Gestational Gigantomastia in the Setting of Myasthenia Gravis

Mishu Mangla¹ · Jashan Chhatwal¹ · Ruchira Nautiyal¹ · Deepmala Prasad¹

Received: 27 April 2018 / Accepted: 15 October 2018 / Published online: 30 October 2018
© Federation of Obstetric & Gynecological Societies of India 2018

About the Author

Dr. Mishu Mangla is Assistant Professor in the Department of Obstetrics and Gynecology, Himalayan Institute of Medical Sciences, Dehradun. She did her postgraduation from the prestigious Sawai Man Singh Medical College, Jaipur. She has presented papers and posters in various national and international conferences and won awards for the same. She has keen interest in academic research of clinical significance.

Introduction

Gestational gigantomastia is excessive, incapacitating and diffuse enlargement of unilateral or bilateral breasts that occurs during pregnancy. It is a rare disorder, with an incidence of 1 in 28,000 to 100,000 pregnancies [1]. Although physiological enlargement of breast tissue occurs during puberty and in pregnancy, but in a patient with gigantomastia, the growth is usually acute and massive. Such massive breast growth affects the patient physically as well as psychosocially. Symptoms may range from mastalgia to ulceration and infection, backache and postural problems to chronic traction injury to 4th/5th/6th intercostal nerves resulting in loss of nipple sensation [1]. Lewison et al. [2] described it as ‘True gigantomastia develops rapidly during pregnancy, undergoes regression after delivery, and recurs with subsequent pregnancies’.

Dr. Mishu Mangla MBBS, MS (OBST and GYNAE) is Assistant Professor in the Department of Obstetrics and Gynecology, Himalayan Institute of Medical Sciences, Dehradun.

✉ Mishu Mangla
mishumangla@srhu.edu.in

¹ Department of Obstetrics and Gynaecology, Swami Rama Himalayan University, Dehradun, Uttarakhand, India

Myasthenia gravis (MG) is a heterogeneous group of congenital and acquired disease, which is characterized by fluctuating weakness of skeletal muscles, caused by autoantibodies against postsynaptic acetylcholine receptors. Its prevalence varies between 1 in 10,000 and 1 in 50,000 and about 2/3rd of all affected individuals are females, mainly in their reproductive years [3]. Even though myasthenia gravis has been associated with numerous complications in pregnancy like severe preeclampsia, myasthenia crisis and arthrogryposis multiplex congenital in the newborn, but its impact on pregnancy has not been emphasized much [4]. The effect that myasthenia gravis and other autoimmune diseases have on breast tissue has not been studied much. We present here a case of gestational gigantomastia (GG) in a patient with myasthenia gravis and try to work out a possible association between the two conditions.

Case Report

A 21-year-old primigravida presented in obstetrics OPD at 24 weeks of pregnancy with chief complaint of sudden and excessive enlargement of bilateral breasts from last 2 months. It began in the third month of pregnancy and by sixth month, it had reached up to the level of groin. Due to this rapid growth in both the breasts, she also had back-ache, which was severe enough to affect her movement and daily routine. She also reported to have sociophobia and felt embarrassment due to this condition. Her previous antenatal history was insignificant. There was no history of similar condition in the family. She had been diagnosed with myasthenia gravis 1 year earlier and had also undergone thymectomy for the same 6 months back. The patient had a remitting and relapsing course of the condition and was on tablet pyridostigmine 60 mg twice daily for the same. However, the patient had no episode of exacerbation throughout the antenatal period and gave no history of relapse.

On examination, both the breasts were massively enlarged, reaching up to the level of inguinal ligament in sitting position (Fig. 1). Left breast was bigger than the right one. There were few engorged and tortuous blood vessels visible on the surface of the both breasts; however, there was no ulceration or local or regional lymphadenopathy. There was no abnormal nipple discharge. No lump was palpable in either of the breasts.

On per abdomen examination, uterus was 24 weeks size, relaxed and fetal heart was 150 bpm, regular. The patients investigations were as follows: Hb—11.6 gm% (normal: 12–15 gm%), TLC—8.66 cu/mm (normal: 4–10 cu/mm), TSH—0.32 mIU/ml (normal: 0.34–4.25 mIU/ml), SGOT—36 (normal: < 40 IU/ml), SGPT—35

Fig. 1 Massively enlarged bilateral breasts reaching up to the level of groin. Measurements: breast circumference—102 cm (Right), 106 cm (left); length—sternum to nipple—36.5 cm (right) and 40 cm (left), length from nipple to midline—22 cm on right and 23 cm on left side. Approximate weight—6 kg (right) and 7 kg (left)

(normal: < 40 IU/ml), prolactin—37.2 ng/ml (normal: < 20 ng/ml), calcium—8.9 mg/dl (8.8–11). Her obstetric ultrasound was normal. Sonomammography of the bilateral breasts showed findings suggestive of markedly increased glandular as well as fatty tissue of both the breasts. Subcutaneous edema was also present. There were few small well-defined hypoechoic lesions in bilateral breasts, likely to be fibroadenomas, largest one in right breast measuring 3.5×2 cm at 2'o clock position (Fig. 2). The patient refused biopsy of breast tissue.

Routine ANC visit after 1 month showed further increase in size of the breast tissue, but the enlargement

Fig. 2 Sonomammogram of breast showing markedly increased glandular as well as fatty tissue with fibroadenomas

Table 1 Gestational gigantomastia cases in patients with myasthenia gravis in literature as per Scopus, Pubmed, Google scholar search

S. No.	Ref. No.	Authors	Year	Age	Patient's history and clinical presentation	Management
1.	[9]	A. G. Ship	1965	22	G2P1L1 with history of myasthenia gravis with idiopathic breast enlargement; Histopathology sample showed fibroadenomatosis with extensive adenosis and proliferation of glandular elements with increased vascularization	Bilateral subcutaneous mastectomy
2.	[7]	P. Touraine	2005	26	Patient presented at 16 weeks gestation with massively enlarged breasts and symptoms of myasthenia gravis which was previously undiagnosed; Parity is NK	Failure of medical management f/b surgical reduction of the breast tissue
3.	[7]	P. Touraine	2005	28	K/C/O of myasthenia gravis—on treatment; Parity, gestation and course of disease is not NK	Failure of medical management f/b surgical reduction of the breast tissue
4.	[10]	P. Leampongsabutthi	2006	28	G3P2L2 with 12 weeks gestation with massive bilateral breast enlargement; K/C/O myasthenia gravis, treated with prednisolone and underwent thymectomy 2 years ago	Termination of pregnancy f/b bromocriptine therapy f/b bilateral reduction mammoplasty
5.	[11]	B. Antevski	2008	30	G2P1L2 with 2nd twin pregnancy with history of myasthenia gravis which was in remission during the pregnancy; Bilateral breast enlargement with mastalgia, backache and difficulty in breathing. Histopathology showed dense lobular units with loose collagen fibrestroma and lymphocytic infiltration	Bilateral reduction mammoplasty followed by bromocriptine therapy
6.	[12]	C. Scarabin	2010	27	Primigravida with massive bilateral breast enlargement at 18 weeks of gestation uptil 7 months of pregnancy along with vulvar lactating adenoma of the left labia majora; K/C/O myasthenia gravis from 6 years and on treatment	Planned C-Section at 38 weeks of gestation f/b excision of vulvar mass and bilateral reduction mammoplasty 6 months later

was not very incapacitating, so patient continued with her pregnancy. She went into spontaneous labor at 39 completed weeks of pregnancy and delivered a healthy male child of 3.2 kg vaginally. The intra-partum and post-partum periods were uneventful. Since the patient insisted for medical management, cabergolin was continued for three more months in the post-partum period. Follow up after 3 months of delivery showed a reduction in breast dimensions as well as the weight of breast tissue. Although both the breasts were still massively enlarged, there was a decrease in glandular and stromal tissues, leading to a saggy look. Approximate weight of the breast was 3 kg on either side. As medical management did not lead to complete resolution, reduction mammoplasty has been planned for her.

Discussion

Gestational gigantomastia is a rare disorder, and there is no universally accepted definition for this condition yet. A thorough knowledge about this debilitating disorder is essential among practicing physicians, especially

belonging to specialty of obstetrics and gynecology, as that is where a patient with GG usually approaches first.

Numerous theories have been proposed explaining the underlying etiology of GG. A sudden change in the hormonal milieu, like a sudden increase in estradiol, progesterone or prolactin that observed in puberty or pregnancy, exacerbates the tendency of breast tissue to hypertrophy [5]. Increased hormone receptor sensitivity to the hormones of pregnancy, especially in the setting of underlying autoimmune disorders has also been a topic of interest [6]. However, what causes the breast tissue to respond in an exaggerated manner even to normal amount of hormones still remains a dilemma. An immune reaction has even been evidenced by immunochemical analysis of breast tissues in patients of gigantomastia in the setting of autoimmune diseases. Touraine et al. described eight cases of gestational gigantomastia in patients with autoimmune diseases, out of which four cases were having concurrent myasthenia gravis. Other autoimmune disorders seen in association with GG were Rheumatoid arthritis, systemic lupus erythematosus and autoimmune thyroiditis [7].

The authors also suggest that pregnant patients with myasthenia gravis should be monitored for unusual breast enlargement as well, and if suspected medical management

in the form of Bromocriptine can be initiated in the antenatal period to arrest further growth of breast. The authors have also attempted to review all cases of gestational gigantomastia in patients with myasthenia gravis published in English literature. An extensive electronic search of PubMed, Scopus and Google Scholar databases was made using keywords ‘gestational’ and ‘gigantomastia’, ‘gestational’ and ‘macromastia’ and all cases of GG in patients of myasthenia gravis have been summarized in Table 1. Apart from the present case, the authors found six more cases of GG reported in patients with myasthenia gravis till date.

Even though there is benign hypertrophy of mammary glands, it is very important to rule out the possibility of malignancy. This poses a challenge, as GG typically presents in a manner similar to malignant breast disorders with the rapid enlargement, edema, necrotic changes of breast skin, with peau d’orange appearance in some cases and even associated with bilateral axillary lymph node enlargement in few cases. For this reason, a complete evaluation with histologic examination of breast tissue is required.

Management of GG varies from case to case. The reason may be due to very few cases reported in literature and no clear-cut guidelines for management of this condition. The treatment can be medical or surgical. The mainstay of medical treatment is bromocriptine and cabergoline. Our patient showed some improvement in symptoms and a reduction in breast size up to 2.5 inches when she was administered cabergoline in post-partum period. However, the reduction in breast size was not satisfactory reduction mammoplasty has been planned for patient.

When medical management fails to relieve the patient, surgical intervention is required. The two available options are bilateral mastectomy with delayed reconstruction and the other one is reduction mammoplasty. Bilateral mastectomy with delayed reconstruction offers lowest risk of recurrence in subsequent pregnancies and has an additional advantage of less operative blood loss. Reduction mammoplasty is cosmetically better for the patient, but there are more chances of recurrence and perioperative blood loss. Hence, if the woman wishes to get pregnant in future, bilateral mastectomy is the best option. However, if the patient is not planning pregnancy in future and understands the possibility of increased operative blood loss with more chances of need for blood and blood product transfusion, then breast reduction mammoplasty is also a good option [8]. Reduction mastectomy has an additional advantage of postoperative breastfeeding function of the breast, the main disadvantage of this procedure is that even the small amount of breast tissue that is left behind can undergo significant hyperplasia in next pregnancy to present again

as gigantomastia. Obviously, bilateral mastectomy with delayed reconstruction would have this advantage of less chances of recurrence, especially in cases, in which the patient is desirous of future pregnancies.

Gestational gigantomastia in itself is a rare entity, and its presence in a patient with myasthenia gravis makes this case even more interesting. Whether the occurrence of GG in patients with myasthenia gravis is just a coincidence or due to some unknown humoral factors that still remain to be elucidated, may be a topic of interest for further research.

Acknowledgements All the authors are thankful to Dr. Deepak Singla, Assistant Professor, Department of Anesthesia, AIIMS Rishikesh for helping in editing of the manuscript.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was taken from the patient.

References

1. Dancey A, Khan M, Dawson J. Gigantomastia—a classification and review of literature. *J Plast Reconstr Aesthet Surg*. 2008;61:493–502.
2. Lewison EF, Jones GS, Trimble FH, et al. Gigantomastia complicating pregnancy. *Surg Gynecol Obstet*. 1960;110:215.
3. Plauche WC. Myasthenia gravis. *Clin Obstet Gynaecol*. 1983;19:592–604.
4. Batocchi AP, Majolini L, Evoli A, et al. Course and treatment of myasthenia gravis during pregnancy. *Neurology*. 1999;52(3):447–52.
5. Moss WM. Gigantomastia with pregnancy: a case report with review of literature. *Arch Surg*. 1968;96(1):27–32.
6. Mangla M, Singla D. Gestational gigantomastia: a systematic review of case reports. *J Mid-life Health*. 2017;8:40–4.
7. Touraine P, Youssef N, Alyanakian MA, et al. Breast inflammatory gigantomastia in a context of immune-mediated diseases. *J Clin Endocrinol Metab*. 2005;90:5287–94.
8. Swelstad MR, Swelstad BB, Rao VK. Management of gestational gigantomastia. *Plast Reconstr Surg*. 2006;118(4):840–8.
9. Ship AG, Shulman J. Virginal and gravid mammary gigantism—recurrence after reduction mammoplasty. *Br J Plast Surg*. 1971;24:396–401.
10. Leampongsabuthi P, Khantipong N. Gigantomastia during pregnancy at Lampang Hospital Case report. *Lampang Med J*. 2006;27:11–7.
11. Antevski B, Jovkovski O, Filipovski V, et al. Extreme gigantomastia in pregnancy: case report—my experience with two cases in last 5 years. *Arch Gynecol Obstet*. 2011;284(3):575–8.
12. Scarabin C, Koskas M, Bornes M. Gigantomastia and vulvar lactating adenoma in a patient with myasthenia during pregnancy. *Am J Obstet Gynecol*. 2010;12:5–8.