Case Series

Uncommon diffuse dense masses on X-ray mammogram, uncurtained by sonomammogram, confirmed on histopathology: A Case series

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Abstract

Unilateral enlargement of the breast can occur due to various diffuse infiltrative breast lesions, including normal physiological changes, infective, inflammatory, benign etiology and malignant tumors. In this article we present a series of cases with history of unilateral enlargement of breast and appearing as diffuse dense mass on x ray mammogram. Ultrasound findings made appropriate diagnoses which are confirmed on histopathology further.

Key Word: Dense masses in the breast, PASH, Phyllodes, Inflammatory carcinoma.

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INTRODUCTION

Diffuse infiltration of the breast can occur due to physiological and pathological conditions. The clinical manifestations include unilateral or bilateral enlargement of breast, palpable mass, asymmetry and shrinkage. Though the x-ray mammogram still the modality of choice, numerous benign and malignant masses appear same, especially dense masses involving the entire breast. High resolution ultrasound helpful characterizing these lesions, complimenting the x-ray mammogram. In this article we present three cases appearing similar on x-ray mammogram. USG uncurtainedthe diagnosis which were confirmed on Histopathology. The x-ray mammogram and USG appearances of Pseudoangiomatous stromal hyperplasia(PASH), Phyllodestumor and Inflammatory carcinoma are described in detail with review of literature.

CASE 1

A 35 year old female presented with rapid enlargement of the left breast for one month with no associated fever and pain. On clinical examination, diffuse enlargement of the breast, no skin thickening or nipple-areola retraction noted. The axilla was normal.

Imaging findings

X- ray mammogram Figure1a&1b showed diffuse dense mass occupying the entire breast .High resolution USG Figure 1c revealed diffuse stroma hypertrophy with no vascularity within. No significant axillary lymphadenopathy. On correlation of x-ray and sonomammogram possible diagnosis of diffuse pseudo angiomatous stromal hypertrophy PASH was made. Tru-cut biopsy done for histopathological confirmation showed nonvascular slit like spaces within the dense collagenous stroma Figure1d characteristic of PASH.

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CASE 2

A 35 year old lady presented to out- patient clinic with sudden increase in the size of the left breast in 1 month .On clinical examination of breast, asymmetry with large mobile mass was palpated . The skin and nipple - areola complex were normal. No history of associated fever and pain .

Imaging findings

X- raymammography Figure 2a& b showed diffuse high density mass in the entire left breast. No calcifications or skin thickening seen. Sonomammogramfigure 2c showed large well circumscribed heterogeneous round mass and cystic clefts within. No vascularity in the vascular clefts. Left axillary lymphadenopathy with preserved fatty hilum seen. Due to large size, possibility of malignant phyllodestumour was suspected. Core biopsy done later shows features of benign phyllodestumour Figure 2d with hyper cellular stroma with cleft like spaces lined by cuboid epithelium. No cellular atypia or mitosis seen.

CASE 3

A 40 year old lady presented with complaints of pain and enlargement of the right breast over past 15 days. She had fever with chills. On clinical breast examination it was warm and shows skin redness. Few palpable axillary lymphnodes were noted .The diagnosis of mastitis / inflammatory carcinoma was considered and sent for mammogram. X –ray mammogram Figure 3a&b; image quality is degraded due to improper compression showed diffuse density with skin thickening .No evidence of calcifications. On USG, ill defined diffuse hypoechogenicity seen extending upto the skin surface. Core biopsy showed dilated dermal lymphatic spaces filled with tumour cells suggestive of inflammatory carcinoma.

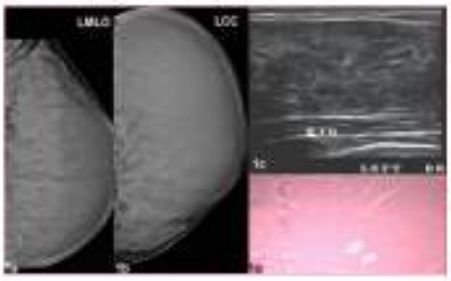

Figure 1

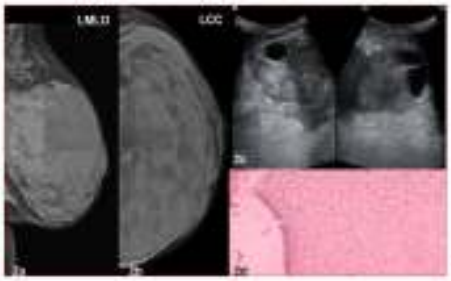

Figure 2

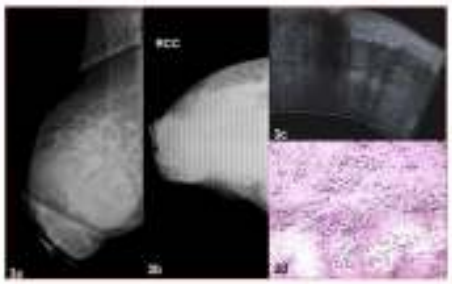

Figure 3

Legends:

Figure 1a&b: x-ray mammogram shows diffuse dense mass in the entire breast.
Figure 1c: USG revealed diffuse stromal hypertrophy without vascularity in the entire breast.
Figure 1d: Histopathology show nonvascular slit like spaces within the dense collagenous stroma suggestive of PASH.
Figure 2a&b: x-ray mammogram shows diffuse dense mass in the entire breast.
Figure 2c: USG shows a large well circumscribed heterogeneous round mass with cystic clefts.
Figure 2d: Histopathology showing ahyper cellular stroma, cleft like spaces lined by cuboid epithelium ,without atypia or mitosis suggestive of benign phyllodes tumour.
Figure 3a&b: x-ray mammogram showing diffuse density in the entire breast with skin thickening.
Figure 3c: USG shows ill defined hypo echogenicity extending upto the skin surface.
Figure 3d: Histopathology reveal dilated dermal lymphatic spaces filled with tumour cells suggestive of inflammatory carcinoma.

DISCUSSION

Case 1

Pseudoangiomatous stromal hyperplasia PASH is a benign mesenchymal stromal disorder of the breast described first in 1986 by Vuitch et al[1], since then several cases have been reported in the literature .The exact etiology is unknown, most recent studies shows its association with hormonal factors[2] based on its more incidence in the child bearing women and women on hormonal replacement therapy. Few cases are also reported in men with gynecomastia[2] and in pediatric age[3]. On x-ray mammogram, usually seen as well circumscribed focal homogeneous or heterogeneous mass without calcifications [2] and difficult to differentiate from other benign breast lesions[4,5,6]. Diffuse enlargement of the breast due to huge tumoral PASH, seen as dense mass on x-ray mammogram is very rare presentation as seen in our case and difficult to differentiate from other causes like phyllodestumour, giant fibroadenoma and inflammatory carcinoma. It was described in 25% of the breast biopsies[7]. Few cases are described so far with histopathology correlation[8]. However ultrasound delineates the diffuse lobular hypertrophy of the glandular stroma with slit like clefts without color flow which is characteristic of diffuse tumoral PASH[8] helpful in differentiating from other causes of the diffuse dense

mass. Histologically the tumor is characterized by abundant stroma containing non-vascular slit-like spaces , scattered ducts and lobules. It is important to differentiate it from low grade angiosarcoma, as the slit-like spaces will mimic vascular spaces. The differentiations of these two conditions are done by Immunohistochemistry staining for CD31 and factor VIII antibodies. These are positive of angiosarcoma and negative for PASH[3]. Although it is a benign disease, short-term follow-up imaging or surgical excision may be performed immediately. Recurrence rate is rare and approximately 10% is reported[9].

CASE 2

Phyllodes tumor is a rare fibro epithelial tumour with an incidence rate of 0.3-1% of all primary breast tumors.[10] It was first termed as cystosarcomaphyllodesby Johannes Muller in 1838[11]based on the tumor's 'leaf-like' projections into cystic spaces and sarcomatous stroma on histology. This is a misnomer since most of them have variable benign course .Phyllodes can occur denovo or from pre existingfibroadenoma.[10] It is more common in the middle and old age group with mean age of 45 years. In literature it has been reported in young women[12] and also in men with gynecomastia.[13] Mostly it is unilateral; bilateral presentation is rare.[1415] The median average size of the tumour is 4cm.[16] They are usually focal slow growing painless tumors. Diffuse rapid enlargement of breast due to giant phyllodes, as in our case is rare and most of these are malignant with few exceptions[16 17].In X -ray mammography, mostly seen as a well circumscribed, lobulated or rounded radiodense masses [18]similar to fibroadenoma. Coarse calcifications rarely can be present.Sonographically, it appears as well circumscribed heterogeneous lobulated, hypoechoic mass with cystic spaces showing post acoustic shadowing[19]. Rapid enlargement of the breast due to giant phyllodestumour is rare. It is difficult to differentiate benign and malignant phyllodes based on the clinical and imaging features. But histologically, it is subdivided as benign, borderline and malignant variety depending on the degree of the stromal cellular atypia, mitosis, stromal overgrowth, tumor necrosis, and margin appearance.[19] On fine needle aspiration FNAC, it is difficult to differentiate fibroadenoma from phyllodes, as both are fibroepithelial tumors. Preoperative diagnosis with biopsy is crucial, as in phyllodestumour resection with clear margin is mandatory due to high chance of recurrent rate and malignant transformation.[19]

CASE 3

Inflammatory breast carcinoma IBC is a relatively uncommon and highly aggressive form of invasive carcinoma which has a characteristic clinical presentation and unique radiographic appearances. Itaccounts for 1%–4% of breast cancer [20]. The average age range at onset is 45–54 years[20,21].Both tissue diagnosis of malignancy and clinical findings of inflammatory disease are required to confirm the diagnosis. According to American Joint Commission on Cancer, IBC is characterized by the presence of diffuse erythema and edema of the breast often without an underlying mass and involving most of the breast[22]. The differential diagnosis includes mastitis, locally advanced breast cancer manifesting secondarily through inflammation and lymphoma. Clinical history and examination may help in differentiating IBC from these entities. In x ray mammogram, secondary abnormalities such as skin thickening, increased density, trabecular thickening and axillary lymphadenopathy are common. Presence of masses and malignant-appearing calcifications are uncommon manifestations[23]. In the setting of acute inflammation, getting a mammogram done may not be easy, due the pain and in very difficult cases,at leastcontra lateral breast should be imaged. At USG, visible breast masses are often irregular, solid and hypo echoic, otherwise isolated areas of architectural distortion may be seen, which must be able to identify and biopsy. Otherfindings include skin thickening, dilatation of vessels, lymphaticsandincreased parenchymal echogenicity[20]. Inflammatory carcinoma of the breast is usually poorly differentiated infiltrating ductal carcinoma. In the typical case, histopathological evaluation of the skin reveals tumour emboli, dilated dermal lymphatic channels and a lymphocytic reaction in the dermis localized around dilated vascular channels[24].Imaging is used to detect clinically non palpable masses, to guide biopsy, stage the disease and assess response to treatment. In the TNM system, IBC is given its own unique designation as a T4d tumour, and patients with IBC are generally staged as either stage IIIb, IIIc, or stage IV at the time of diagnosis[25] .The management also differs from that of other types of breast cancer. Making proper diagnosis and staging very important for treatment planning.

CONCLUSION

Diffuse density on x- ray mammogram is a nonspecific finding of various common and uncommon conditions affecting thin thee breast .Clinical history and USG findings can lead to the appropriate diagnosis.

REFERENCES

1. Vuitch MF, Rosen PP, Erlandson RA. Pseudoangiomatous Hyperplasia Of Mammary Stroma. Hum pathology 1986;17:185-91.
2. Erin Bowman, MD,et al. Pseudoangiomatous Stromal Hyperplasia (PASH) of the Breast: A Series of 24 Patients. Breast Journal 2012 May-Jun; 8(3): 242–247.

3. Suhair Al-Saad, Sara Mathew George, Raja Al-Yusuf .Pseudo-angiomatous Stromal Hyperplasia: Benign Tumor of the Breast. Bahrain Medical Bulletin September 2009 ; 31: 3.
4. Navas Cañete A, et al. Pseudoangiomatous Stromal Hyperplasia: Magnetic Resonance Findings in Two Cases. Radiology 2007; 49(4): 275-8.
5. Salvador R, et al. Pseudo-angiomatous Stromal Hyperplasia Presenting as a Breast Mass: Imaging Findings in Three Patients. Breast 2004; 13(5): 431-5.
6. Mercado CL, et al. Pseudoangiomatous Stromal Hyperplasia of the Breast: Sonographic Features with Histopathologic Correlation. Breast J 2004; 10(5): 427-32.
7. AbidIrshad ,etal.Rare Breast Lesions: Correlation of Imaging and Histologic Features with WHO classification. Radiographics, September-October 2008;Volume 28, Issue 5.
8. EunMiRyu In Yong Whang, Eun Deok Chang. Rapidly Growing Bilateral Pseudoangiomatous Stromal Hyperplasia of the Breast. Korean J Radiol 2010;11:355-358.
9. MerihGuray and Aysegul A. Sahin. Benign Breast Diseases: Classification, Diagnosis, and Management. *The Oncologist* 2006; 11:435-449.
10. Tavassoli FA, Devilee P, eds. Tumours of the breast: Pathology and genetics of tumours of the breast and female genital organs. World Health Organization Classification of Tumours.Lyon,France: IARC, 2003; 9–112.
11. Lee BJ, Pack GT. Giant Intracanalicular Myxoma of the Breast: The So-Called Cystosarcoma Phyllodes Mammae of Johannes Muller. Ann Surgery 1931;93(1):250-268.
12. Chua CL,Thomas A, Ng BK. Cystosarcomaphyllodes-Asian variations. Aust N Z J Surgery1988;58(4) :301–305.
13. Nielsen VT, Andreasen C. Phyllodestumour of themale breast. Histopathology 1987;11(7):761–762.
14. Barrio AV, et al. Clinicopathologic features and long-term outcomes of 293 phyllodestumours of the breast. Ann Surgery Oncology 2007;14(10):2961-2970.
15. Soumaya Ben Abdelkrima e, et al. PhyllodesTumours of the Breast: A Review of 26 Cases. World journal of oncology 2010,vol 1 number 3: 129-134 .
16. Karim RZ, Gerega SK, Yang YH, Spillane A, Carmalt H, Scolyer RA, Lee CS. Phyllodestumours of the breast: A clinicopathological analysis of 65 cases from a single institution. Breast 2009;18(3):165-170.
17. Korula A, Varghese J, Thomas M, Vyas F. Malignant phyllodestumour with intraductal and invasive carcinoma and lymph node metastasis. Singapore Med J 2008;49(11):e318-321.
18. S.Wurdinger, A. B. Herzog, D. R. Fischer et al."Differentiationofphyllodes breast tumors from fibro adenomas on MRI," American Journal of Roentgen ology, vol. 185,no. 5, pp. 1317–1321,2005
19. Shashi PrakashMishra, Satyendra Kumar Tiwary,ManjareeMishra, and Ajay Kumar Khanna .PhyllodesTumor of Breast: A Review Article. Department of Surgery, Institute of Medical Sciences, Banaras Hindu University:Volume 2013.
20. Gunhan-Bilgen et al. Inflammatory Breast Carcinoma: Mammographic, UltrasonographicClinical,andPathologicFindings in142 Cases.Radiology2002;223:829–838.
21. Dershaw DD, Moore MP, Liberman L, Deutch BM. Inflammatory breast carcinoma: mammographic findings.Radiology 1994; 190:831-834.
22. American Cancer Society.Inflammatory breast cancer.September 29, 2011. Available at: http: // www .cancer. org / acs / groups / cid / documents/web content/002298-pdf.
23. Anne C.et al. Primary Inflammatory Carcinoma of the Breast: Retrospective Review of Mammographic Findings,February 2000, Volume 174, Number 2.
24. Anne C. Kushwaha, Gary J. Whitman, Carol B. Stelling, Massimo Cristofanilli and Aman U. Buzdar.Primary Inflammatory Carcinoma of the Breast: Retrospective Review of Mammographic Findings. American Journal of Roentgenology. 2000;174: 535-538.
25. American Joint Commission on Cancer.AJCC Cancer Staging Manual, 7th edition , updated Cancer Staging Posters. Available http :// www. Cancerstaging.org/ staging /posters/ breast pdf.

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