

MASSIVE CHRONIC BILATERAL GYNECOMASTIA IN A MIDDLE AGED MAN: A CASE REPORT

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ABSTRACT

Gynecomastia is defined as enlargement of the male breast and derives its origin from 2 Greek words- 'gyne' and 'mastos' which mean "woman's" "breast". Gynecomastia is a clinical condition and often has three radiological patterns which are nodular, dendritic and diffuse glandular patterns. We report a case of a 42 year old man of Hausa-Fulani descent with massive bilateral breast enlargement of multifactorial origin. Investigations done included thyroid function test, liver function test and additional basic blood workup. A mammogram was done, which was followed by breasts ultrasound. Additional radiological imaging included abdominal and testicular sonograms and diagnosis of massive bilateral gynecomastia was made. Anti-psychotics are a documented cause of gynecomastia while thyroid dysfunction is an often overlooked etiology of male breast enlargement. Medical treatment may address the underlying pathology in some cases; however, surgical reconstruction must be considered in severe, chronic cases as it addresses the physical deformity which is a significant cause of depression in these patients. The role of radiology in excluding the causes of gynecomastia cannot be overemphasized and is pertinent in the management of this condition.

KEYWORDS: Massive, Gynecomastia, Mammography, Sonomammography

INTRODUCTION

Gynecomastia is defined as the benign enlargement of the male breast, usually, a result of stromal proliferation and ductal hyperplasia. This benign proliferation of glandular breast tissues in men can be physiological or non physiological^{1,2}. Physiological gynecomastia, is commonly asymptomatic and has a trimodal age

distribution, occurring in neonates, adolescents and elderly males with prevalence ranging from 60 – 90 % in neonates, 50 – 60% in adolescents and up to 70% in elderly men aged 50 – 69 years respectively³. Some studies have shown that up to 90% of newborn boys have palpable breast tissues and in these cases at least, it is believed to be as a result of transplacental transfer of maternal estrogen with spontaneous resolution within a few weeks after birth².

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Gynecomastia outside the above age groups is uncommon, usually non-physiological, can occur at any age and is often unilateral (as shown in 70% of one series) or bilateral and is usually as a result of medical conditions, medications or substance abuse^{1,2}. Medication and substance abuse are the commonest causes of non-physiological gynecomastia. Many drugs including antipsychotics (haloperidol), exogenous sex hormones (estrogen) as well as

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several medications used to control and treat a handful of medical conditions such as hypertension (methyldopa), peptic ulcer disease (cimetidine, omeprazole), anxiety (diazepam) and cardiac failure (thiazide diuretics) are notable causes. Well documented causes of gynecomastia in the realm of endocrine disorders include hyperthyroidism, Klinefelter syndrome and hypogonadism^{2,4,5}. We present a case of massive chronic bilateral gynecomastia in a 42 year old man.

CASE REPORT

A.M., a 42 year old Man of Hausa-Fulani descent, presented to the breast imaging unit of Radiology Department, Aminu Kano Teaching Hospital (AKTH) for a breast ultrasound with a complaint of bilateral breast enlargement. He gave a one year history of bilateral and almost symmetrical painless, breast enlargement. He denied any history of substance abuse but there was a history of haloperidol use after RTA. There was no history of neck pain or swelling, testicular pain or swelling, yellowish discoloration of his eyes, abdominal pain or swelling and body swelling. He however admitted to been involved in a road traffic accident (RTA) 3 year ago as a result of which he was hospitalized with head trauma and managed with a prescription antipsychotic (haloperidol). He has been on this drug for the same duration.

On examination, we found a male patient who appeared withdrawn from his surroundings. He was over dressed for the hot weather wearing 2 shirts and 2 sweatshirts, and sitting with his arms folded high across his chest in what looked like an attempt to conceal his breast enlargement from other patients. Inspection of the chest with the patient's clothes removed revealed bilateral symmetrical pendulous breast enlargement (figures 1a and b) Clinical breast examination showed massively enlarged breasts bilaterally. No masses were palpable within the breasts and examination of the axillae was normal.

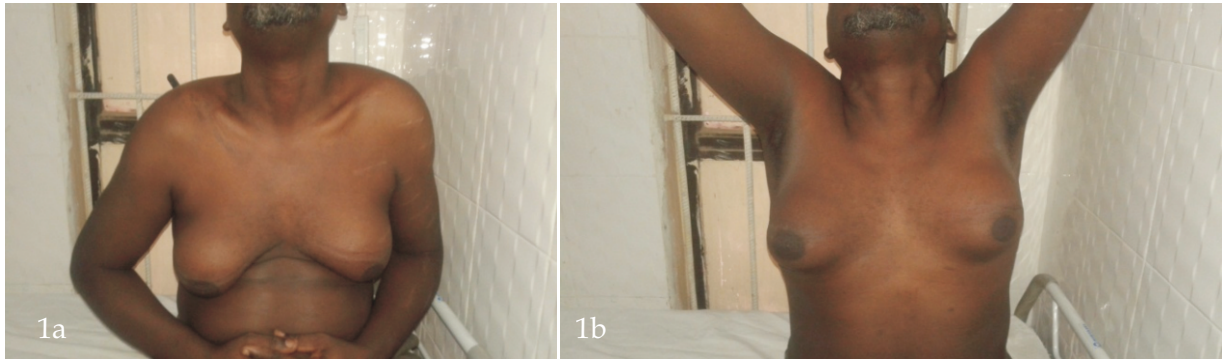
No abnormal findings were noted on examinations of the neck, abdomen and external genitalia. The pattern of hair on the patients head, axilla and pubic regions were normal.

Mammography of the breasts with cranio-caudal (CC) and medio-lateral oblique (MLO) views were done and showed bilateral retroareolar flame shaped densities with prominent extensions into the deeper adipose tissue (figures 2a and b). Based on these findings, a BIRADS 2 category was assigned to our patient (ie Normal mammogram with regards to the composition of breast tissues present which is a definitely benign findings).

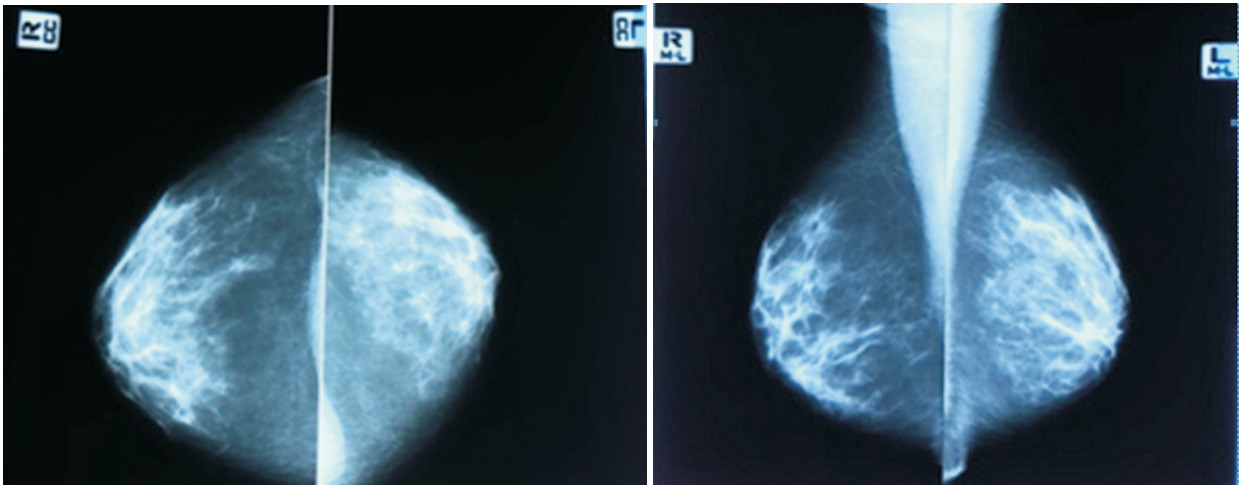
Sonomammography showed predominantly fatty breasts with bilateral irregular hypoechoic retroareolar flame shaped tissues (figures 3a and b). No masses or architectural distortion suggestive of a malignancy were seen. The axillae were free and normal. Sonographically, no skin thickening was noted and the nipples were normal. Sonographic examination of the thyroid, Testes and abdomen were normal.

Liver function test (LFT), serum proteins and a thyroid function test (T3, T4, TSH) were done and revealed elevated triiodothyronine (T3 3.9nmol/L; range: 1.3-3.1) and thyroxin (T4 >320nmol/L; range: 66-181). Thyroid stimulating hormone was normal (1.28mu/L; range: 0.3-4.2). His urine tested negative for alcohol, barbiturates and benzodiazepine. The above findings could suggest use of antipsychotic medication and primary hyperthyroidism as the cause of the massive gynecomastia seen in our patient. Diagnosis of massive chronic bilateral gynecomastia was then made based on past medication history of antipsychotic usage (haloperidol) after a road traffic accident 3 years ago and laboratory proven elevated thyroid hormones (T3 and T4).

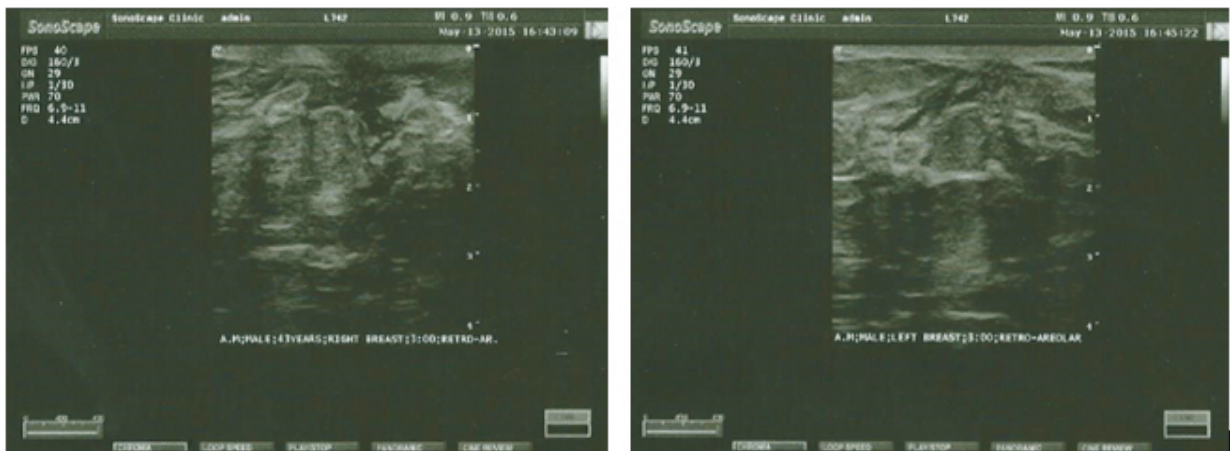
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Figures 1a and b: 42-year old male with gynecomastia



Figures 2 a and b: Mammograms (a – craniocaudal view; b – mediolateral oblique) showing flame-shaped sub-areolar densities with prominent extensions into the deeper adipose tissues.



Figures 3a and b: Sonomammograms of both breasts showing flame-shaped, retro-areolar hypodensities.

DISCUSSION

Gynecomastia in a middle aged man can be gravely disturbing and embarrassing. Thus, identifying the primary cause is cardinal as many of the precipitating factors if detected early, are reversible. Furthermore, systematic evaluation to rule out the more life-threatening etiologies of gynecomastia is of utmost importance because even though gynecomastia and male breast cancer are not believed to be a transition from one disease process to another, Stavros et al⁷ stated that men who developed breast cancer are likely to have an underlying long standing gynecomastia with some studies reporting up to 40% of breast cancers been associated with gynecomastia^{6,7}. Gynecomastia can be unilateral or bilateral and described clinically as mild, moderate and severe⁸.

Medications and substance abuse are the most common causes of non-physiological gynecomastia after persistent pubertal gynecomastia with as much as 20% of cases of post adolescent gynecomastia being caused by medications. Haloperidol is a recognized cause of gynecomastia^{1,2,8} and our patient has being on this drug for a duration of 3 years.

Mechanisms which can cause drug induced gynecomastia include anti-androgenic or estrogenic properties of some drugs and stimulation of hyperprolactinemia. Haloperidol causes gynecomastia via the latter mechanism^{1,7}. A few drugs lead to gynecomastia via unknown mechanisms. Medication induced gynecomastia can only be reversible if the causative agent is withdrawn early; as long standing cases become refractory and eventually irreversible^{2,9}.

Hyperthyroidism in males is an uncommon cause of gynecomastia though this association has been well documented with about 10-40% of cases in some studies. However, it is rarely seen as the primary presenting feature of this disease^{2,5} It represents an imbalance between estrogen and testosterone and the factors

responsible for the deranged sex hormone ratio include increase in sex hormone binding globulin, increased peripheral aromatization of androgens, increased glandular secretion of estrogens and increased circulating levels of LH. Other associated factors responsible for the gynecomastia seen in cases of male thyrotoxicosis include hyperprolactinaemia and hypogonadism^{2,5}. The index patient showed none of these associated factors.

Radiological imaging of males with an area of palpable or tender concern in the breast can be complex and involve imaging other organs such as the thyroid, testes and liver. Imaging modalities available for use in male patients with breast complaints include mammography, ultrasound scan and MRI. Usually mammography and ultrasound scan are sufficient to make diagnosis of a breast lesion and, therefore, MRI is rarely required. Moreover, MRI is not widely available in all centers and may be expensive even when available. Overall, breast imaging in male patients should be guided by examination^{2,10}. We performed a mammogram and ultrasound of his breast, thyroid, liver and the testes. MRI was not available in our center and was not seen as essential for diagnosis.

Mammography is the imaging modality of choice and is usually sufficient to make a diagnosis of gynaecomastia (true gynaecomastia) and to rule out lipomastia (pseudo-gynaecomastia) and often requires only CC and MLO views of both breasts^{1,7}. Occasionally, pectoralis-displaced views may be required for men who have well developed pectoral muscles. Lipomastia is defined as fatty enlargement of the male breast which on mammogram is seen as radiolucent fatty tissues and on ultrasound may have only a very small parenchymal bud unilaterally or bilaterally^{8,10,11}. It is worthy of note that, though, majority of patients present with unilateral symptoms of breast enlargement, mammographically detected gynecomastia is seen bilaterally and it is often asymmetrical^{9,12}.

Three mammographic patterns of gynecomastia are nodular, dendritic and diffuse. Nodular gynecomastia is the pattern seen in the florid early phase of the disease as a subareolar density which is often fan shaped and blends into the surrounding subcutaneous fat, thus its indistinct borders. It results from ductal and stromal proliferation with loose cellular stroma and surrounding edema in patients with gynecomastia of less than one year duration^{1,8,9}. Dendritic pattern of gynecomastia, also known as the fibrotic phase appears as a "flame-shaped" subareolar density radiating from the nipple into the deeper adipose tissues via linear interdigitating projections. The small subareolar density is larger in size than that seen in the nodular subtype and may appear spiculated. This phase is also called the chronic quiescent phase of gynecomastia and often shows an irreversible mammographic abnormality due to the presence of acquired fibrosis which eventually occurs^{1,9,11}. Our patient showed similar subareolar densities and prominent extensions into the deep adipose tissues.

Diffuse glandular pattern of gynecomastia is the third mammographic pattern, typically seen in patients receiving high dose of exogenous estrogen therapy and this form of gynecomastia mimics the pattern of the female breast but lacks Cooper's ligaments^{1,9,11}. Mammographic appearance here is that of a heterogeneously dense breast resembling the female breast. A fourth, less frequently documented mammographic pattern is the combined pattern between dendritic and diffuse glandular patterns of gynecomastia¹² which was the case seen in our patient. There is a paucity of data on sonographic appearance of gynecomastia, indeed, it is unclear whether this imaging modality used alone or in combination with mammography is beneficial in the diagnosis of gynecomastia. Some radiologists resort to the use of ultrasound when mammographic findings are suspicious or atypical¹².

As a part of our departmental protocol for imaging the male breast, mammography is followed by sonomammography in all male patients and they were carried out in this order for this patient. Our literature search revealed that 'Flame-shaped' or triangular retroareolar densities were the most commonly described sonographic patterns of gynecomastia in adults^{1, 12}. Wigley et al¹³ described 2 sonographic patterns: a focal and diffuse pattern. The former is seen as a discrete triangular hypoechoic area in the retroareolar region while the later as a hyperechoic increase in the amount of breast parenchyma. The main limitation of their study however, was the rather small sample size¹³.

Dialani et al¹² gave four sonographic patterns of male breast enlargement. They are nodular, poorly defined, flame-shaped and non-mass lesion¹². Sonographically, our patient showed hypoechoic flame-shaped retro-areolar tissues projecting into the deeper aspects of the breast. Sonographic surveys of his thyroid, testis, abdomen (to examine the adrenal glands, and liver) were all normal. However, his thyroid function test showed elevated levels of T3 and T4 with normal TSH which led to a diagnosis of primary hyperthyroidism.

Many clues as to the possible diagnosis and psychological effects of this disease can be made before imaging commences. From our experience with imaging many patients with gynecomastia (from adolescents to the elderly), we gathered that there is almost a linear relationship between the degree of breast enlargement and the psychological effect on such patients. Another common observation, (again regardless of age) is that these patients are often overdressed in an attempt to hide the size of their breast from other people. Our patient presented in this manner and though he came to our department of his own free will, he was extremely reluctant to undress his upper body for the imaging. It is not uncommon to have patients become anti-social which manifests in many ways.

Thorough physical examination in these patients is necessary to exclude other causes of gynecomastia. Examinations of the breast (to exclude focal breast masses), genitalia (to exclude a testicular tumor or undescended testes), abdomen (with particular interest in the liver to exclude chronic liver disease), and thyroid gland (to exclude signs of thyroid enlargement and disease) are essential in the proper assessment of gynecomastia. Assessing the breasts for their consistency and asymmetries was also performed as this is a critical part of a breast examination^{2,3}.

Drug induced gynecomastia can be managed by discontinuation or substitution of the drug which is usually sufficient to reverse or arrest the gynecomastia if diagnosed in the early phase^{3,9}. Along the same vein, gynecomastia associated with hyperthyroidism is usually reversed by control of the thyrotoxicosis using carbimazole to achieve a euthyroid state⁵.

Withdrawal of our patient's anti-psychotic medication is not advisable as they are essential for the proper management of his condition. Administering drugs that could suppress the gynecomastia such as testosterone and other anti estrogens are again not recommended due to the fact that he was diagnosed in the irreversible fibrotic (chronic) phase. Our patient's gynecomastia was multifactorial. Substituting haloperidol with another antipsychotic drug which does not cause gynecomastia was considered, however when weighed against the risk of the patients

becoming unstable and the more likely possibility that it would have no effect on his gynecomastia which was already in the chronic irreversible phase, this idea was aborted.

Reduction mammoplasty is recommended for patients such as ours who have unacceptable large breasts because the depression that develops as a result of the gynecomastia and its associated embarrassment constitutes a major social concern. Our patient is currently undergoing counseling as he declined to have a bilateral reduction mammoplasty.

CONCLUSION

Gynecomastia is a clinical diagnosis with a myriad of possible etiologies. Proper and systematic evaluation is the most effective option to ensure an accurate diagnosis which will eventually lead to proper management of the condition. Mammography remains the recommended first line investigation and usually suffices in arriving at a diagnosis. Breast ultrasound should be employed in instances of refusal of mammography or to further evaluate a breast finding and in a search for a cause.

Many patients with gynaecomastia are withdrawn and probably depressed and these symptom should not be overlooked. Effective management of a patient with gynaecomastia should be a multidisciplinary endeavor and reduction mammoplasty should be offered to patients who require it.

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