



Neonatal giant mastaxe: a case report

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Introduction and importance: Giant mastaxe is an uncomplicated physiological enlargement of the breasts in newborns, characterized by a breast bud diameter greater than 3 cm. While most newborns have some degree of breast enlargement, giant mastaxe is rare, which may be unnecessarily intervened upon.

Case presentation: A 13-day-term male neonate presented with bilateral breast enlargement and milky nipple discharge, which worsened upon breast massage. The mother had an uneventful pregnancy, and neither the mother nor the baby had a history of drug intake. The examination revealed soft, non-tender, non-erythematous bilateral breast swellings measuring 3.6 × 3.8 cm on the right side and 3.2 × 3.4 cm on the left side. Ultrasonography confirmed their hypoechoic nature with minimum vascularization. The white blood cell count, C-reactive protein levels, and culture of nipple discharge yielded normal results. The baby was discharged, and upon follow-up after 2 weeks, it was observed that breast swellings had spontaneously reduced in size.

Discussion: Neonatal breast enlargement can occur as a result of either the transplacental transfer of maternal estrogens or declining levels of estrogens toward the end of pregnancy, leading to hyperprolactinemia. However, the exact reasons behind the occurrence of giant mastaxe in some newborns remain incompletely understood. It may be due to increased sensitivity of the breast tissue to estrogens.

Conclusion: Proper clinical examination, along with the use of ultrasonography and/or laboratory investigations if required, is essential to differentiate giant mastaxe from neonatal mastitis or breast abscess. Treatment primarily involves observation and providing reassurance to parents.

Keywords: breast enlargement, case report, giant mastaxe, neonate

Introduction

Physiological enlargement of the breasts is a common occurrence in newborns, observed in ~60–90% of them^[1], with the typical size ranging from 1 to 2 cm^[2]. The term ‘neonatal mastaxe’ is used to describe uncomplicated physiological breast enlargement, characterized by a breast bud diameter 3 cm or less, which occurs under the influence of hormones in newborns. It originates from the combination of two Greek words ‘mastos’ (breasts) and ‘auxein’ (increase in size). Giant mastaxe, on the other hand, refers to an exaggerated form of neonatal mastaxe, characterized by a breast bud diameter exceeding 3 cm^[3]. Breast enlargement in newborns typically manifests during the first week of life and tends to resolve spontaneously within ~6 months. It is not

HIGHLIGHTS

- Giant mastaxe is an uncomplicated breast enlargement in newborns with a breast bud diameter larger than 3 cm.
- It should be differentiated from neonatal mastitis, as untreated mastitis can result in various complications.
- Observation and reassurance are the treatments for giant mastaxe.
- Being larger in size than most enlarged breasts in newborns, giant mastaxe may be unnecessarily intervened upon.

influenced by the baby’s sex and can occur either unilaterally or bilaterally. Furthermore, breast enlargement in newborns may be accompanied by galactorrhoea, also referred to as witch’s milk^[4].

While physiological breast enlargement in newborns is a common phenomenon, giant mastaxe is a rare condition, with only a few reported cases in the literature. We report a rare case of a 13-day male neonate with giant mastaxe. This case has been reported in line with the Surgical CAse REport (SCARE) 2020 criteria^[5].

Case presentation

A 13-day-term male neonate presented to the Pediatric Outpatient Department with bilateral breast enlargement since birth and nipple discharge for the last 4 days. Breast enlargement was progressive in size and nipple discharge was milky. The mother reported a history of squeezing the neonate’s breasts in an attempt to reduce their size. There was no history of redness of the

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breasts, fever, trauma, or any drug intake other than iron and calcium supplements taken by the mother. The baby was born at 41 weeks of gestation through an emergency lower segment cesarean section due to failed induction of labor. The baby had a birth weight of 2800 g and received Apgar scores of 7, 8, and 9 at 1, 5, and 10 min of life, respectively. The baby cried immediately after birth and passed both urine and meconium within 24 h of life. The mother had regular antenatal care visits and no history of maternal infections or any complications related to pregnancy.

On examination, the baby had a normal body temperature and a heart rate of 144 beats per minute. The respiratory rate was 50 breaths per minute, and the capillary refill time was less than 3 s. The oxygen saturation level was 98% on room air. The systemic examination revealed no abnormalities. When examining the chest, bilateral breast swellings were found. The swelling was soft in consistency, non-fluctuant, non-tender, and non-erythematous. The approximate size of the swelling was 3.6 × 3.8 cm on the right side and 3.2 × 3.4 cm on the left side. No nipple or skin changes were noted during palpation (Fig. 1). There was no active nipple discharge.

The laboratory evaluation showed a normal white blood cell count and C-reactive protein level. The culture of the nipple discharge yielded no growth. Ultrasonography of the bilateral breasts revealed well-defined hypoechoic masses measuring 3.4 × 3.7 cm on the right side and 3.0 × 3.3 cm on the left side. No loculated fluid collections or significant vascularization were observed. Based on clinical examination, laboratory evaluation, and ultrasonographic findings, the possibility of breast abscess or any other inflammatory changes was ruled out. Due to the size of the breast swellings being greater than 3 cm, a diagnosis of ‘giant mastauxe’ was established. The baby was discharged, and the mother was advised not to squeeze the breasts. During the follow-up visit after 2 weeks, the swellings were significantly reduced and there was no evidence of infection (Fig. 2).

Discussion

Gynecomastia, which is the most common alteration in male breast tissue, can be categorized as physiological (25%), idiopathic (25%), or pathological (50%). Major mechanisms leading to its development are excess estrogens, androgen deficiency, and an altered estrogen-to-androgen ratio. Gynecomastia can be caused by a range of endocrine disorders, including thyroid disorders, hyperprolactinemia, estrogen-secreting tumors, and male hypogonadism. Additionally, non-endocrine disorders such as chronic liver disease and chronic kidney disease can also contribute to the development of gynecomastia^[6]. In neonates,



Figure 1. Bilateral breast enlargement.



Figure 2. Reduced breast size after 2 weeks.

whether male or female, either the maternal transfer of estrogens or a fall in the level of estrogens at the end of pregnancy, which subsequently leads to hyperprolactinemia, is the explanation for physiological breast enlargement^[7] (Fig. 3).

Neonatal mastitis is the most common differential diagnosis of neonatal mastauxe. Differentiating between them is important because neonatal mastitis requires hospitalization and antibiotics, whereas neonatal mastauxe requires only observation and reassurance. Furthermore, untreated mastitis may be complicated by breast abscess, cellulitis, fasciitis, osteomyelitis, cerebral abscess, or generalized sepsis^[8-10]. Clinically, tender, erythematous, fluctuating palpable breast mass with purulent discharge and enlarged lymph nodes favors the diagnosis of mastitis, and such features are not usually present in neonatal mastauxe. On ultrasound, poorly marginated hyperechoic tissue with increased vascularization favors neonatal mastitis, whereas neonatal mastauxe is characterized by heterogenous well-defined hypoechoic breast tissue or hypoechoic retro areolar tissue with central star-shaped or linear hypoechoic areas and minimum vascularization^[8]. In our case, clinical examination, ultrasound features, and laboratory evidence of normal cell count and C-reactive protein helped to rule out infective conditions like mastitis or breast abscess.

Squeezing and expressing milk to reduce the size of swelling may lead to further enlargement, prolonged secretion, irritation, or infection by disrupting the dermal integrity and facilitating the dissemination of microorganisms^[11,12]. Similar to the case reported by Meshram *et al.*^[4], our patient began to have nipple discharge and increase in size after breast massage by the parents. It is a popular belief in our part of society that breast massage and

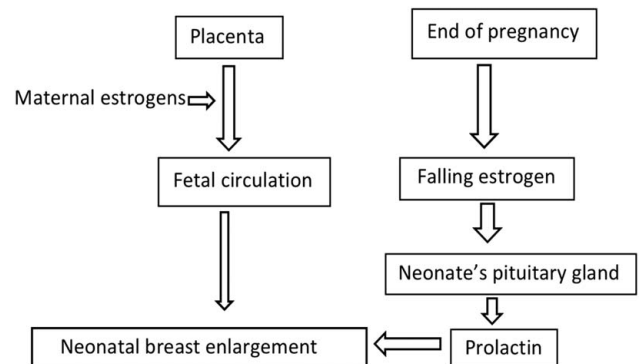


Figure 3. Mechanism of neonatal breast enlargement.

squeezing to express milk reduces size and brings good shape later in life in the case of the female gender. However, it further aggravates the problem and brings various complications.

Galactorrhea is more common in newborns with larger breast nodules and mostly occurs within 2 weeks of life. It resolves faster in those with smaller breast size, and transiently it may increase between 2 and 5 weeks of life if the breast size is initially larger^[13]. Neonatal milk protein has a similar concentration to maternal milk in terms of IgA, IgG, lactoferrin, lysozyme, and albumin^[14]. Although the mechanism of breast enlargement in the newborn has been known, the reason why some newborns have giant mastaxe is not completely understood. It may be due to increased sensitivity of the breast tissue to estrogens.

Conclusion

Giant mastaxe of the newborn, being greater in size than most cases of physiological enlargement of the breast, may be unnecessarily intervened by parents or physicians, potentially leading to various complications. Giant mastaxe should be differentiated from mastitis or breast abscess by proper clinical examination, ultrasonography, and laboratory evidence. Regardless of the size of the breast tissue, observation and reassurance are the recommended treatment.

Ethical approval

Ethical approval is not required for case reports from the ethics committee at our institution.

Consent

Written informed consent was obtained from the patient's parents for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author's contribution

V.P.P.: conceptualization, writing – original draft preparation, literature review, and final manuscript approval; D.M.: conceptualization, literature review, manuscript editing and review, supervision, and final manuscript approval.

Conflicts of interest disclosure

There are no conflicts of interest.

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