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Bilateral Juvenile Gigantomastia in a 16-Year-Old Adolescent: A Case Diagnosed at the University Hospital Center of Kara, Togo

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Abstract

Introduction: Juvenile gigantomastia, or virginal breast hypertrophy, is characterized by a debilitating increase in breast volume during adolescence. We report the case of a 16-year-old girl with bilateral gigantomastia. **Case Report:** The patient was a 16-year-old girl, nulligravida, with progressively developing and debilitating bilateral gigantomastia. She received primarily medical and surgical treatment, consisting of superior pedicle reduction mammoplasty, at the Gynecology-Obstetrics Department of the University Hospital Center of Kara (CHU Kara) in northern Togo. **Conclusion:** Juvenile gigantomastia is a rare condition. It is debilitating for a patient in active growth and has psychological impacts. Treatment involves both medical and surgical approaches. Pregnancies are possible, and recurrences are not uncommon.

Keywords

Gigantomastia, Adolescent, Bilateral, Togo

1. Introduction

The breast is the organ responsible for lactation, rudimentary in men and children, and well-developed in women from puberty. Its development begins before the first menstruation and can continue beyond. The changes in the shape and volume of the breasts are due to the growth of the mammary gland tubules, adipose tissue, and the supportive tissue of the breast. The mammary gland usually

completes its development around the age of 14 - 15 years [1] [2].

After puberty, the extensive ductal system enlarges, all under the influence of the main hormones (estrogen and progesterone) [2]. This growth can lead to abnormalities, including juvenile gigantomastia.

Gigantomastia is an excessive increase in breast volume characterized by a breast weighing 1500 g or more, compared to a normal breast with an average weight of 300 g. It is most often observed in overweight patients. It is termed juvenile or virginal breast hypertrophy when it is characterized by a debilitating increase in breast volume in adolescents. This is a benign condition that occurs most often during puberty, before menarche [3]-[6]. Given its timing, the etiology is thought to be related to an underlying hormonal disorder. Recent studies describe the crucial biological role of estrogen receptor α, ERα, in increasing tissue sensitivity to estrogens and aromatase, responsible for local tissue production, biological factors involved in juvenile gigantomastia. Genetic factors are also implicated [2] [7].

Clinically, it manifests as an excessive, rapid, bilateral increase in breast volume. From a pathological standpoint, it combines lobular atrophy with the development of juvenile units of mammary ducts [6] [8]. It is a major morphological anomaly of the adolescent breasts. Given the significant role breasts play in a woman's life, the physical and psychological impacts are severe, often prompting parents or the adolescent herself to seek treatment [9]-[12]. Treatment of this condition occurs in two phases: first, medical, combining a nor-steroidal progestin and a continuous anti-estrogen; then surgical, through plastic surgery.

Globally, this is a benign condition of adolescents, rare in the Caucasian population [5] [11].

In 1992, 32 cases of juvenile gigantomastia were reported in Greece [8]. In France, authors have reported 20 cases of gigantomastia, including one involving a 16-year-old adolescent [9]. Cases termed as gestational gigantomastia have been documented in the literature, with an incidence of approximately one case per 100,000 births, especially during the first trimester of pregnancy [13].

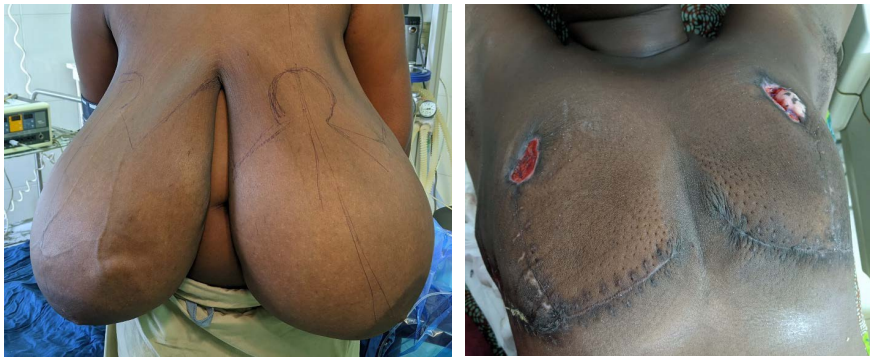
In sub-Saharan Africa, 3 cases have been reported in Côte d'Ivoire, 2 in 2010 and 1 in 2023 [4] [5]. To our knowledge, no cases have been reported in Togo. It seems timely for us to report the case of a 16-year-old girl with bilateral gigantomastia who was admitted to the University Hospital Center Kara (CHU Kara), a reference center in the northern region of Togo. It serves as the last resort for peripheral centers in the northern region of Togo.

2. Observation

This is Miss T.A, a 16-year-old student in the second year of secondary school who began menstruating at the age of 13. She was admitted in September 2023 for a progressively increasing bilateral breast enlargement with no associated nipple discharge, which had been developing for 3 years.

She has no family history of breast disease and has not undergone any long-term treatment. Clinical examination revealed a very significant, asymmetric in-

crease in the size of both breasts, with marked ptosis. Palpation revealed multiple firm, painless, regular nodules, with the most superficial ones being mobile, dispersed throughout the mammary parenchyma, and decreased sensitivity in the areola-nipple areas. There was no nipple discharge associated with nipple expression. The axillary and supraclavicular lymph node areas were free of any lymphadenopathy (**Figure 1(a)**).



(a) (b)

Figure 1. Front views of the breasts before and after the surgical procedure. (a) Breasts before the reduction surgery, front view; (b) Bilateral breast reduction, top view.

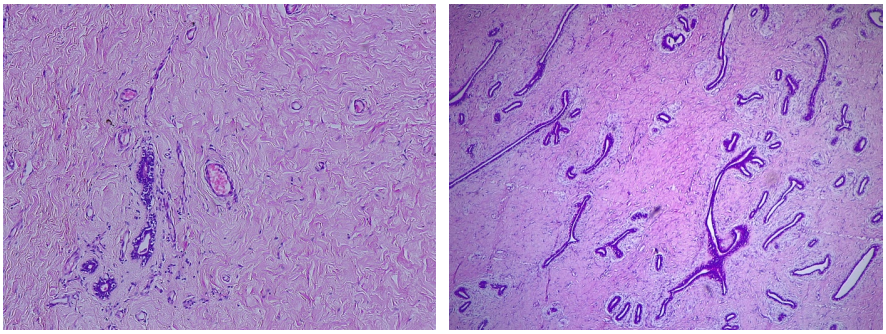
A breast ultrasound performed in September 2023 showed multiple probably benign tissue lesions in both breasts, suggestive of adenofibromatosis, classified as BIRADS 3. Hormonal assays for estrogen and prolactin were not conducted.

A preoperative assessment was performed: measurements of the areola diameter, location of the future areola-nipple complex (ANC), and the design of the skin-glandular resection. The sternum-nipple distances were each 34 cm. Psychologically, she was subject to teasing and stigmatisation by her classmates due to the size of her breasts, causing her to become withdrawn.

In October 2023, a breast biopsy was performed, followed by bilateral breast reduction.

The standard histological examination of the micro-biopsy of the nodules and the surgical specimens revealed a proliferation with both fibrous and adenomatous components, without signs of malignancy. The rest of the mammary parenchyma showed dense collagenous fibrosis, interspersed with rare adipocytes and lobular atrophy (**Figure 2(a)** and **Figure 2(b)**). The diagnosis of bilateral breast adenofibroma in the context of gigantomastia was made.

The patient underwent breast reduction surgery with a superior dermal-glandular pedicle. The procedure was performed under general anesthesia, with the patient in a supine position. A total breast reduction of 8 kg was achieved (4.5 kg from the left breast and 3.5 kg from the right breast) over approximately 4 hours. A Redon drain and a compressive dressing were applied at the end of the procedure. The hospitalization lasted 5 days. An elastic support sports bra was prescribed to be worn day and night following the procedure. There were no immediate postoperative complications.



(a) (b)

Figure 2. Histological aspects of the lesions. (a) (HESX100): Fibro-collagenous parenchyma with lobular atrophy; (b) (HESX40): Fibrous and adenomatous hyperplasia (adenofibroma).

Three weeks post-surgery, there was a bilateral suppuration of the areola-nipple complexes (ANC) (**Figure 1(b)**). The patient followed a daily dressing with dermal betadine until healing, which took 3 weeks. There have been no recurrences to date.

3. Discussion

3.1. Epidemiology

Juvenile gigantomastia is a rare benign breast condition. Its incidence is very low, especially in the Caucasian population. In the literature, it is most often reported as case studies [2] [6] [10]. In our context, this rarity may be understated due to a lack of awareness of the condition in our areas.

A few cases have been reported in Africa: 3 cases in Côte d'Ivoire in 2010 and 2023, and 1 case of gestational gigantomastia in Senegal in 2015 [14]. There is no universal classification or validated definition of this condition.

No etiology has been identified in our context due to inadequate technical resources. However, recent studies highlight the significant role of ERα and aromatase in juvenile gigantomastia [2] [7] [8]. ERα increases tissue sensitivity to estrogens and aromatase, thereby promoting local tissue production. The absence of ERα is believed to be responsible for this condition. Other authors have mentioned autoimmune diseases among other factors, due to hormonal influences [15]. The investigation into the involvement of growth factors appears justified due to stromal hyperplasia noted in histology. Thus, cases of gigantomastia have been found in patients who have undergone liver transplantation for alpha-1 antitrypsin deficiency, thyrotoxicosis [1], systemic lupus erythematosus [16], and congenital anonychia [17].

3.2. Diagnosis

The signs that often lead parents to seek a consultation vary and are marked by: a very rapid increase in breast volume becoming unaesthetic for the minor, scapular pain, and postural disorders of the spine [10]. In our case, the consultation delay was 3 years, indicating a delay in seeking medical attention in our environment.

This delay is explained by the parents' ignorance, lack of financial resources for care due to the absence of health insurance.

Diagnosis is primarily clinical, characterized by a breast weighing 1500 g or more, compared to a normal breast with an average weight of 300 g [11]. It is predominantly bilateral with an inflammatory appearance, skin thickening, and engorgement of breast veins.

Imaging is not very contributive and is often laborious due to the breast volume. It shows edematous thickening of the cutaneous and glandular structures [18] [19]. It helps to characterize or detect associated lesions.

Hormonal assessments often show a variable increase in prolactin levels not linked to a pituitary abnormality. This assessment was not conducted in our context due to financial constraints.

Histologically, juvenile gigantomastia is marked by florid stratified epithelial proliferation with papillary structures, without atypia, and vacuolated epithelial cells indicating significant secretory activity. In the stroma, edema, sclerosis, and necrosis are found. The exaggerated appearance in this context should not overshadow the possibility of other rare breast pathologies like breast lymphomas [19]. In our context, we initially performed a micro-biopsy with histological examination confirmed on surgical specimens. It was a proliferation with both fibrous and adenomatous components, with no signs of malignancy. Similar results have been reported in the literature [1] [5].

Medical evaluation aimed at aiding therapeutic decision-making highlighted the difficulties she faces in daily life (unaesthetic appearance, spinal postural disorders, psychological burden related to judgments from those around her).

3.3. Treatment

In our case, medically, the patient experienced spinal pain and difficulty walking due to kyphosis and the weight of her breasts. Psychologically, she faced stigma at school and was often mistaken for being pregnant by her peers. Her health condition exempted her from sports activities.

The management was primarily medical through supportive psychotherapy in our case, followed by surgical intervention via breast reduction, as reported in several studies [20] [21].

In the literature, there is a discrepancy in the weight of the reduction, ranging from 0.8 to 2 kg. Three main techniques are described according to Loury *et al.* [22] [23]: the areolar graft amputation described by Thorek, the superior dermal-glandular pedicle, and the inferior dermal-glandular pedicle. For the latter two techniques, the advantage lies in preserving the areola-nipple complex (ANC), with significant risks of necrosis. To apply these techniques to major hypertrophies and gigantomastias, the sterno-nipple distance must be less than 35 cm [B], and the pedicle carrying the nipple should be broad, adhering to the principle of a random flap ($L/l < 2$) [1].

In our context, the superior pedicle technique was used based on preoperative

evaluation. The risk with this technique is necrosis of the areola-nipple complex, as noted as a complication in this context, with more or less complete closure. A graft of the nipples from the genitocrural folds would be an alternative. Some authors sometimes opt for tattooing. This option is possible in our context, but the risk of keloids is often high in the black race.

In our context, we opted for the graft. The lack of financial means for treatment and the absence of health coverage explain the delay in her care.

The literature indicates that there is no ideal technique for correcting breast hypertrophy and ptosis. The choice of technique is adapted to the preoperative situation: techniques with a periareolar scar allow for the correction of small ptosis (2 to 3 cm), possibly combined with the placement of an augmentation prosthesis; hypertrophies require the use of a superior pedicle technique, leaving a vertical scar or an "anchor" with a short horizontal branch; large hypertrophies necessitate the use of inferior pedicle techniques or even a free areolar graft. It is essential that these techniques, with their advantages and disadvantages, are discussed with the patient before the operation. Under these conditions, the correction of breast hypertrophy remains a procedure that satisfies the majority of patients [21] [23].

In our context, the outcomes of the treatment were satisfactory compared to her previous state, according to her. She was very pleased with the comfort, femininity, and psychological well-being achieved. Nevertheless, addressing the complications would further enhance her physical, mental, and psychological well-being.

Recurrences are possible. To address this issue, some teams have attempted medical treatment with Tamoxifen. Baker *et al.* [22] suggest that Tamoxifen could be a useful adjuvant treatment to help maintain stable results. In our context, there have been no recurrences after 6 months to a year of medical follow-up without hormonal treatment.

4. Conclusion

Juvenile gigantomastia is a rare condition. It is debilitating for a patient who is still growing, as in our case, and has psychological impacts. Treatment involves both medical and surgical approaches. Today, there are several surgical techniques available with favorable outcomes. Pregnancies are possible, and recurrences are not uncommon. Our patient underwent reduction surgery without recurrence. This condition has significant psychological consequences, often requiring a multidisciplinary approach. Health coverage would improve management in our setting given the challenging conditions.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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