

Idiopathic Granulomatous Mastitis: A Diagnostic and Imaging Challenge Mimicking Breast Carcinoma – A Retrospective Analysis of 20 Cases

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ABSTRACT

Background: Idiopathic granulomatous mastitis (IGM) is a rare, benign, chronic inflammatory breast disease that often mimics carcinoma both clinically and radiologically, posing a significant diagnostic and therapeutic challenge.

Methods: A retrospective analysis of 20 histopathologically confirmed cases of IGM was conducted at SKIMS, Srinagar, between June 2023 and May 2025. Clinical presentation, imaging findings, histopathology, management, and outcomes were analyzed.

Results: The mean patient age was 34.7 years (range 23–47). All were parous, with 75% having a recent history of breastfeeding. The commonest presentation was a unilateral tender breast lump with overlying inflammation. Ultrasound revealed ill-defined, irregular hypoechoic masses in 80% of cases. Mammography (n=14) showed asymmetrical densities, while MRI (n=3) occasionally mimicked malignancy. Histologically, all patients demonstrated non-caseating granulomas with Langhans-type multinucleated giant cells and absence of acid-fast bacilli. Treatment strategies included oral corticosteroids, wide local excision, and observation. Most patients responded well to corticosteroid therapy; recurrence was noted in a few.

Conclusion: IGM should be considered in the differential diagnosis of breast masses in young, parous women with recent lactation. Radiologic resemblance to malignancy mandates biopsy for confirmation. Individualized management—guided by severity and recurrence risk—achieves favorable outcomes while avoiding overtreatment.

Keywords: Idiopathic granulomatous mastitis, Breast carcinoma mimic, Corticosteroids, Imaging, Granulomatous inflammation

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INTRODUCTION

Idiopathic granulomatous mastitis (IGM) is a rare, benign, chronic inflammatory condition of the breast that presents a significant diagnostic and therapeutic challenge. First described by Kessler and Wolloch in 1972, IGM typically affects women of reproductive age, particularly within a few years of pregnancy or during the lactation period¹. Although it is benign, its clinical and radiological resemblance to breast carcinoma can lead to unnecessary invasive procedures, prolonged anxiety, and delays in appropriate management.

The aetiology of IGM remains uncertain, with several hypotheses proposed in the literature. Autoimmune mechanisms are the most widely accepted, given the histological resemblance of IGM to other autoimmune

granulomatous disorders such as sarcoidosis². Other proposed contributing factors include hormonal influences, particularly elevated prolactin levels; mechanical trauma; localised immune responses to retained milk or secretions; and even infectious etiologies, although specific pathogens are rarely identified^{3,4}. The disease is termed “idiopathic” when all other causes of granulomatous inflammation—such as tuberculosis, fungal infections, sarcoidosis, and duct ectasia—are excluded.

Clinically, IGM most commonly presents as a unilateral, firm, tender breast mass, frequently located in the subareolar region. The overlying skin may show signs of inflammation, erythema, and induration, often mimicking

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an abscess or malignancy. Nipple retraction, sinus formation, and axillary lymphadenopathy may also occur in more severe or chronic cases⁵. These varied presentations make clinical diagnosis difficult without histopathological confirmation.

Radiologically, IGM has no pathognomonic features. Ultrasonography typically reveals irregular, ill-defined, hypoechoic lesions with heterogeneous internal echoes and possible ductal involvement or sinus tracts. Mammography often reveals focal asymmetry or architectural distortion, although this distinction is not always clear, without the classic signs of malignancy. Magnetic Resonance Imaging (MRI) is occasionally useful but is usually reserved for complex or recurrent cases⁶. Given the considerable overlap with malignancy in imaging findings, tissue diagnosis is essential for definitive identification.

Histologically, IGM is characterised by non-caseating, lobulocentric granulomas composed of epithelioid histiocytes, multinucleated Langhans-type giant cells, and lymphoplasmacytic infiltrates. Necrosis, when present, is usually minimal and not of the caseating type seen in tuberculosis. Exclusion of infection through Ziehl-Neelsen staining for acid-fast bacilli, fungal stains, and microbiological cultures is essential⁷.

Management of IGM remains controversial due to its unpredictable course and lack of standardised treatment guidelines. Options range from observation and conservative therapy to corticosteroids, immunosuppressants, and surgical excision. Corticosteroids are often considered first-line treatment, especially in cases with diffuse or symptomatic disease, while surgery may be reserved for localised or refractory cases⁸. A significant proportion of patients, however, may experience recurrence, necessitating long-term follow-up and multidisciplinary care.

This study aims to review the clinical presentation, radiological features, histological patterns, treatment approaches, and outcomes of patients diagnosed with IGM in our centre. By presenting a 20-patient case series, we hope to contribute further to the understanding and management of this enigmatic breast condition and highlight the importance of accurate diagnosis to avoid overtreatment.

MATERIALS AND METHODS

This retrospective study was conducted at SKIMS Sgr between June 2023 and May 2025. Inclusion criteria were:

- Female patients aged 18–50
- Presentation with a breast mass
- Histopathological confirmation of IGM
- Exclusion of infectious (e.g., tuberculosis), malignant, or systemic autoimmune causes

Clinical Assessment

A detailed clinical history was obtained, including age, parity, lactation history, symptom duration, and previous treatments. Physical examinations focused on lump characteristics, skin changes, and axillary lymphadenopathy.

Imaging

All patients underwent:

- Ultrasound (US): Examined for shape, echotexture, and vascularity
- Mammography: Performed in women ≥ 35 years or with suspicious findings
- MRI (optional): In select cases for further characterisation

Histopathology

Core needle biopsy specimens were analysed for:

- Lobulocentric granulomas
- Multinucleated Langhans-type giant cells
- Absence of caseous necrosis or malignancy

Treatment and Follow-Up

Treatment decisions were based on clinical severity, patient preference, and physician recommendation. Options included:

- Oral corticosteroids
- Wide local excision
- Observation with symptomatic management

Patients were followed up at regular intervals (3, 6, and 12 months).

RESULTS

Patient Demographics

- Mean age: 34.7 years (range: 23–47)
- Parity: All were parous, and 75% had a history of recent breastfeeding

- No known autoimmune diseases or systemic infections

Clinical Presentation

Radiologic Findings

- Ultrasound:
- Ill-defined, irregular hypoechoic mass (80%)
- Tentacle-like extensions (65%)
- Peripheral vascularity (30%)
- Mammography (n = 14):
- Asymmetrical density with no specific features
- MRI (n = 3):
- Irregular enhancement mimicking malignancy

Histopathology

- All patients showed non-necrotising granulomas centred on lobules
- Langhans-type multinucleated giant cells were present in 90%
- No acid-fast bacilli or fungal organisms detected

Treatment and Outcome

DISCUSSION

Idiopathic granulomatous mastitis (IGM) is an uncommon benign inflammatory disease that mimics carcinoma in both clinical and imaging characteristics. Since its first description by Kessler and Wolloch in 1972¹, IGM has remained a diagnostic and therapeutic challenge, particularly in regions where infections such as tuberculosis are prevalent.

In our cohort of 20 patients, the most common presenting feature was a unilateral breast lump, often accompanied by pain or skin changes. These findings are consistent with other studies reporting similar presentations [9,10]. The disease typically affects parous women within a few years postpartum, suggesting that hormonal and immunological factors may contribute to its pathogenesis⁵.

Ultrasonography in our series revealed irregular, hypoechoic, tentacle-like masses with ill-defined margins—imaging features that are highly suggestive of malignancy and often lead to unnecessary alarm¹¹. Mammography and MRI were of limited specificity, as previously reported¹². This underscores the importance of histological evaluation for definitive diagnosis.

Histopathologically, all our patients demonstrated non-

caseating granulomas centred on lobules, with multinucleated Langhans-type giant cells and an absence of necrosis or infective organisms. These are hallmark features of IGM and help differentiate it from infectious granulomatous diseases like tuberculosis and fungal mastitis^{13,14}.

Therapeutic approaches to IGM vary widely. In our study, corticosteroid therapy showed good response in most patients, consistent with existing literature^{15,16}. However, recurrence remains a known complication. Surgical excision, although once considered the mainstay of treatment, is now typically reserved for localised or steroid-resistant cases due to concerns about recurrence and cosmetic outcomes¹⁷. Observation may be appropriate in select mild or self-limiting cases, as supported by studies advocating conservative management¹⁸.

Importantly, IGM requires a multidisciplinary approach for timely diagnosis and appropriate management. Given its ability to mimic breast cancer, clinicians should maintain a high index of suspicion and promptly pursue tissue diagnosis when radiologic findings are equivocal. Tailoring treatment to individual clinical scenarios remains the best strategy in the absence of a standardised protocol.

CONCLUSION

IGM should be considered in the differential diagnosis of breast masses, particularly in young women with a recent history of lactation. Radiologic resemblance to malignancy necessitates biopsy for accurate diagnosis. Tailored management based on severity and recurrence risk offers favourable outcomes without overtreatment.

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