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Research Article

Clinical presentation and management of idiopathic granulomatous mastitis in a Middle Eastern country-a case series

Introduction: Idiopathic Granulomatous Mastitis (IGM) is a rare and benign inflammatory condition of the breast. IGM cases have been poorly documented in the Middle East, highlighting the need for improved awareness.

Aim and Methods: A retrospective review of medical records was conducted, at a specialist centre on the clinical presentation, radiological findings, histopathological features, treatment and outcomes of IGM patients.

Results: We identified twenty-two patients with a mean age of 36.6 years (range: 25-51) at presentation to breast clinic. 21/22 (96%) patients presented with a breast lump. 17/22 (77%) patients had breast pain, 4/22 (18%) patients had nipple discharge and 7/22 (32%) had palpable lymph nodes. GM was diagnosed histopathologically in 50% of fine needle aspirates, and 94% of core biopsies of breast. Conservative treatment was the sole treatment in 27%, while surgical management was undertaken in 5% of the patients.

Conclusion: IGM appears to be a prevalent concern amongst Middle Eastern countries. There appears to be a diminishing role of surgery in its management and the role of immunosuppressants is emerging.

Keywords: granulomatous • mastitis • breast • disease • Middle East

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Introduction

Idiopathic Granulomatous Mastitis (IGM) is a benign inflammatory condition of the breasts that predominantly affects parous, pre-menopausal women with a recent history of lactation [1-3]. It commonly presents as a unilateral painful mass associated with erythematous skin changes, abscess formation and axillary lymphadenopathy [1-5]. Clinically, it is often mistaken for inflammatory breast carcinoma, breast abscess and periductal mastitis and radiology is of limited value in differentiating it from other inflammatory and malignant diseases [1,2,6-11]. Diagnosis is confirmed by histopathological evaluation of breast tissue and can only be made clinically after the exclusion of sarcoidosis, Wegener's granulomatosis, giant cell arteritis, polyarteritis nodosa, tuberculosis and parasitic and fungal infections [1-3,10,12,13].

Surgical excision and high dose corticosteroids remain the mainstay of treatment [9-10,14]. However, immunosuppressive therapy has recently been reported as an attractive alternative in reducing corticosteroid therapy and post-operative recurrence rates [1,15].

IGM is prevalent in the Middle East, despite a lack of awareness among health professionals [16-18]. There remains a paucity in the literature for IGM cases documented in the Middle East. Herein we retrospectively review and compare the clinical presentation, epidemiology and management of IGM in the United Arab Emirates (UAE) to better inform the diagnosis and treatment of this rare and important disease.

Methods

A retrospective review of twenty-two patients with a histopathological diagnosis of IGM was conducted at a specialist breast and rheumatology centre in the UAE. Clinical records were examined for clinical presentation, radiological findings, histopathological features, treatments and outcomes. Patients with incomplete clinical records were excluded from our cohort. The study was conducted in accordance to the principles of the Declaration of Helsinki.

Results

Twenty-two female patients were identified and included in this study. Demographic details are outlined in Table 1 and obstetric history in Table 2.

Clinical presentation

The most common presenting complaints were

Table 1. Patient demographic details.	
Variable	**Demographic Details**
Ethnicity-Number of Patients (%)	Emirati-11 (50%) Indian-4 (18%) Pakistani-3 (14%) Lebanon-1 (4.5%) Philippines-1 (4.5%) Great Britain-1 (4.5%) Jordan-1 (4.5%)
Mean Age at Presentation (Range)	36.6 (35-51)

Table 2. Patient obstetric details.	
Component of Patient History	**Patient Cohort Aggregated Details**
Duration of Symptoms-Days (Range (Months))	45.6 (0-5)
Mean age of menarche-Years (Range)	12.9 (9-16)
Menopausal Status (%)-Premenopausal Perimenopausal Postmenopausal	20 (91) 1 (4.5) 1 (4.5)
Mean Age (Years) of 1st Pregnancy (Range)	25.14 (19-33)
Mean Parity	3.09 (1-9)
Previous/Current Use of Contraception (%) Oral Contraceptive Pill Depot Provera Yasmine	5 (23%) 4 (17%) 1 (4.5%)
Previous Breast-Feeding (%)	22 (100%)
History of Previously Diagnosed Cancer (%)	0 (0%)

a palpable breast mass (21/22; 96%), mastalgia (17/22; 77%), skin changes (11/22; 50%) and palpable axillary lymph nodes (7/22; 32%). Only one patient reported mastalgia alone. There was no difference in the distribution of masses between the right and left breasts. A single patient presented with bilateral breast masses. Locations by quadrant are outlined in Table 3. Sixteen (73%) patients reported non-cyclical pain and one (4.5%) reported cyclical pain. Left-sided axillary lymphadenopathy was palpable in 3 (14%) cases and right-sided axillary lymphadenopathy was palpated in 3 (14%) cases. One (4.5%) patient presented with bilaterally palpable axillary lymph nodes. Ten (45%) patients reported erythematous skins changes, 4 (18%) nipple discharge and 3 (14%) had a clinical impression of breast abscess at presentation. Erythema nodosum (1/22; 4.5%) and an inflammation of the right nipple (1/22; 4.5%) were also documented.

Table 3. Location (by quadrant) of Breast Masses.	
Quadrant	**Number (%)**
Outer Upper	7 (29)
Outer Lower	5 (21)
Inner Upper	4 (17)
Central and Inner Lower	3 (12)
Twelve o'clock position	2 (8)

Imaging and histopathology

Ultrasonography was performed in 18/22 patients (82%). Only 12 of the 18(67%) found hypoechoic vascularised lesions, with the remaining finding no clinically significant pathology. Eight (36%) patients underwent mammography. An ill-defined mass was identified in 3/8 (38%) instances and an asymmetric density with irregular margins in a further 2/8 (25%). Peri-areolar ductal dilatation (12.5%), bilateral axillary lymphadenopathy (12.5%) and benign lymphadenopathy (12.5%) were also reported. No mammography was undertaken in 13/22 (59%) patients.

Twelve (54%) patients underwent fine needle aspiration cytology (FNAC). The results were reported as IGM in five (42%) patients. Other diagnoses included 'abscess' in six (50%) patients (50%), and 'IGM with abscess' in one (8%) patient. Of the five (23%) patients who underwent open biopsy, three received a diagnosis of IGM alone; the remaining two patients received a diagnosis of 'IGM with abscess'. Sixteen patients underwent core biopsy, diagnosing IGM in twelve (75%) patients, 'abscess alone' in one (6%) patient and 'IGM with abscess' in three (19%) patients.

Histopathological evaluation followed FNAC, open and core biopsies. All cases showed evidence of epithelioid non-caseating granulomatous inflammation. There was a varying degree of infiltration of Langerhans multinucleated giant cells, neutrophils, lymphocytes, plasma and other inflammatory cells around mammary lobules.

Management

Seventeen patients (77%) of the cohort were treated with antibiotics and thirteen patients (59%) were treated with non steroid anti-inflammatories (NSAIDs). Conservative therapy alone was defined as treatment with antibiotics and/or NSAIDs. Treatment strategies using steroid therapy, Disease Modifying Anti-Rheumatic Diseases (DMARDs) and surgical

Table 4. Treatment Strategies.	
Treatment Strategies	**Frequency (%)**
Conservative	6(27)
Surgery Alone	1(5)
Steroids Alone	6(27)
Methotrexate Alone	1(5)
Steroids + Methotrexate	4(18)
Surgery + Steroids	3(14)
Surgery + Methotrexate + Steroids	1(5)

approaches(lumpectomy/incision and drainage) are listed in Table 4. Methotrexate was the DMARD prescribed, and Prednisolone the corticosteroid of choice. Recurrence rate of 36% was calculated in our cohort.

Discussion

There are few reports in the literature documenting IGM cases in the Middle East [17-20]. Our study identified 22 patients, at a specialist rheumatology centre in the UAE. Thirteen (59%) were documented as being indigenous to an Arab nation (11 Emiratis, 1 Lebanese and 1 Jordanian). Clinically, our cohort reported palpable breast masses (96%) and mastalgia (77%) as the most common presenting complaints and FNAC (54%), core biopsy (73%) and ultrasonography (82%) were routinely used to facilitate diagnosis. Conservative management and prednisolone alone were recorded as the most common therapeutic approaches in our study.

The underlying aetiology is poorly understood [3]. Kessler and Wolloch first proffered an autoimmune cause, noting histopathological consistencies between IGM, granulomatous thyroiditis and orchitis- later widely supported following IGM's response to corticosteroids [2,5,6,9,10]. Other studies proposed associations of IGM to hormonal imbalances secondary to the use of the Oral Contraceptive Pill (OCP), breastfeeding, hyperprolactinemia, a-1 antitrypsin deficiency and local granulomatous immune responses to irritants, trauma and infections [8,9,21-23]. Although our data made no attempt at identifying autoimmune diagnoses; all females reported previous breast-feeding, most were pre-menopausal and 5 (23%) reported the use of the OCP.

Breast lumps and mastalgia are frequently identified as the most common clinical presentations – findings that are consistent with our centre's experience [1-5,15-19]. Our cohort also demonstrated erythematous skin changes (45%), palpable axillary lymph nodes (32%) and nipple discharge (18%), which are well documented in the literature [1,7,15,16]. Other studies have reported cases of nipple bleeding and fistulation [17,18].

Diagnosis by histopathological evaluation is considered the gold standard [13,24]. It is characterised by the presence of non-caseating granulomas with epithelioid histiocytes in a predominantly neutrophilic background, limited to the mammary lobules with frequent microabscesses [2,3,10,12,25]. All cases of histopathological evaluation demonstrated epithelioid non-caseating granulomatous inflammation, in our cohort. Radiological modalities are limited in their diagnostic ability and in differentiating IGM from malignant disease [14,24]. Commonly reported findings include axillary lymphadenopathy, asymmetric and poorly-outlined lesions, and parenchymal distortion on mammography [9,24]. Ultrasound findings extend to hypoechoic masses and thickened skin [9]. There is a suggestion that a complete triple assessment can facilitate satisfactory distinction of an IGM lesion from a malignancy [2].

Management approaches include conservative management, antibiotics, immunosuppressants, corticosteroids and surgical excision [1-3,8-10,12,14,16,24]. Conservative therapy constitutes a watch-and-wait approach, in the absence of any surgical or medical intervention [24]. Surgical excision and high dose corticosteroids are the preferred therapeutic strategies [9-10,14]. Immunosuppressant such as methotrexate, hydroxychloroquine and colchicine may, however, be attractive alternatives [15,17-20,26].

Conclusion

In summary, our study demonstrated that IGM presents with breast lumps and associated pain and that histopathological evaluation of lesions facilitated diagnoses. Prednisolone use and conservative measures were the most commonly used treatment approaches. Importantly, IGM is prevalent in the Middle-East, despite the poor awareness amongst healthcare practitioners. Of interest is that 55% of our cohort was Emirati, who only constitute 11% of the UAE population. This may be skewed by the patient profile enrolled at this specific breast centre. The role of immunosuppressive is developing, leading

to rheumatological input (from centre's like ours) into multi-disciplinary teams becoming increasingly important.

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