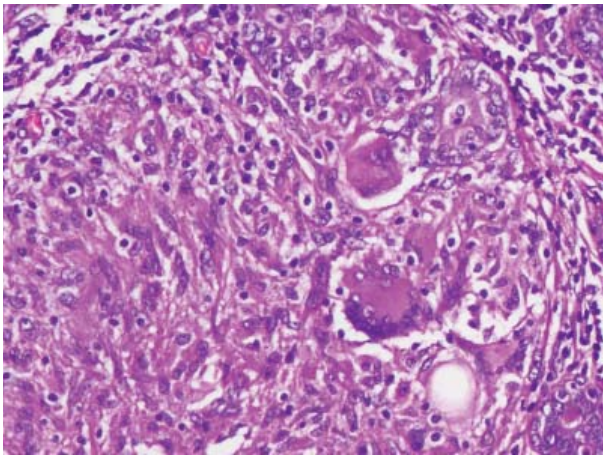

Fig. 3: Non-caseating granuloma composed of epithelioid cells, giant cells and lymphocytes H&E, X200

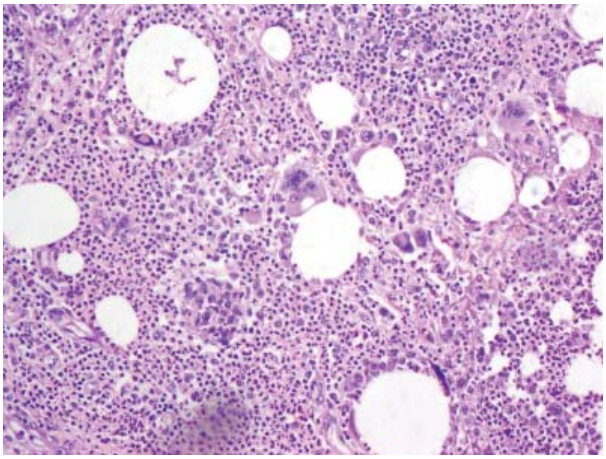

Fig. 4: Mixed chronic inflammatory infiltrate along with giant cells H&E, X100

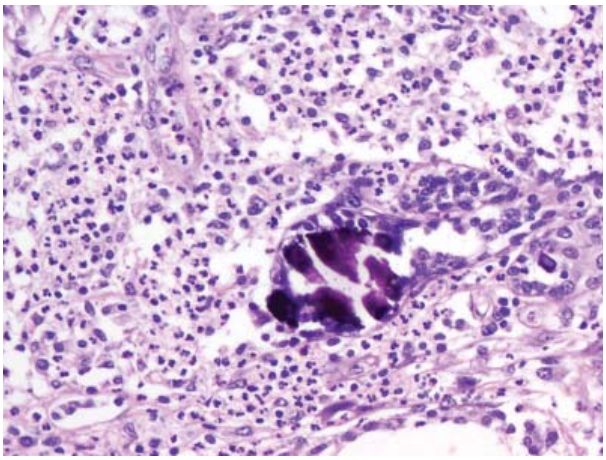

Fig. 5: Calcific deposit along with inflammatory cells H&E, X200

Conclusion

Granulomatous mastitis is a rare, chronic

inflammatory process with diverse modes of presentation. It generally affects young women and is of great significance in that it can mimic malignancy clinically and radiologically. The Gold standard for diagnosis is histopathology. Infectious etiology must be excluded before making a diagnosis of GM. A high index of suspicion is required to prevent misdiagnosis and unnecessary radical surgery. The exact etiology and treatment modalities are yet to be defined.

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Conflicts of interest: None to declare

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