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Five-year Study of Patients with Lactating Adenoma and Review of the Literature

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ABSTRACT

Background: Lactating adenoma is a benign breast mass related to physiological changes during pregnancy and increased estrogen level. Fibroadenoma and breast cancer should be considered in the differential diagnosis of this lesion. The purpose of this study was to report cases of lactating adenoma in Breast Cancer Research Center (BCRC) and review the relevant literature.

Methods: All patients with histological diagnosis of lactating adenoma between April 2010 and December 2015 were selected. Patients' data were extracted from their medical records and follow-up of the patients were done through in-person examination or rarely by telephone call.

Results: A total of 22 patients with pathological diagnosis of lactating adenoma were enrolled. The mean age of patients was 27 ± 4.6 years. Fourteen patients were in breast-feeding period and eight were pregnant at the time of diagnosis. The chief complaint was breast mass in 16 patients and pain 6 patients. The mean size of masses was 4.1 cm (1.8-8 cm). For 13 patients, core needle biopsy (CNB) and for 6 patients open biopsy were performed and for the other 3 patients vacuum-assisted biopsy were done. In 5 patients, excisional biopsy was done in the follow-up period that one of them proved to be medullary carcinoma and other cases were benign.

Conclusions: Lactating adenoma commonly presents as a palpable mass during the breastfeeding period or the third trimester of pregnancy. The most common ultrasonographic appearance is a hypoechoic mass with regular borders. It usually regresses after cessation of breastfeeding, however in patients with mass enlargement during the follow-up, period pathologic evaluation of the lesion through core needle biopsy should be performed to rule out coexistent carcinoma.

Introduction

More than 80% of breast tumors that are diagnosed during pregnancy or breast-feeding are benign, however changes in breast tissue during pregnancy and lactation cause clinical examination

and imaging more difficult during this period of time.¹ These changes are due to increased level of estrogen, progesterone and prolactin and consist of growth of milk ducts and lobules, dilation of milk ducts and increasing stromal fat. As a result, volume, density and consistency of the breasts increase and these changes will make clinical and imaging more difficult in pregnancy and lactation.^{1,2}

Lactating adenoma, a benign condition, is the most common breast lesion during pregnancy and puerperium period that is often seen in the third decade of life.³ Despite its name, "lactating adenoma" often occurs during pregnancy.⁴

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Despite etiological ambiguity, these lesions usually appear as palpable non-tender mobile masses, with clearly defined borders. They may also present atypically as firm tender masses as a result of tissue infarction.¹

The most appropriate imaging method to diagnose these lesions is ultrasound with features such as an oval mass with a posterior acoustic enhancement, circumscribed and often a microlobulated border.¹

In the past decades, FNA was a rapid, inexpensive and painless method for tissue diagnosis of breast masses, however most of the changes during pregnancy are so marked that they can lead to the false-positive diagnosis of malignancy. Therefore, the pathologic diagnosis of breast lesions during pregnancy and lactation should be made with caution.⁵ The definitive diagnosis of breast adenoma is through histopathological examination.⁶ Most lactating adenomas will regress completely without any interventions.^{3,7}

On the other hand, lack of awareness about possibility of breast cancer during pregnancy and more invasive nature of tumors during this period can lead to diagnosis in more advanced stages.^{4,8}

The goal of the current study was to report clinicopathological characteristics and management of patients with lactating adenoma referring to Breast Cancer Research Centre (BCRC) during a 5-year period of time.

Methods

All patients with the diagnosis of lactating adenoma based on pathology report at BCRC were included from April 2010 until October 2015. BCRC is a multidisciplinary breast clinic in Tehran-Iran with about 20 years of experience in diagnosis and treatment of breast diseases.

Overall in this period of time, there were a total of

22 patients with pathology or cytology of lactating adenoma and their records were studied and analyzed. Most of these patients were followed by breast physical examination and imaging, except some cases who were followed by telephone follow-up.

Result

The mean age was 27 ± 4.6 . Fourteen patients were in breastfeeding period and 8 patients were pregnant (two during the second trimester and 6 during the third). The chief complaint was a mass in 16 patients and pain in 6 patients. Mean tumor size was 4.1 cm (1.8-8 cm). The most common ultrasonographic appearance of the tumor was a hypoechoic mass with regular borders.

Fine needle aspiration were done as the first step of the diagnostic process in 2 patients that cytologic report in one of them was normal and the other one showed atypia and then vacuum-assisted biopsy and excisional biopsy were performed.

Milk fistula occurred just in one of thirteen patients who sustained core needle biopsy (CNB). Breast mass regressed or completely disappeared after cessation of lactation in fifteen patients, however in seven patients excisional biopsy was recommended due to mass enlargement during the follow-up period. Five of these patients underwent surgery, but two refused. Pathology report was benign in four patients (Three of them were lactating adenoma and one was galactocele).

The fifth patient was a 36-year-old woman with the family history of breast cancer in her mother and increasing size of tumor despite the pathology result of lactating adenoma in CNB. Excision of the mass was performed and the pathology result was medullary carcinoma. Partial mastectomy and sentinel lymph node biopsy were done for this patient. The ultrasound appearance of the patient's mass is shown in Figure 1.

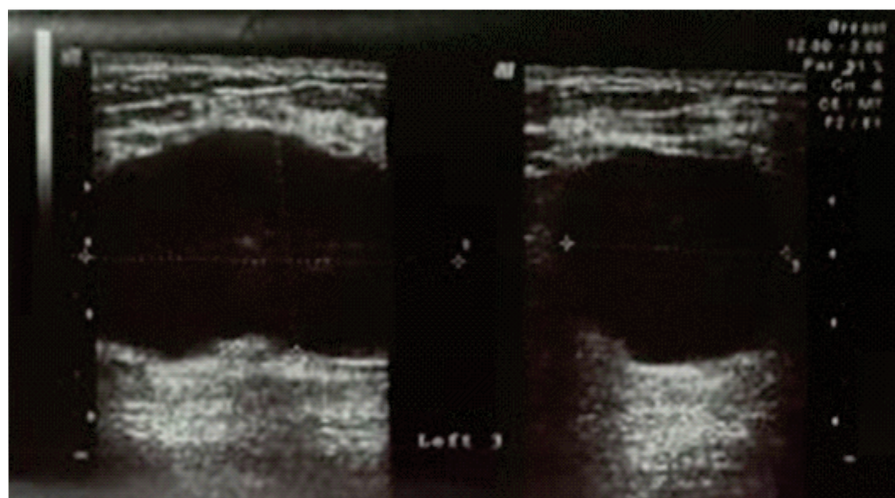


Figure 1. The ultrasonographic appearance of a breast mass in a 36-year-old lactating patient with the diagnosis of a lactating adenoma in CNB. The mass was enlarged through the follow-up and excision was performed. The pathology result was medullary carcinoma.



Discussion

Lactating adenomas are the most common masses occurring during pregnancy most commonly appearing during the third trimester of gestation which usually present as painless, well circumscribed, palpable and mobile breast lesions.³ The underlying etiology of lactating adenoma is unclear. Some researchers propose that the lesion is simply a variant of fibroadenoma, tubular adenoma, or lobular hyperplasia. While, others hypothesize that lactating adenomas are neoplastic proliferation of breast tissue secondary to hormone stimulation.⁹

Usually lactating adenomas are slow growing tumors which are smaller than 5cm in size; but, sometimes undergo rapid growth and could be very large at the time of diagnosis.¹⁰ These lesions often occur in the third trimester of pregnancy and during lactation, but are rarely seen in the first and second trimesters.^{11,12} In this study, two patients were in their second trimester and the rest in the third trimester or during lactation.

A specific feature of these tumors is regression after cessation of breastfeeding.^{3,7} In this study through follow-up ultrasonography, tumor size increased in seven cases after cessation of breastfeeding, or there were suspicious ultrasonographic characteristics and excision were recommended.

Lactating adenoma is not associated with the increased risk of breast cancer but there are some reports of co-incidence with breast carcinoma in the literature.^{2,3,9} It is not clear whether the mentioned carcinoma are the result of malignant transformation of an adjacent lactating adenoma or a distinct primary lesion of the breast.²

Unlike malignant tumors, lactating adenomas are usually slow-growing and rarely become larger than 5 cm, but in some cases they grow quickly and will be detected in larger sizes.¹⁰

Mammography is not recommended during pregnancy and lactation due to increased breast size and dose of radiation received by the fetus, except in the cases of strong suspicion of malignancy, in these cases it is recommended to evacuate breasts out of milk completely.³ Moreover, the sensitivity of mammography in this age is reduced, however these changes will regress after cessation of breastfeeding within 1 to 5 months.^{5,9,13} Presentations of lactating adenoma in mammography are relatively well-circumscribed and partly obscured masses or asymmetrically increased densities.⁹

Regardless of the cost, interpretation of MRI is difficult and challenging due to tissue changes related to pregnancy and breast-feeding including increased background enhancement and diffusely increased T2 signal.¹³ The most important problem of MRI during pregnancy is complications of using contrast material in pregnancy and thus, it is better to be postponed until after delivery.³

Ultrasonography is the most common diagnostic

method used for assessing breast disorders in women during pregnancy and lactation. The breast parenchyma is characterized by enlargement of the non-fatty fibroglandular component with slight diffuse hypoechogenicity during pregnancy. In contrast, lactation causes a prominent ductal system, diffuse hyperechogenicity, and increased vascularity in breast parenchyma.⁵

These masses usually have transverse position, posterior acoustic resonance and distinct borders and sometimes show microlobulation.¹ Due to the milk fat, radiolucent or hyperechoic areas are seen on ultrasound that is a definitive sign of adenoma.⁵ Also the discharge causes compression property under the ultrasound probe. Sometimes they may appear like a malignant tumor with irregular and ridged borders.⁹

Histological characteristics of lactating adenoma are defined borders which contain secretory lobules that are separated by connective tissue and the epithelial cells of the lobules contain granular, foamy cytoplasm⁹ (Figure 2). The differences between lactating adenoma and fibroadenoma are their very little stroma and very high epithelial elements.¹

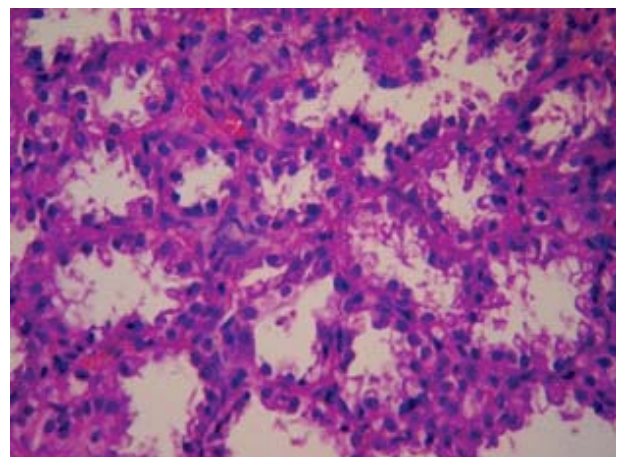
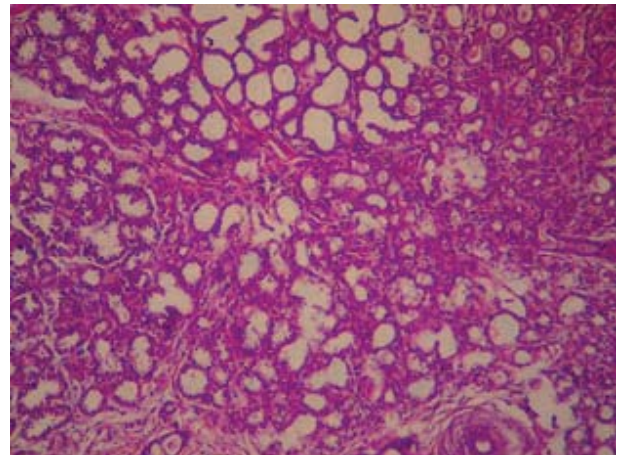


Figure 2. Histologic features of lactating adenoma



Cellular changes that normally occur during pregnancy and lactation, including cellular atypia, fibroglandular tissue growth and increase in vessels and ducts may increase the likelihood of false positive report of malignancy by FNA. False negative reports may be due to removal of the intact tissue.^{7,8} Now, CNB is the best and most definitive diagnosis.⁷ As in our experience, in one patient, FNA showed atypia; but breast adenoma was diagnosed after biopsy.

Sampling by the CNB, especially during pregnancy and lactation may increase risk of bleeding (due to hypervascularity of the breast), infection (due to dilation of the milk ducts) and milk fistula.^{5,14}

In order to prevent these complications, most surgeons postpone biopsy until the completion of this period.⁸ However no imaging modality is specific for diagnosis of breast adenoma. That is why tissue diagnosis is recommended to evaluate palpable breast masses especially through needle biopsy. Of twenty two patients with pathology of lactating adenoma, five patients underwent excisional biopsy due to tumor growth and in one patient, invasive ductal carcinoma was diagnosed. CNB pathology in this patient was breast adenoma, but due to a family history of breast cancer in her mother and tumor growth, excision was recommended.

Due to the large number of prolactin receptors in lactating adenoma, some experts believe that if cancer cells are there in the mass, they may grow rapidly.¹⁰ For this reason, patients with lactating adenoma should be closely followed to rule out malignancy.

In conclusion, lactating adenomas usually appear during the third trimester of gestation. Although the evidence suggests that most breast lumps during pregnancy and lactation are benign, in the case of a newly diagnosed palpable mass in the late pregnancy or during lactation, ultrasonography should be performed first to exclude cysts. Tissue diagnosis through core biopsy should be recommended to rule-out malignant lesions, if the mass is solid. Most lactating adenomas will regress after cessation of breast-feeding, however women with lactating adenomas should be followed up closely to rule out coexistent carcinoma.

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