Case Report

A Rare Case of Gestational Gigantomastia with Hypercalcemia: The Challenges of Management and Follow up

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Received: Nov. 8, 2015
Accepted: Dec. 8, 2015

Abstract

Background: Gigantomastia is a breast disorder marked by exaggerated rapid growth of the breasts, generally bilaterally. Since this disorder is very rare and has been reported only in sparse case reports its etiology has yet to be fully established. Treatment is aimed at improving the clinical and psychological symptoms and reducing the treatment side effects; however, the best therapeutic option varies from case to case.

Case Presentation: The present report described a case of gestational gigantomastia in a 30-year-old woman, gravida 2, parity 1, 17 week pregnant admitted to Pars Hospital, Tehran, Iran, on May 2014. The patient was admitted to hospital at week 17 of pregnancy, although her breasts initially had begun to enlarge from the first trimester. The patient developed hypercalcemia in her 32nd week of pregnancy. The present report followed this patient from diagnosis until the completion of treatment.

Conclusion: Although gestational gigantomastia is a rare condition, its timely prognosis and careful examination of some conditions like hyperprolactinemia and hypercalcemia is essential in successful management of this condition.

Keywords: Breast, Diagnosis, Gestational age, Gigantomastia, Hypercalcemia, Iran, Therapeutics.
To cite this article: Moazzami B, Chaichian Sh, Farahvash R, Taheri S, Ahmadi SA, Mokhtari M, et al. A Rare Case of Gestational Gigantomastia with Hypercalcemia: The Challenges of Management and Follow up. J Reprod Infertil. 2016;17(4):243-246.

Introduction

Gestational hypertrophy of the breast or gestational gigantomastia is a very rare clinical condition characterized by fast, unusual and painful breast growth during pregnancy first reported by Palmuth in 1648 (1, 2). Since then, only about one hundred cases have been reported in the literature (1, 2).

This condition can be accompanied by ulcerations, infections, and areas of local necrosis causing severe maternal morbidity and even mortality (1). The etiology of this condition is unknown but various theories including endocrine imbalance, hyperprolactinemia and target organ hypersensitivity have been suggested by different researchers (3, 4).

The choice of treatment for these patients is different based on the severity of each case and the time of pregnancy (5). Only few cases of complete spontaneous postpartum resolution among these patients have been reported and surgical management may be performed by breast reduction or by mastectomy and delayed reconstruction (1).

The objective of this paper was to describe a

case of a gravid 2 patient diagnosed with the disorder in the second trimester of pregnancy. All procedures, included in the present report, were conducted in compliance with the appropriate ethical principles, with approval by the institutional review board of the Pars Hospital, Tehran, Iran, and after obtaining informed consent from the patient.

Case Presentation

A 30-year-old woman, gravida 2, para 1, 17 week pregnant, was hospitalized in gynecology and obstetrics department of Pars Hospital on May 2014 with chief complain of bilateral breast enlargement, as well as breast skin edema and inflammatory changes. Patient had a series of previous breast ultrasounds, indicating fibrocystic changes with a progressive enlargement from the 9th week of pregnancy. The chest circumference was 109 *cm* and sonography examination was normal except for fibrocystic findings. Two days after admission, the patient developed breast skin ulceration which was bandaged and the sample was sent for culture examination. The results of wound culture were negative for microorganism growth. The patient was released 10 days after admission with stable condition.

She was again admitted to emergency department at 25th week of pregnancy with coughs and dyspnea increasing gradually since 15 days before admission. Ultrasonography exam again revealed fibrocystic changes and the breast size had increased to 122 *cm* in circumference. Heart examination showed tachycardia and ejection fraction of 60% in echocardiography. Patient also had anemia and her prolactin level was 49.7 *ng/ml* at first admission and rose to 67 *ng/ml* before delivery which were both in normal range for pregnant women. It was reduced to 27 *ng/ml* one week after breast surgery. With thorough evaluation of the patient, the diagnosis of asthma was established and she received Clexane, Betamethasone, Venofer, and Azithromycin and was discharged after 7 days with stable condition.

She was admitted again to the hospital in 31th week of pregnancy with dry coughs, fever, dyspnea, and tachycardia. No peripheral edema was observed. The breast circumstance had increased to 134 *cm* and patient was treated by Clexane, methylprednisolone, and Azithromycin. She was released after 3 days with stable condition.

She was admitted at week 32 for the fourth time with dry coughs, dyspnea, vomiting, reduced urine volume and depression. Her breast circumference at this time had reached 155 *cm* (Figure 1). She also showed hypercalcemia (Ca=13.5) in two occasions. Considering the patient's condition, she was a candidate for cesarean section after normalizing the Ca level and gave birth to a male newborn with Apgar score of 7 and 8 in the first and fifth minute after delivery, 1.38 *kg* of weight, and good respiratory conditions. Although it was supposed that the breast enlargement might be due to pregnancy hormonal changes, the breast size did not change after delivery and considering the size of breasts as well as respiratory and cardiac complications, patient underwent total mastectomy in two surgeries with nipple and a flap of areola transplanted back 10 days after delivery. Each breast weighted 16.5 *kg* before the start of the surgery. Pathology report indicated fibrocystic changes (Figure 2), increased stroma and CD34 positivity. The calcium levels returned to normal levels one week after the total mastectomy and patient left the hospital 12 days after the surgery with good general condition.

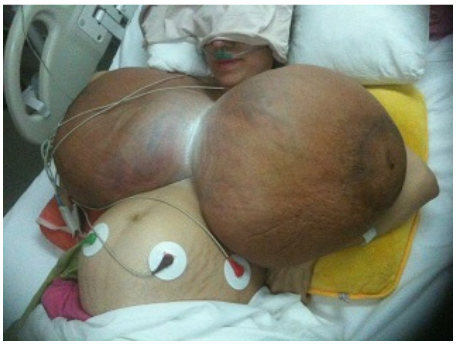

Figure 1. Patients breasts before the surgery

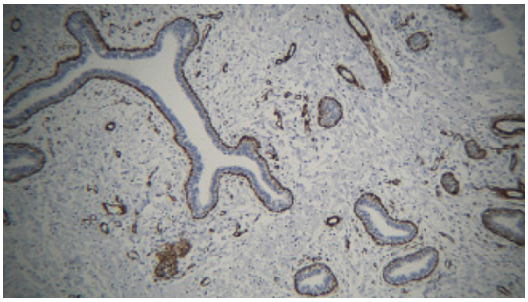

Figure 2. The small slit-like spaces in the stroma (pseudoangiomatous spaces) are lined with cells that are stained with smooth muscle actin (SMA) marker in immunohistochemistry (IHC) study. Note that the basal cells around the mammary ducts are also stained with this marker, which is presumed as a normal histologic finding. Also, note that the benign proliferation and branching of breast ducts is closely similar to the benign fibroadenoma of the breast (X100; IHC staining for SMA marker)

Discussion

Gestational gigantomastia is a complication whose etiology and pathogenesis have yet to be fully clarified; however, various theories including endocrine imbalance, hyperprolactinemia and end organ hypersensitivity have been suggested by different researchers (3, 4). Gestational macromastia can manifest either in first pregnancy or after previous normal pregnancies (6). Manifestations usually begin in the first trimester (7) but in the current presentation, the patient was admitted to hospital at week 17 of pregnancy, although her breasts initially had begun to grow in size from the first trimester. Similar cases of admission at second trimester of pregnancy have previously been reported. In a case reported by Eler Dos Reis et al. (8), their 24 year old pregnant patient was referred to hospital at 22nd week of pregnancy. Agarwal et al. reported that their 22 year old pregnant patient came to their hospital at week 24th of her pregnancy. Following the increase in the size of the breasts, ulcerations, infections, and areas of local necrosis, causing severe maternal morbidity and even mortality might be seen (1). In our patient, the ulcerations appeared at her first visit. Similar ulceration in cases of gestational gigantomastia has been reported by Ezem et al. (1), Eler dos Reis et al. (8) and Agarwal et al. (9). In the case reported by Eler dos Reis et al. (8), because of the progressive increase in the size of their patient's breasts as well as necrosis and recurrent infections, her pregnancy had to be interrupted at 28 weeks of gestational age but the delivery was postponed by cesarean section in our patient until week 32 of pregnancy.

Depression due to combination of pregnancy and unbearable size of the breasts limiting the patients mobility and interaction with others has been previously reported among patients with gigantomastia (1, 8). Our patient developed depression at the 32nd gestational week.

The exact role of hyperprolactinemia is not clear. Most patients with hyperprolactinemia do not present with breast hypertrophy, yet those with pregnancy induced gigantomastia usually respond well to high doses of anti-prolactin agents such as the dopamine agonist bromocriptine (10). The normal range of prolactin for non pregnant women is 4.8-23.3 *ng/ml*, which might increase to 34-386 *ng/ml* in pregnant women. In our patient, the prolactin reading during pregnancy was in normal range for pregnant women. Bloom et al. (11) have reported increased levels of prolactin in their 32 year old patient with gestational gigantomastia.

Our patient also developed hypercalcemia in her 32nd week of pregnancy. Hypercalcemia in patients with pregnancy-induced gigantomastia has been attributed to the excessive production of parathyroid hormone-related protein (PTHrP) by the (hypertrophied) breasts (12). The exact reason for the abnormally high level of PTHrP production in pregnancy-induced gigantomastia is unknown (10). It seems that in patients with the combination of gigantomastia and excessive PTHrP of mammary origin causing hypercalcemia, radical breast reduction and in some cases bilateral mastectomy may be the only option available (10). The majority of pregnant patients with hypercalcemia remain asymptomatic during gestation so the careful examination of calcium levels in patients with gigantomastia has been suggested (13).

The main objective of the palliative treatment among patients with gestational gigantomastia is improving the adverse conditions affecting pregnancy, minimizing the pain and providing psychological support for patients suffering from depression (8). The effect of drug therapy on gigantomastia is limited, so the surgical treatment remains the mainstay treatment method (14-16). Options for surgical management have included reduction mammaplasty and mastectomy (15). Although spontaneous involution might happen in rare cases it is sufficient to return the breast to its premorbid condition (11, 14). Considering the high chance of recurrence during the next pregnancies, it has been recommended that patients undergo mastectomy rather than reduction mammaplasty when future pregnancy is desired (11, 14).

The decision was made to perform a total mastectomy due to unbearable size of breasts not being reduced after delivery, as well as respiratory and cardiac complications and also hypercalcemia. In a similar case, Eler dos Reis et al. (8) decided to perform simple bilateral mastectomy 52 days after their patient gave birth due to continuation of complications and the size of their patient's breasts not reducing after delivery. In another case reported by Karagulle Et al. (17), patient underwent surgery about two months post delivery due to initial refusal of patient for resection of breast mass. Alternatively, successful management of gestational gigantomastia using reduction mammaplasty has been previously reported (11).

Usually, the pathology of the surgical specimens shows glandular hyperplasia with an increase in the connective tissue and no involvement of the adipose tissue (8). In the present case, pathology revealed breast tissue with fibrocystic changes without atypia.

Conclusion

Although gestational gigantomastia is a rare condition, its timely prognosis and careful examination of some conditions like hyperprolactinemia and hypercalcemia is essential in successful management of this condition.

Conflict of Interest

None of the authors has a conflict of interest with the subject matter of the present study.

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