

Ruptured Epidermal Inclusion Cyst of the Breast

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Abstract

An epidermal inclusion cyst of the breast is a rare benign cutaneous or subcutaneous lesion in the breast tissue. Although it is a benign mass, it can lead to serious complications, such as spontaneous rupture or malignancy. Here we present a 42-year-old female with non-bloody nipple discharge, found to have a ruptured epidermal inclusion cyst of the breast. The sub-areolar location of this patient's ruptured cyst complicates diagnosis, making it more difficult to rule out malignancy. Imaging of the breast typically shows heterogeneous echo texture, and may not rule out a malignant lesion. Fine needle aspiration biopsy was used to make the diagnosis, showing squamous epithelium with abundant basket weave keratin. Ruptured epidermal inclusion cyst of the breast should be considered in a patient with non-bloody nipple discharge and biopsy should be employed to differentiate the diagnosis from other serious complications.

Keywords: Epidermal inclusion cyst; Breast

Introduction

An epidermal inclusion cyst is the most common cutaneous or subcutaneous cyst and it is lined by stratified squamous epithelium that contains a granular layer and lamellated keratin [1,2]. It most frequently occurs on the face, scalp, neck, and trunk, and seldom occurs in the breasts [1,3-5]. Epidermal cyst rarely calcifies, but when it does, it is usually in older cysts in the keratin debris [2,3,6]. Diagnosis of a small epidermal cyst that occurs in the subcutaneous tissue is usually straightforward, but enlarged cysts presenting in the breast parenchyma require them to be differentiated from malignant or benign tumors of the breast. The pathogenesis of differentiation of an epidermal cyst into carcinoma is not completely clear. Chronic irritation or repetitive trauma to the epithelial lining of the cyst has been suggested to play a role in malignant transformation, however, this relationship has not been established [2,3,6,14-16]. Epidermal inclusion cyst can potentially be serious, and fine needle aspiration or excision is usually required for differentiation from a malignant or benign breast tumor. Here we present a case of epidermal inclusion cyst of the breast in a patient who presented with a ruptured epidermal inclusion cyst.

Case Report

A 42-year-old African American female, who is a chronic alcohol user, presented to the hospital with recurrent pancreatitis. She also reported non-bloody right nipple discharge. The patient had a history of bilateral breast reduction and no family history of breast cancer. The patient was referred for mammography and ultrasound, which revealed scattered bilateral fibroglandular tissue, benign appearing bilateral calcifications and a large mass in the immediate sub-areolar right breast measuring 3.75 x 2.1cm (Figure 1). The mass displayed macro lobulated borders and the medial border was partly obscured by parenchyma.

Ultrasound was conducted and showed solid, reasonably well-circumscribed ovoid mass in the immediate sub-areolar right breast measuring 3.5 x 1.5cm (Figure 2).

These findings were suggestive of phyllodes tumor or fibroadenoma. The mass was categorized as BI-RADS 4a and the patient was sent for ultrasound-guided biopsy, which showed squamous epithelium with abundant basket weave keratin (Figure 3A) and giant cells (Figure 3B) suggesting an epidermal inclusion cyst.

Discussion

An epidermal inclusion cyst is a benign cutaneous or subcutaneous

lesion and is the most common epithelial cyst [1,2]. However, very few are found in the breast [1-5]. To date, approximately 40 have been reported in the literature [3,4,6-10,12-17]. Most that have been reported presented with a palpable mass in the breast [3,4,6-10,14-17]. Few of these cysts have presented with accompanying pain [3,4,6,12,15-17] or noticeable change in size [4,8,14]. To our knowledge this is the first reported case of a patient with non-bloody nipple discharge as the first presenting complaint of an epidermal inclusion cyst. The most common cyst location reported, including the case presented here, is in the sub-areolar region [3,4,6,14-16]. These cysts are composed of stratified squamous epithelium filled with lamellated keratin, occasionally with calcifications [2]. They can be caused by congenital factors, squamous metaplasia of columnar epithelium, obstructed

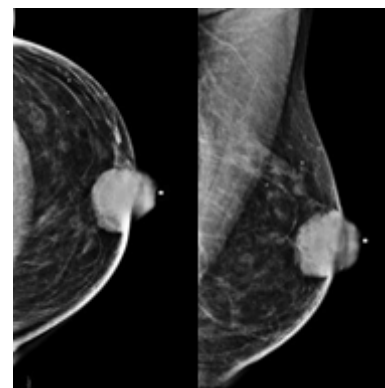


Figure 1: Scattered bilateral fibroglandular tissue, benign appearing bilateral calcifications and a large mass in the immediate subareolar right breast measuring 3.75 x 2.1cm.

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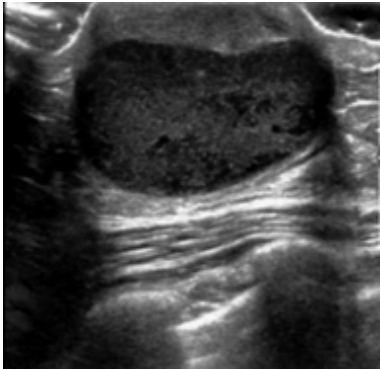


Figure 2: Ultrasound was conducted and showed solid, reasonably well circumscribed ovoid mass in the immediate subareolar right breast measuring 3.5 x 1.5cm.

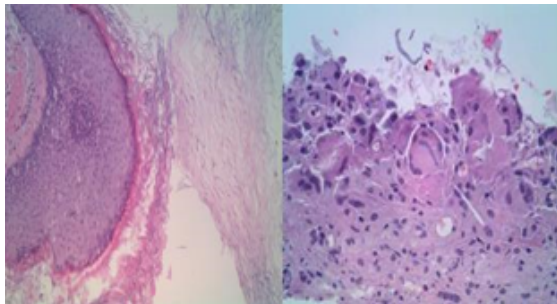


Figure 3: A) Giant cells B) An epidermal inclusion cyst.

hair follicle or pore causing inflammatory downward growth of the epidermis, or trauma related to reduction mammoplasty or needle biopsy that causes epidermal fragments to be implanted more deeply in the breast tissue [2,4,7,9,14,15].

Epidermal Inclusion Cysts of the Breast (EICB) are benign but can occasionally lead to complications. There is variable data on the risk of transformation to malignant squamous cell carcinoma (0.045-19%) and possible association with Paget's disease of the breast [11-13]. Another rare complication is spontaneous rupture, which was seen in this patient. Five cases of this complication have been reported in the literature [7,9,16,17]. This releases non-absorbable keratin, irritating the surrounding tissue, which can lead to secondary foreign body reactions, granulomatous reactions, or abscess formation [7,16].

The subareolar location and ruptured nature of the cyst do not allow for malignancy to be ruled out on physical exam [1,16]. The flexible fat and mammary gland tissue of the breast allows the epidermal inclusion cysts to grow toward the deep subcutaneous tissue, making it more difficult to distinguish from a mammary gland tumor. Other diagnosis can present in a similar manner, including fibroadenoma, fibrocystic disease with squamous metaplasia, and metaplastic carcinoma. On mammography, EICB appears as a non-calcified, well-circumscribed lesion and on ultrasonography appears as a solid circumscribed, complex mass [2,4,6,10]. The alternating concentric hyperechoic and hypoechoic rings corresponding to the layers of lamellated keratin have been described as an onion ring pattern [10,14]. A ruptured cyst can show a heterogeneous echo texture due to inflammatory infiltrate, granulation tissue, or abscess formation in or around the cyst [1]. Aspiration of EICB typically shows cheesy, flaky material, differentiating it from a sebaceous cyst [8].

Conclusion

An epidermal inclusion cyst of the breast is a benign mass, but may lead to serious complications. A patient may present with a palpable mass or due to a complication such as pain or discharge following spontaneous rupture. Imaging of the breast typically shows an onion ring pattern or heterogeneous echo texture if the cyst has ruptured, and may not rule out a malignant lesion. As this case shows, a ruptured epidermal inclusion cyst should be considered when evaluating a patient presenting with non-bloody nipple discharge. Fine needle aspiration biopsy should be employed to differentiate this complication from a more serious diagnosis.

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