

Research Article

Epidermal inclusion cyst of breast diagnosed on fine needle aspiration cytology: a retrospective study

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ABSTRACT

Background: Epidermal inclusion cyst (EIC) is a rare benign condition of breast. Patient presents with palpable breast lump and needs to be differentiated from other breast lesions. This study included cases of epidermal inclusion cyst of breast (EICB) diagnosed on fine needle aspiration cytology (FNAC) and their correlation with histopathological findings.

Methods: Study was conducted in a retrospective manner over a period of 2 years. 8 Patients who presented with breast lump and were cytologically diagnosed as EIC were included in the study. Cytological features were suggestive of EIC or infective EICB. Histopathological confirmation was done. Female: Male ratio in the study was 7:1 with an age range of 35 to 54 years. Radiological investigations favoured benign lesions in 5 cases and tubercular collection in one case.

Results: FNAC was performed and May-Grunwald-Giemsa stained smears showed numerous anucleate squames and mature squamous epithelial cells in a clean or inflammatory background. Diagnosis of EICB or infective EICB was made on cytology. Diagnosis was confirmed histologically in 6 cases.

Conclusions: Asymptomatic lesions do not require biopsy and treatment. Follow-up is sufficient if typical clinical and radiological findings are there. But in symptomatic cases, excision should be done followed by histopathological confirmation to rule out malignant lesion. Diagnosis should be made on FNA whenever associated with characteristic pultaceous aspirate and cytological findings.

Keywords: Breast, Cytology, Epidermal inclusion cyst, FNAC

INTRODUCTION

Epidermal inclusion cyst (EIC) is a rare benign condition of breast and corresponds to the cysts that arise from implantation and proliferation of epidermal elements in the dermis. These cysts usually occur in head and neck region, trunk and extremities. Incidence of epidermal inclusion cyst in breast (EICB) is very low and till date less than 40 cases have been documented. Patients generally present as a palpable lump and the lesion should not be confused with other benign and malignant

lesions.¹ Here, we report eight cases of EICB diagnosed on fine needle aspiration along with a review of literature.

METHODS

Present study was conducted retrospectively over a period of 2 years. Patients who presented with breast lump and were cytologically diagnosed as EIC were included in the study. FNA was done using 22 gauze disposable needles. Air-dried May-Grunwald-Giemsa stained smears showed numerous anucleate squames and mature squamous epithelial cells in eight cases. Acute

inflammatory cells were also present in 3 of these cases. Cytological features were suggestive of EIC or infective EICB. Radiological findings were also reviewed in all of the cases. Diagnosis was confirmed on histopathology in 6 cases.

RESULTS

Total eight cases were diagnosed as EIC cytologically. Aspirate was pultaceous in 5 cases and purulent in 3 cases. Table 1 shows clinical findings. Table 2 shows correlation of cytological findings with radiological findings and histological diagnosis. Female: Male ratio in our study was 7:1 and with an age range of 35 to 54

years. 5 patients were in age group of 31 to 40 years. All patients presented with breast lumps, 5 in right breast and 3 in left breast. History of breast lump existed from 15 days to 2 years. Size of the lesion varied from 0.3 to 2.2 cm. Lesions were located in periareolar region in females but in retroareolar region in male.

These were firm, mobile and non-tender in 5 cases and partially adhering to overlying skin and tender in 3 cases. Overlying skin was red and inflamed in 2 cases and had punctum in one case (case 3). None of the cases presented with history of trauma, surgery, family history of breast disease. None of the patients had history of nipple discharge.

Table 1: Clinical details.

Case No.	Age/ Sex	Site	Duration	Examination finding
1.	36 F	R-3o'clock,PAR	2 months	0.3cm x 0.3cm, firm, mobile, non-tender
2.	54 F	L-7o'clock,PAR	5 months	1 cm x 1cm, firm, mobile, non-tender
3.	35 F	R-9o'clock,PAR	1 month	1 cm x 1cm, firm, mobile, non-tender, punctum seen
4.	40 F	L-8o'clock,PAR	2 years, Pain-6days	2cm x 1cm, firm, partially adhering to skin, tender, overlying skin is inflamed and red
5.	48 F	R-2o'clock,PAR	1 year	0.8cm x 0.8cm, firm, mobile, non-tender
6.	52 M	R-RAR	15 days, ATT taken 10 years back	1.5cm x 1cm, firm, tender, partially adhering to skin
7.	38F	R-5o'clock,PAR	6 months	0.8cm x 0.6 cm, firm, mobile, non-tender
8.	38F	L-7o'clock,PAR	1 month	2.2cm x 1.2cm, tender, red and inflamed skin, partially adhering to skin

L: Left breast; R: Right breast; PAR: Periareolar region; RAR: Retroareolar region; ATT: Antitubercular therapy.

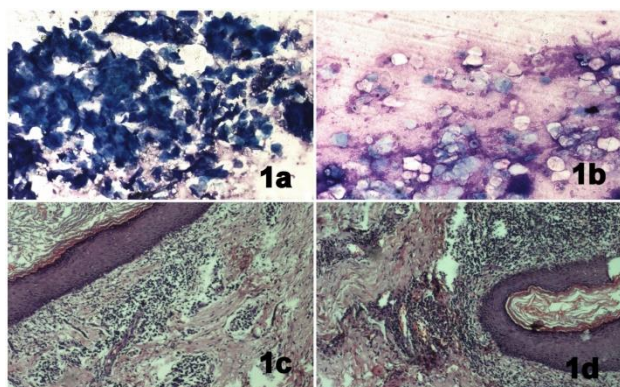


Figure 1(a): FNA smear shows many anucleated squames and mature squamous epithelial cells in background of blood and lipoproteinaceous material (giemsa, ×100); 1(b): FNA smear shows anucleated squames and mature squamous epithelial cells in inflammatory background (giemsa, ×100); 1(c): Lumpectomy specimen showing, epidermal inclusion cyst with inflammation in adjacent breast tissue (h and e, ×100); 1(d): Lumpectomy specimen shows epidermal inclusion cyst and dense inflammation in surrounding breast tissue (h and e, ×100).

Radiological findings

Favoured benign lesions in 5 cases, cysticercosis in one case and tubercular collection in case number 6 who had history of antitubercular therapy intake 10 years back. No radiological investigation was available in one case.

Cytological findings

Case 1-3, 5 and 7

FNA yielded pultaceous material. Smears showed numerous anucleate squames, mature squamous epithelial cells and fibroadipose tissue fragments in background of blood and lipoproteinaceous material (Figure 1a). Few clusters of benign ductal epithelial cells were also present in cases 2 and 5. Diagnosis of EICB was made. Differentials included benign mammary lesions like fibroadenoma and fibrocystic disease. However, malignancy was also one of the differentials in case 2 due to higher age.

Case 4, 6 and 8

FNA yielded pultaceous material. Smears showed numerous anucleate squames and mature squamous epithelial cells along with acute inflammatory cells, macrophages. Few multinucleated giant cells were also present in cases 4 and 8 (Figure 1b). Diagnosis of Infective EICB was made on cytology.

Histological findings

Histological diagnosis was available in 6 cases, two patients with tiny asymptomatic lumps didn't report back. Diagnosis in 3 cases was EICB and in other 3 cases it was Infective EICB (Figure 1c and 1d).

Table 2: Correlation of cytological findings with radiological and histopathological diagnosis.

Case No.	Aspirate	Cytological findings	Cytological diagnosis	Radiological diagnosis	Histopathological diagnosis
1	Pultaceous	Numerous AS, MSEC and F/A ; background clean	EICB	Hypoechoic lesion; Benign	EICB
2	Pultaceous	Numerous AS, MSEC, few clusters of benign ductal epithelial cells, F/A ; background clean	EICB	Hypoechoic lesion with posterior enhancement; Fibroadenoma	EICB
3	Pultaceous	Numerous AS, MSEC and F/A ; background clean	EICB	Hypoechoic lesion; Benign	EICB
4	Pus	Neutrophils, few lymphocytes, macrophages, eosinophils, multinucleated giant cells, AS and MSEC	Infective EICB	Cystic lesion measuring; Cysticercosis	Infective EICB
5	Pultaceous	Numerous AS, MSEC, few clusters of benign ductal epithelial cells, F/A; background clean	EICB	Hypoechoic lesion; Benign	NA
6	Pus	MSEC, numerous AS in a background of neutrophils, some macrophages and lymphocytes	Infective EICB	Hypoechoic collection with internal echoes, thickening of overlying skin; Tubercular/ Infective EIC	Infective EICB
7	Pultaceous	Numerous AS, MSEC and F/A in a clean background	EICB	NA	NA
8	Pus	MSEC, AS in a background of neutrophils, some macrophages and lymphocytes, multinucleated giant cells	Infective EICB	Hypoechoic lesion; Benign	Infective EICB

AS: Anucleate squames; MSEC: Mature squamous epithelial cells; F/A: Fibroadipose tissue fragments; EICB: Epidermal inclusion cyst breast, NA: Not available.

DISCUSSION

Epidermal inclusion cysts in breast are very rare compared to other sites of their common occurrences like head and neck, extremities and trunk.² Epidermal cyst originates from proliferation of epidermal cells in circumscribed space of the dermis. It can be congenital or secondary to obstructed hair follicle or traumatic resulting in implantation of epithelium. Developmental etiology has also been reported in few cases of fibrocystic disease where there was squamous metaplasia of columnar cells in dilated ducts. Some cases of reduction

mammoplasty have also been reported which led to EIC formation by implantation of epidermal elements deeper into breast tissue.² In the present study, etiology could be due to obstruction of hair follicle as there was no history of trauma or surgery in any of our cases.

These patients may present with a palpable lump in breast or pain due to rupture or infection of the cyst.³ Mammography in such cases reveals a well circumscribed mass with homogeneous density and can be distinguished from malignancy. However, pathological diagnosis is required to rule out benign

pathology. On ultrasonography, EICB appears as solid well circumscribed complex mass with the alternating concentric hyperechoic and hypoechoic rings conforming to lamellated keratin and has been designated as onion ring pattern.⁴ A ruptured cyst shows a heterogeneous echotexture due to inflammation, granulation tissue or abscess in the cyst.^{4,5} In our second case, this cystic lesion mimicked cysticercosis on ultrasonography and FNAC gave diagnosis of epidermal cyst.

Diagnosis of EICB is easy when it presents as subcutaneous nodule in breast. However, flexible fat and mammary glands of the breast cause epidermal cyst to grow towards deeper subcutaneous planes, thereby making it more difficult to differentiate it from mammary lesion such as fibroadenoma, fibrocystic disease with squamous metaplasia, metaplastic carcinoma, phylloides or malignancy.⁶

In a study conducted over a period of ten years on surgical biopsies, Lilleng et al found only one case of EIC out of 779 histologically benign breast lesions. Our study also showed female preponderance contrary to studies in past which showed more cases reported in male.⁷

On fine needle aspiration, a pultaceous material or pus was aspirated. Cytological smears showed numerous anucleate squames and mature squamous epithelial cells. Due to rupture or secondary infection there was presence of acute inflammatory cells, macrophages and multinucleated giant cells. In 2 cases, normal breast ductal epithelial cells were also seen due to the intraparenchymal nature of lesion.

In this study, differentials included benign breast lesions like fibroadenoma, fibrocystic disease, malignancy due to old age of the patient (case 2), tubercular abscess (case 6). Few other differential diagnoses on cytology include dermoid cyst, branchial cyst, pilomatrixoma and thyroglossal cyst. Smears of dermoid cyst also contain skin appendageal elements which were absent in our cases.

Branchial cysts and thyroglossal cysts are differentiated on the basis of their site of presentation. Smears from thyroglossal cyst may also show mucus secreting columnar epithelial cells and pilomatrixoma also show basaloid cells, shadow cells along with squames.⁸

EICB may result in several complications. One of them is spontaneous rupture of cyst which leads to release of keratin which acts as an irritant leading to inflammation and pus formation.³ In a study conducted by Menville et al it was found that 19% of patients with EICB show malignant squamous cell lining on histopathology.⁹ But a study conducted by Cameron and Hilsinger showed malignant transformation in cyst wall epithelium in only 0.045% cases.

However, as very few cases of epidermal cyst have been reported, true incidence of malignant transformation is not known.¹⁰

Asymptomatic or small lesions, do not need biopsy and treatment. Follow-up is sufficient if typical clinical and radiological findings are there. But in symptomatic cases, excision should be done followed by histopathological examination to rule out malignant lesion.⁶

CONCLUSION

Number of cases of breast lump being diagnosed as epidermal cyst is increasing gradually. This may be due to increased awareness among masses. Earlier such cases would go unnoticed as patients do not seek medical advice for tiny asymptomatic lumps. EICB should be kept in mind while dealing with a palpable lump in breast, and diagnosis can be made on FNA alone whenever associated with characteristic pultaceous aspirate and cytological findings.

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