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A Case Report on The Recognition of Granulomatous Mastitis and its Treatment

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Abstract

Granulomatous mastitis (GM) is a rare disease, the pathophysiology of which is not yet understood. It is a benign condition that commonly presents as a painful and erythematous mass. Due to its vague presentation, GM is often mistaken for breast abscess, cellulitis, and even breast cancer. It is definitively diagnosed through histopathological studies, as common imaging modalities are often non-revealing. Due to its rarity, there is not yet a clear management method for patients with GM. This casereport details the presentation of a patient with histopathological confirmed granulomatous mastitis and her response to high dose steroids as a treatment. There isa lack of studies regarding the management of GM and this case indicates that the use of steroids is a reasonable avenue for further investigation.

Keywords: granulomatous mastitis; breast; diagnosis

Introduction

Granulomatous mastitis (GM) is a rare inflammatory breast condition with an unknown etiology that was first described in 1972 [1]. GM has an incidence of 2.4 per100,000 women and 0.37% in the U.S. The majority of cases in the U.S. are predominantly in non-white patients suggesting that the incidence is even lower in European countries. The etiology of GM is unknown but predisposing factors are birth control, pregnancy, breast feeding, reproductive age, hyperprolactinemia, infections, and autoimmune diseases [2]. The rarity of the disease and lack of familiarity amongst medical professionals makes diagnosis a challenge. Furthermore, it often presents similarly to cellulitis, abscess, and even inflammatory breast cancer making diagnosis even more difficult. GM is a diagnosis of exclusion and commonly presents as a firm, unilateral, and discrete breast mass that is associated with inflammation of overlying skin. Definitive diagnosis is reached through histopathological studies, however there is often a delay before this is done due to the vague presentation of GM.

Histopathological studies of GM reveal a mixed chronic inflammatory infiltrate with clusters of histiocytes and multinucleated giant cells. Studies also demonstrate granulomatous changes occurring around lobules and ducts of the breast. There is no consensus on disease management, thus treatment differs across providers and mayinclude the use of antibiotics and steroids in conjunction [3].

This case report is about a 29-year-old female who presented to an outpatient clinic with a swollen, painful, and erythematous right breast lesion. This was initially thought to be a case of mastitis, however further investigation revealed granulomatousmastitis. The use of high dose oral steroids ultimately resulted in significant improvement in symptoms, indicating their importance in the treatment of GM.

Case Presentation

A 29-year-old female presented with a one-month long history of right breast lesion that was swollen, painful, and erythematous. She also has a history of a similar lesion on thelateral left breast thought to be mastitis 6 months ago. She was treated with antibiotics without improvement of symptoms. Routine imaging at the time was performed and revealed vague results suspicious of possible mastitis. At this point she underwent drainage with negative cultures and symptoms resolved spontaneously over the course of a few weeks.

The patient's newly developed lesion was approximately 7 cm in diameter at the 9 o'clock

position of the right breast. She was started on a trial of antibiotics, including
Clindamycin followed by Ciprofloxacin, without improvement of symptoms. The patient had an ultrasound performed which was similar to the previous lesion and was suspicious for mastitis. She refused needle aspiration and insisted on surgical exploration with biopsy. Drainage culture results came back as negative. Biopsy results showed granulomatous changes.
At this point, infection was considered less likely on the differential and an autoimmunecondition causing granulomatous mastitis was considered. The patient was tested for antibodies which resulted in a positive ANA screening. She was then started on
Prednisone 50 mg for 2 weeks which resulted in drastic improvement in her symptoms.Following the 14-day dosage, the patient was tapered off of her medication and was referred to a rheumatologist for further evaluation and management of autoimmune conditions.

Discussion

Presentation

Signs and symptoms of granulomatous mastitis are nonspecific with the most common presentation being a single mass that may be associated with erythema and swelling [4]. Patients may also present with nipple retraction, ulceration, and fistula formation [3].Additionally, GM has been found to present with lymphadenopathy in a significant number of patients. The majority of patients diagnosed with GM present with a unilateralmass, although the presence of bilateral disease has also been recorded [4]. Our patient presented with a history of a left sided breast mass that did not resolve with antibiotics and ultimately resolved spontaneously. She has since developed a new right sided mass that is associated with pain, erythema, and swelling. This mass is also unresponsive to antibiotics, however administration of steroids resulted in improvement of her symptoms. This patient's presentation is consistent with GM, however further diagnostics are required in order to definitively diagnose granulomatous mastitis.

Diagnosis

The first step in the diagnosis of GM is ultrasound which should reveal a solid mass, occasionally associated with an abscess. Ultrasound for GM is non-specific but aids in obtaining a core needle biopsy of the mass. Biopsy should be sent for culture and histopathology. Pathology demonstrates non necrotizing granulomatous lesions aroundthe centers of breast lobules [4].
Although diagnosis for GM is typically restricted to ultrasound and biopsy, autoimmune testing may aid in honing in on a possible etiology causing the GM. Autoimmune testing for this patient included antinuclear antibody screen, antiphospholipid antibody panel, anti-dsDNA, and rheumatoid factor of which she tested positive for the antinuclear antibody. This does not change the course of the acute treatment plan; however, it does provide an opportunity for further rheumatological testing in this patient.

Treatment

Treatment of granulomatous mastitis is not straightforward as the condition is not well understood and the treatments often result in alleviation of symptoms while still retaininga high recurrence rate. The treatment approach for each patient should be personalized and tailored to the patient's presentation with alterations made to the regimen based on patient response. GM is a self-limiting inflammatory condition which often does not require treatment and may resolve spontaneously. However, there are instances in which symptoms are more severe or persistent thus requiring medical management. Treatments that have been studied for GM include antibiotics, corticosteroids, and wide surgical resection [1].
Antibiotics were often used in the treatment of GM due to difficulty differentiating between infectious etiologies and granulomatous mastitis. The use of antibiotics is no longer recommended in the treatment of GM, as it is now understood that it is an inflammatory process and not an infectious one. Corticosteroids are now more commonly being used for the treatment of GM due to their anti-inflammatory effects.
Numerous studies have shown the effectiveness of corticosteroids with the alleviation ofsymptoms and decrease in recurrence of the condition [5]. Prednisone is recommended at a dosage of 0.5-1.0 mg/kg/day with or without the use of methotrexate (10-15 mg oraldaily) [4]. However, with the benefits of corticosteroids also come the side effects which can include weight gain, hyperglycemia, acute adrenal insufficiency, and immunosuppression. Although

oral corticosteroids have been used for the treatment ofGM, the use of intralesional injection or topical steroids has shown effectiveness while reducing the side effects of oral corticosteroids [6].

With the use of corticosteroids becoming more common, surgical resection is no longera first line treatment for many due to the invasiveness of the procedure. Surgical resection is still used in cases that consist of patients who are not responsive to corticosteroid treatment or those who may not be able to tolerate it [6]. Additionally, it can be used in cases with complications such as abscesses, fistula formation, or chronic wound infections [6]. Surgical resection may be used alongside corticosteroids in which the steroids are given as a neoadjuvant therapy to reduce the amount of inflammation followed by surgical resection of a smaller amount of breast tissue [6].

Conclusion

Our case focuses on a 29-year-old female and calls to attention the need for better management of GM. This disease is rare and often misdiagnosed as inflammatory breast cancer, breast cellulitis, and breast abscess highlighting the need for more attentive investigation. Oral steroids have become the mainstay treatment in GM due totheir efficacy. This was the case in our patient, who experienced near complete resolution of symptoms after administration of oral steroids. However, it is possible thatalternatives to oral steroids may achieve the same effect while reducing risks. The use of topical or intralesional steroids may also prove to be beneficial in patients with GM. With a regimented treatment of GM there will be a concrete method to treat the initial diagnosis and further flare ups of GM.

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