Case Series on Early Methotrexate Use Reducing Morbidity in Granulomatous Mastitis

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BACKGROUND

Granulomatous mastitis (GM) is a rare, benign inflammatory breast condition primarily affecting parous, reproductive-aged women. However, Hispanic and African American women are disproportionately affected. As GM can mimic malignant breast disease, it remains a diagnostic and therapeutic challenge, especially in the absence of standardized treatment guidelines.

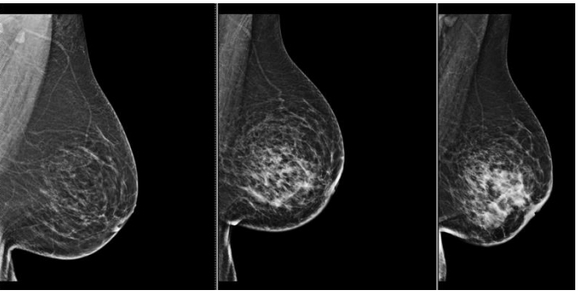


Figure 1: Mammographic changes in patient 2 over 1-year period (left most is prior to presentation with following images at presentation)

METHODS

A single institution, retrospective review of all cases of GM sequentially captured from January 2024 to March 2025 at a minority-serving breast clinic. A total of 4 patients were included in the study.

Pt	Age / Sex	Race	Presentation	Treatment(s) before methotrexate	Outcome after methotrexate
1	23F	H	Right indurated breast mass, with recurrent multiloculated right breast abscess	• 3 drainage procedures • Antibiotics for 4 months	Mass significantly reduced in size
2	42F	H	Enlarging painful lump on left breast, development of abscess after biopsy	• Antibiotics and NSAIDs for 4 months • Steroids for 1 month	Resolution of breast mass, without recurrence of abscess
3	59F	AA	Two-year history of a progressively enlarging mass, recurrent abscess after biopsy	• 1 drainage procedure • ~1-week course of antibiotics	Resolution of breast mass, without recurrence of abscess
4	54F	AA	Indurated lump in the left breast associated with nipple retraction and dimpling	• ~-1-week course of antibiotics	Lost to follow up

Table 1: All four women were diagnosed with granulomatous mastitis from pathology and ultimately initiated on methotrexate treatment. H-Hispanic, AA-African-American, NSAID-Non-steroidal anti-inflammatory drug

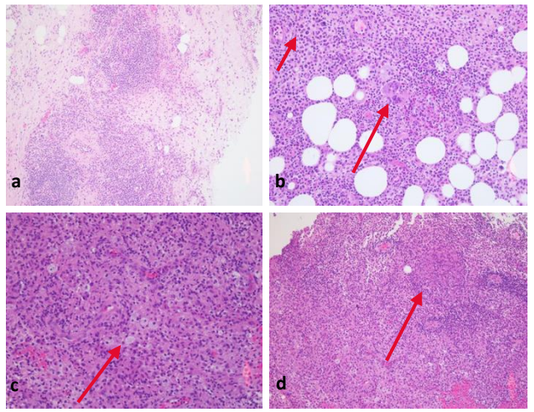


Figure 2: a) Breast lobules with chronic and acute inflammation (lobulocentric inflammation b) demonstrating plasma cells, and giant cells , c) foamy macrophages d) non-necrotizing granuloma

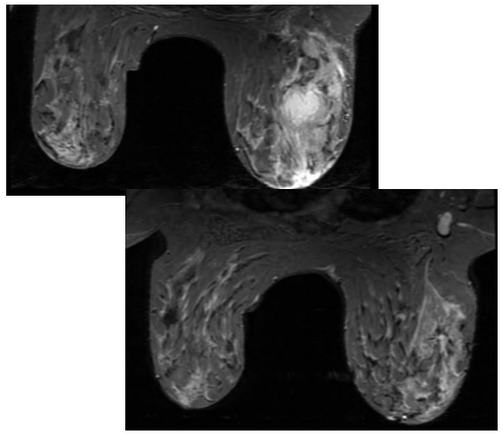


Figure 3: Patient 1's Breast MRI with abnormal right breast lesion (top) and right axillary lymph node (bottom), at presentation prior to treatment with MTX

RESULTS

All four patients initially presented with breast pain, swelling, and masses concerning for malignancy based on clinical findings and imaging. Biopsies in each case confirmed granulomatous mastitis without evidence of malignancy. Antibiotics and steroids provided partial or temporary relief in three patients, but recurrent or persistent disease led to the application of disease-modifying antirheumatic drug therapy with methotrexate (MTX). Notably, all patients had a negative rheumatologic workup.

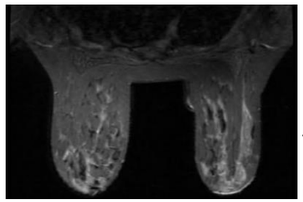


Figure 4: Patient 1's MRI after treatment with MTX (1yr after initial MRI)

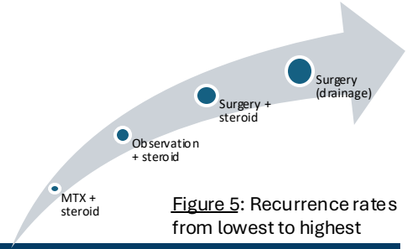


Figure 5: Recurrence rates from lowest to highest

DISCUSSION

This series illustrates the varied clinical spectrum of GM and underscores the importance of a timely biopsy to differentiate it from carcinoma, particularly in women of color. Notably, our case series suggests that early MTX initiation can be valuable, particularly in patients with persistent or recurrent disease despite antibiotics and corticosteroids, which could reduce morbidity and avoid prolonged surgical interventions. Prospective studies are needed to further clarify the role of early MTX in GM management and to establish standardized treatment protocols.

References: 1) Postolova A, Troxell ML, Wapnir IL, Genovese MC. Methotrexate in the Treatment of Idiopathic Granulomatous Mastitis. J Rheumatol. 2020 Jun 1;47(6):924-927. doi: 10.3899/jrheum.181205. Epub 2019 Jun 15. PMID: 31203215. 2) Alhalaseh S, Smith J, Alziadin N, Gandrabur L. Challenging Management of a Breast Mass: Case Report and Literature Review. Cureus. 2023 Jul 13;15(7):e41855. doi: 10.7759/cureus.41855. PMID: 37583723; PMCID: PMC10423851. 3) Bacon DR, Ngeve SM, Jordan SG. Granulomatous mastitis: An underdiagnosed inflammatory disease afflicting minority women. Radiol Case Rep. 2021 Oct 22;16(12):3990-3994. doi: 10.1016/j.radcr.2021.09.044. PMID: 34745405; PMCID: PMC8554342