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Ultrasonographic evaluation of spectrum of breast diseases in patients during pregnancy and lactation

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Abstract
Introduction: Ultrasonographic evaluation of breast is the foremost and appropriate radiological method to evaluate breast disorders in women during pregnancy and lactation. 80% of patients presenting with palpable breast mass during lactation and pregnancy are benign however malignancy must be excluded by a thorough workup.
Purpose: The aim of this article was to review different breast pathologies occurring in women during pregnancy and lactation.
Methods: A prospective study of one year was done in Dr. Ziauddin University Hospital Karachi. Pregnant or / and lactating females who came for ultrasound breast examination with complain of pain, lump or discharge were included in study. Patients with previous history of incision and drainage, already diagnosed or on medical treatment were excluded from study.
Results: A total of 94 patients with an age range of 17- 42 years were included. Right breast was most commonly involved 58.51% than left 41.48%. Ultrasound revealed benign breast diseases in 67.02%, of them most were infective / inflammatory accounting for 55.31%. Malignancy was detected in 7.44% and 25.53% showed no sonographic abnormailty. Breast abscess was the most common breast disease found 25.53% and were more common in lactating 70.83% than pregnant females 29.16%. 9 breast abscesses, 2 galactocele underwent aspiration, mastitis and infected sebaceous cysts were managed conservatively. Trucut needle biopsy done in 6 and FNAC in 2 patients for suspicious looking lesions.
Conclusion: Ultrasound is useful in early detection, however, diagnosis is challenging due to changes secondary to hormonal stimulation. A thorough understanding of clinical and imaging features of normal physiological changes and benign or malignant lesions is exigent.

Keywords: Ultrasound, breast, malignancy, benign, pregnancy, lactation

Introduction

Ultrasonographic evaluation of breast is the foremost and appropriate radiological method to evaluate breast disorders in women during pregnancy and lactation. 80% of patients presenting with palpable breast mass during lactation and pregnancy are benign, however, malignancy must be excluded by a thorough workup. Diagnosis is challenging due to physiological changes occuring secondary to hormonal stimulation. During lactation major problem encountered are spectrum of inflammatory complications with a reported incidence of 5-11%. Pregnancy associated breast carcinoma is an entity diagnosed during pregnancy, lactation or within one year from pregnancy. 0.2- 3.8% of breast cancers occur during pregnancy with a median maternal age of 33-34 years.

Purpose: The aim of this article was to review different breast pathologies occurring in women during pregnancy and lactation.

Methods: A prospective study of one year was done in Dr. Ziauddin University Hospital Karachi. Ninety four pregnant or /and lactating females who came for ultrasound breast examination with complain of either / and pain, lump or discharge were included in the study. Patients with previous history of incision and drainage, already diagnosed or on medical treatment were excluded from the study. A detailed history and examination findings were recorded on the performa. Ultrasound examination of all patients were done in radial, anti-radial and sagittal planes using high frequency linear ultrasound probe. Follow up was also taken from the patients regarding treatment given, prognosis and histopathological diagnosis of suspicious lesions Data was then analysed using SPSS version 17.0 and comparison of the results done with literature series.

Results

During the study period, a total of 94 patients with an age range of 17- 42 years were included, of them 70 (78.7%) were lactating and 20 (21.27%) were pregnant. Right breast was most commonly involved 55 (58.51%) than left 39 (41.48%). Most of the patients came with complain of mastalgia (85.1%) followed by presence of lump (34.04%) and nipple discharge (12.76%). [Table.1] Fever was present in 10.63% cases and mostly in patients with breast abscess and mastitis.
Most of the lesions were located in upper outer quadrant of breast followed by retroareolar region. Ultrasound examination revealed benign breast diseases in 63 patients (67.02%) of them

most were infective / inflammatory lesions accounting for about (55.31%) cases. Malignancy was detected in 7 patients (7.44%) and 24 patients (25.53%) showed no sonographic abnormailty. [Fig.1] Breast abscess (25.53%) was the most common breast disease found followed by mastitis (14.89%), galactoceles (12.76%), infected sebaceous cyst (2.12%), lactating adenoma (1.06%), fibroadenoma (6.38%) and simple breast cyst (4.2%). Largest size of the breast abscess detected was 7.3 x 5.9cm and that of galactocele was 4.9 x 2.4cm. Breast abscesses were more common in lactating (70.83%) than pregnant females (29.16%). 9 cases (37.5%) of breast abscesses were treated with incision and drainage while rest were conservatively managed. 2
patients with galactocele underwent aspiration. Patients with mastitis and infected sebaceous cysts were managed with analgesics and antibiotics.

Trucut needle biopsy was done in 6 patients with suspicious looking lesions and histopathology revealed invasive ductal carcinoma in 2 patients, ductal carcinoma in situ (DCIS) and intra-cystic papillary carcinoma in 1 patient, phyllodes tumor with malignant degeneration in 1 patient and giant fibroadenoma in 1 patient. FNAC was done in 2 patients that showed DCIS. [Table.3]

Table 1

Clinical presentation	%
Lump	85.10%
Mastalgia	34.04%
Nipple Discharge	12.76%
Fever	10.63%

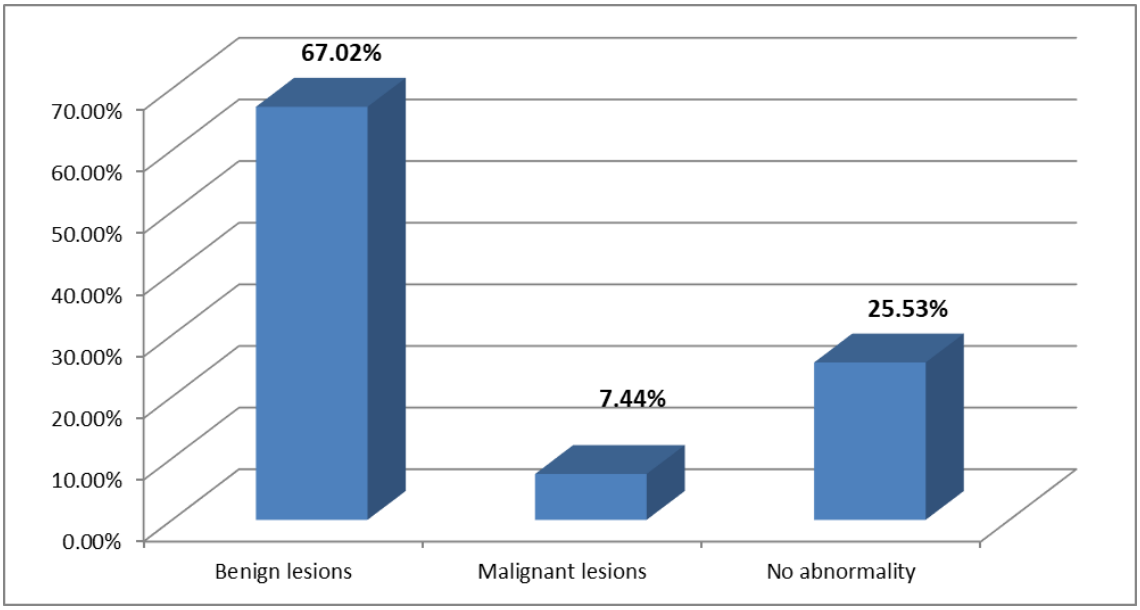

Fig 1

Table 2

Benign Pathologies	67.02%
Abscess	25.53%
Mastitis	14.89%
Galactocele	12.76%
Fibroadenoma	6.38%
Simple Cyst	4.20%
Sebaceous Cyst	2.12%
Lactating Adenoma	1.06%
Malignant Pathologies	7.44%
DCIS	3.19%
Papillary carcinoma	1.06%
Invasive ductal carcinoma	1.06%
Phyllodes Tumor	1.06%

Discussion

A scenario of palpable breast mass is routinely encountered while imaging breasts of pregnant or lactating females. Lactational and postpartum period may vary from 6months to 2 years and any disease diagnosed during pregnancy, lactation or one year postpartum is considered pregnancy associated. Most of the lesions identified are benign but we cannot exclude malignancy as it may occur and must be evaluated by a thorough workup.
Changes in breast physiology due to hormonal variations results in increased breast volume and parenchymal density, firmness with associated nodularity. Serum estrogen, progesterone and prolactin are the major hormones responsible for these changes. Because of physiological changes, clinical as well as radiological examination becomes more difficult as pregnancy advances. It returns to normal 3 months following cessation of breast feeding. Ultrasound is the imaging modality of choice during pregnancy and postpartum period with a sensitivity ranging from 86.7 to 100% which is 30% greater than mammography [1]. It also has the benefit of not exposing the fetus to radiation, producing high resolution images allowing more effective differentiation of benign and malignant pathologies. During pregnancy, breast usually appear diffusely hypoechoic due to enlargement of the non-fatty fibroglandular component whereas during lactation there is diffuse hyperechogenicity with prominent ducts and vascularity [2].
In this study, most of the patients presented during lactational period. Jessica *et al*. [3] in her study also concluded that 25% of

the patients presented during pregnancy, 10% postpartum and 65% during the period of lactation. Of these 4 patients were found to have malignant mass lesions and 36 were benign pathologies. Lesions evaluated through ultrasound showed a sensitivity and specificity of 100% and 86% respectively. In another study conducted by Maria *et al*. [4] 74.4% of the patients presented during lactation and 25.6% during pregnancy.

Inflammatory and infective breast pathologies are the major problems encountered during pregnancy and lactation with a highest incidence between 6wks postpartum. Delay in diagnosis would be due to unawareness of patient or because of inappropriate diagnosis by the clinician. Mastitis has a reported incidence of 6.6–33 % [5]. Approximately 4.8–11 % of lactation-related mastitis is complicated by breast abscesses [6]. Source of infection is usually nasopharyngeal organisms from infant's mouth. Cracked nipples are a major risk factor as it results in retrograde dissemination of infection. Staphylococcus aureus is the major organism encountered which is invasive from the onset and cause early abscess formation inspite of prompt antibiotic cover. However, streptococcus infections mainly results in diffuse mastitis with focal abscess formation in advanced stages. In this study, majority of the cases were inflammatory/ infective (55.31%). Breast abscesses were most commonly encountered (25.53%) followed by mastitis (14.89%). However, both were more common in lactating (70.83%) than in pregnant women (29.16%). Maximum size of breast abscess was 8.3 x 5.9cm. 9 abscesses were treated with incision and drainage while rest of the cases were treated conservatively with antibiotics. Breast feeding should be encouraged as stasis of milk provides a good culture medium for infection.

Galactoceles are the most common benign breast lesions encountered and thought to occur due to obstruction of a mammary duct and inspissation of milk. Patient may present with a painless or tender mass. The imaging appearance of galactocele is variable, depending on the amount of fat, protein and water content. In this series, 12.76% of the cases occurred, of them 2 were drained through aspiration. The importance of recognizing a galactocoele lies in the fact that it needs to be differentiated from other cystic lesions, most importantly intracystic carcinoma [7].

Lactating adenoma is another benign entity which is usually considered a variant of fibroadenoma and sonographically indistinguishable [8]. Collins JC *et al*. [9] have reported 76% cases and Eun Ju Son *et al*. [10] We report a single case of lactating adenoma in a pregnant female in her third trimester that regressed after delivery which is its unique feature. Lactating adenomas and fibroadenomas are prone to infarction during pregnancy and can be clinically suspected if sudden pain occurs in a previously painless lump. Infarcted fibroadenoma may show cystic spaces and a more irregular border than typical.

Pregnancy associated breast cancer is a diagnostic challenge for physicians, radiologist sand patients alike. It represents 3% of all cases of breast cancer, with an incidence of one in every 3,000-10,000 pregnancies [11, 12]. Prevelance is likely to increase as more women are delaying childbearing. Approximately 7–14% of newly diagnosed breast cancers in women younger than 40 years are associated with pregnancy. More than 50% of the tumors are high grade with advanced stage at the time of diagnosis with poor prognosis [13]. Recurrence is also common within 2-3 years of diagnosis. Patients with pregnancy-associated breast cancer typically present with a palpable, painless mass, attached to the deep planes, with diffuse edema and erythema in the early phases of the disease [14]. While most cancers in non-pregnant women older than 40 years old are detected by screening mammography before becoming clinically evident. The median maternal age at the time of diagnosis of breast cancer during pregnancy is 33-34 years [15]. Sensitivity of ultrasound in the diagnosis of PABC is 100%. Metastasis to the breast is rare with a reported incidence of 1.7-6.6% and is most commonly occur from contralateral breast, lymphoma, leukemia, melanoma and lung cancer [16]. Metastatic lesions are mostly bilateral, multiple and well circumscribed and usually lack calcifications. These are found in subcutaneous fat while primary breast cancer occurs in glandular tissue. Hosny *et al*. [17]. in its study reported 6.25% cases of malignancy while we in this study detected 7.44% cases.

The most important task of the radiologist in evaluating a pregnant and lactating patient is to circumvent delay in diagnosis of pregnancy associated breast cancer. Any palpable lump in a pregnant and lactating patient must be promptly and properly evaluated with ultrasound and any suspicious mass should be biopsied immediately without postponement to the postpartum period.

Conclusion

Evaluation of breast pathologies is a diagnostic challenge for a radiologist during pregnancy and lactation due physiological changes. According to National Comprehensive Cancer Network guidelines, ultrasound is the first line imaging modality of choice in pregnant and lactating women under 30 years of age. Mammography is indicated when there is a suspicious or indeterminate lesion on ultrasound and in lactating women above 30 years of age. A thorough understanding of clinical and imaging features of normal physiological changes and benign or malignant lesions is exigent. Based on radiological findings, high suspicion for malignancy in atypical lesions should be raised for timely management.

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References

1. Ahn BY, Kim HH, Moon WK, Pisano Ed, Kim HS, Cha ES, *et al*. Pregnancy and lactation associated breast cancer: mammographic and sonographic findings. J Ultarsound Med. 2003; 22(5):491-7.
2. Sabate JM, Clotet M, Torrubia S, Gomez A, Guerrero R, De las Heras P *et al*. radiologic evaluation of breast disorders related to pregnancy and lactation. Radiographics. 2007; 27(1):101-24.
3. Jessica R, Deborah J, Marilyn R, Mark H. Accuracy of Diagnostic Mammography and Breast Ultrasound During Pregnancy and Lactation. AJR. 2011; 196:716–22.
4. Maria SS, Masoom RM. Breast diseases presenting during pregnancy and lactation. Journal of Surgery Pakistan. 2010; 15(3).
5. Kvist LJ, Larsson BW, Hall-Lord ML, Steen A, Schalen C. Int Breastfeed J. 2008; 7(3):6

6. Ulitzsch D, Nyman MK, Carlson RA. Breast abscess in lactating women: US-guided treatment. Radiology. 2004; 232(3):904-9
7. Sawhney S, Petkaska L, Ramadan S. Sonographic appearances of galactoceles. J Clin Ultrasound. 2002; 30:18-22.
8. Saglam A, Can B. Coexistence of lactating adenoma and invasive ductal adenocarcinoma of the breast in a pregnant woman. J Clin Pathol. 2005; 58(1):87-9.
9. Collins JC, Liao S, Wile AG. Surgical management of breast masses in pregnant women. J Reprod Med. 1995; 40:785-8.
10. Son EJ, OH KK, Kim EK. Pregnancy associated breast diseases: Radiologic features and diagnostic dilemmas. Yonsei Med J. 2006; 47:34-42.
11. Yu JH, Kim MJ, Cho H, *et al*. Breast diseases during pregnancy and lactation. Obstet Gynecol Sci. 2013; 56:143-59.
12. Joshi S, Dialani V, Marotti J, *et al*. Breast disease in the pregnant and lactating patient: radiological-pathological correlation. Insights Imaging. 2013; 4:527-38.
13. Ring AE, Smith IE, Ellis PA. Breast cancer and pregnancy. Ann Oncol. 2005; 16(12):1855-60.
14. Canoy JM, Mitchell GS, Unold D, *et al*. A radiologic review of common breast disorders in pregnancy and the perinatal period. Semin Ultrasound CT MR. 2012; 33:78-85.
15. Ring AE, Smith IE, Jones A. Chemotherapy for breast cancer during pregnancy: an 18 year experience from five London teaching hospitals. J Clin Oncol. 2005; 23:4192-7.
16. Surekha J, Vandana D, Jonathan M, Tejas SM, Priscilla JS. Breast disease in the pregnant and lactating patient: radiological-pathological correlation. Insights Imaging. 2013; 4(5):527–38.
17. Hosny IA, Eldin L, Elghawabi HS. Radiological evaluation of palpable breast masses during pregnancy and lactation. EJRNM. 2011; 42(2):267-73.