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10.4103/jfcm.JFCM_288_19

Cyst of Montgomery: An uncommon adolescent breast lump

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Abstract:

Reports of the incidence of the cyst of Montgomery, a rare condition of the breast, affecting mainly adolescent female, are scarce in the literature. This cyst develops from an obstruction of the small papular projections at the edge of the areola called Montgomery tubercles. It could be a simple asymptomatic mass or an inflamed symptomatic mass. We report two cases encountered this year. The first case was a 15-year-old female who complained of bilateral breast pain and a right breast mass. Laboratory tests were unremarkable. A diagnosis of noninflamed Montgomery cyst based on clinical and sonographic examination was made. An antibiotic was recommended. The second case was a 13-year-old female who complained of pain and swelling with redness in the right breast. Laboratory tests were unremarkable. Sonographic examination revealed a right retroareolar cyst containing turbid echogenicity with surrounded hyperemia. A diagnosis of inflamed Montgomery's cyst was made. Medical treatment was successful without any surgical intervention. Both patients had favorable outcomes at follow-up visits. This stresses the importance of a proper recognition of the pathology, incidence, diagnosis and management of the cyst of Montgomery in the pediatric age group.

Keywords:

Adolescent breast lump, cyst of Montgomery, retroareolar cyst

Introduction

Many childhood diseases can be misdiagnosed and thus increase the number of underreported cases. Some of these diseases tend to affect the valuable female organ, the breast. The cyst of Montgomery, a benign breast mass in female adolescents, is a rare condition of the retroareolar area of the breast, also sometimes called retroareolar cyst.^[1] The cyst of Montgomery occurs when there is an obstruction of Montgomery tubercles, small projections at the edge of the areola, that play a role in lactation. This obstruction results in either acute inflammation or an asymptomatic mass. The diagnosis is mainly clinical and can be confirmed with

ultrasonography, which mostly shows a single cystic lesion located in the retroareolar area. The clinical manifestation depends on whether the cyst is infected or not. An infected cyst may present as a palpable mass with mastalgia and peri-areolar erythema. In contrast, a simple noninfected cyst may be asymptomatic.^[2] The management depends on clinical presentation, but most resolve spontaneously with excellent prognosis. The reported incidence of cyst of Montgomery in the literature is scarce. Therefore, the purpose of this study was to provide better knowledge by reporting two cases of Montgomery cysts, review the literature and suggest the optimal management.

Case Reports

First case

A 15-year-old female presented with bilateral mastalgia and a lump in the right

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How to cite this article: Almuhanha AF, Almuhanha AF, Alzuabi RS, Alshamlan RA, Almarhoon FH. Cyst of Montgomery: An uncommon adolescent breast lump. J Fam Community Med 2020;27:138-41.

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Received: 24-12-2019

Revised: 26-12-2019

Accepted: 22-03-2020

Published: 03-06-2020

breast. Laboratory tests including C-reactive protein and erythrocyte sedimentation rate were unremarkable. Sonographic examination using linear multifrequency probe revealed a noninflamed right retroareolar cyst [Figure 1]. A diagnosis of noninfected Montgomery' cyst was made.

Second case

A 13-year-old female presented to the ER with a right breast swelling with mild mastalgia. On examination, there was mobile retroareolar lump with an overlying skin redness. Laboratory tests were unremarkable. The patient was discharged with paracetamol 120 mg/5ml syrup to be taken every 6 h for 5 days. A week later she presented to the emergency room with no improvement. Sonographic examination using linear multifrequency probe revealed a right retroareolar cyst with maximum diameter of 12 mm × 11 mm containing turbid echogenicity with surrounding hyperemia [Figure 2]. A diagnosis of an inflamed Montgomery's cyst was made. The patient received amoxicillin 250 mg orally every 8 h for 7 days, and was significantly improved at follow-up ultrasound.

Discussion

Awareness of breast malignancy increases with years and with any changes in the breast comes more stress.^[3] Any, breast symptoms and palpable masses create a great deal of anxiety and psychological distress.^[4] Fortunately, most breast pathologies that occur in childhood and adulthood tend to be benign.^[3,5,6] We gathered studies from the earliest to the latest 48 cases of reported cysts of Montgomery summarized in Table 1.

Huneus *et al.* reported two groups of forty-six cases in 2 years; the first group comprised 31 (67.39%) girls who presented with mastalgia and the other was of a

group of 15 (32.60%) girls with asymptomatic palpable mass. On examination, the first group had tenderness, swelling and palpable mass in the retroareolar area of variable sizes from 2 cm to 5 cm. The examination, second group had only palpable masses, and two were diagnosed with suspected lymphangioma owing to the bluish appearance of the mass. Sonographic examination revealed ipsilateral solitary cyst in 17 patients. Bilateral cysts were seen in 19 patients. Multiple cystic lesions were seen in 22 patients. Doppler ultrasound showed enhanced vascularity around the cyst only in symptomatic patients. They were all treated with oral antibiotic, amoxicillin/clavulanate and nonsteroidal anti-inflammatory drugs. Only one patient needed hospitalization and was treated with IV antibiotics for sepsis. All patients showed remarkable improvement.^[7]

Wallace *et al.* reported a case of a 15-year-old female who presented with mastalgia and periareolar cellulitis of her right breast. On clinical examination, she was febrile and clinical palpation of the breast revealed periareolar erythema with inflammatory subareolar mass raising the suspicion of abscess. She was treated with oral flucloxacillin, but there was no improvement in symptoms after 2 days. Sonographic examination revealed three communicated cysts containing echogenic fluid located in the retroareolar area surrounded by inflammatory changes from hyperemia to subcutaneous edema. No surgical intervention was made and the patient was discharged with a prescription of an additional course of amoxicillin and asked to return for follow up 3 days later. After a mild improvement in the symptoms, a diagnosis of retroareolar cyst was made. Follow - up sonographic examination revealed a well - defined anechoic lesion with no inflammatory changes, which decreased in size and resulted in better clinical outcomes.^[1]

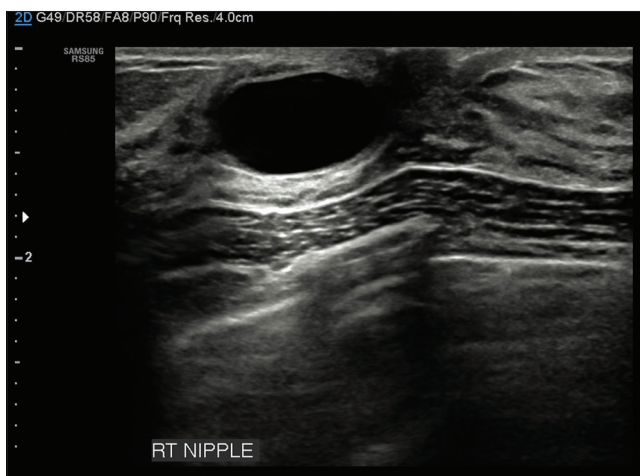


Figure 1: Sonographic examination using linear multifrequency probe revealed a noninflamed right retroareolar cyst

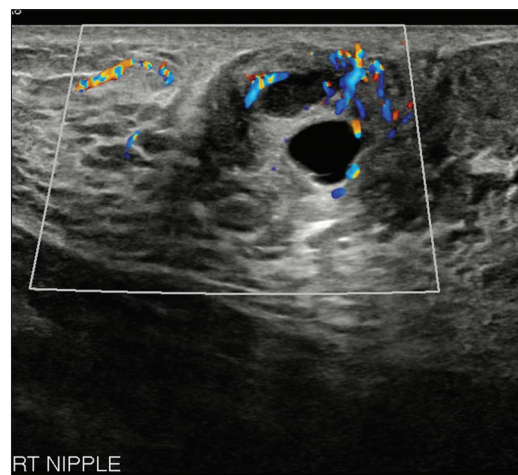


Figure 2: Sonographic examination using linear multifrequency probe revealed a right retroareolar cyst with maximum diameter of 12 mm × 11 mm containing turbid echogenicity with surrounding hyperemia

Table 1: A summary of about 48 reported cases demonstrating sonographic findings and remarks used

Study	Number of patients	Ultrasound findings	Management
Huneus <i>et al.</i> , 2003	46	31 - Inflamed cyst 15 - Noninflamed	Hospitalized patient - IV antibiotic Outpatients - Augmentin
Wallace <i>et al.</i> , 2013	1	Inflamed retroareolar cyst	Amoxicillin
Akcaboy <i>et al.</i> , 2017	1	Inflamed retroareolar cyst	Augmentin

IV=Intravenous

Akcaboy *et al.* reported a case of a 15-year-old female who was admitted with mastalgia and swelling in the right breast of 3 days' duration and associated mild pyrexia. Past Medical, surgical and menstrual history was unremarkable. On physical examination, there was periareolar tenderness with a nontender subareolar mass on the right breast. Also, there was smooth, mobile retroareolar mass on the left breast. Diagnostic workup using ultrasound revealed five-lobulated hypoechoic fluid-filled cysts, the size of 16 mm × 9 mm in the retroareolar area of the right breast and 10 mm × 6 mm on the left breast. They showed high vascularity in the periphery with subcutaneous tissue edema. Laboratory workup revealed Neutrophil dominance in peripheral blood smear. In this case, a diagnosis of retroareolar cyst infection was made. No aspiration was done, but amoxicillin clavulanate was prescribed. On follow-up ultrasound 2 weeks later, the cyst had decreased in size and there was no palpable mass or tenderness on physical examination.^[2]

Retroareolar cysts in pediatrics are largely underreported. Consequently, there should be careful reflection before a diagnosis of an abscess is made in order to prevent defects of the developing breast bud as a result of the destruction caused by incisional drainage and aspiration.^[3,5] Cysts constitute a clinical problem and require an evaluation of coexisting hormonal disturbances especially in girls presenting with recurrent cysts and boys with gynecomastia,^[3,8] accompanied by breast pain [Figure 3]. The breast pain is usually benign, so the physician should concentrate on clinical examination to determine whether there is redness, or a mass, whether the mass, if present, is smooth, superficially fixed or not. Depending on the findings, age, and family history, the physician can determine if there is a need for radiological assessment.^[5,6,9] Ultrasonography is the first choice and the most ideal examination to confirm the diagnosis of cystic changes in the breast of children and adolescents as well as adults.^[3] The most common indication for sonographic examination is when there are symptoms such as pain or pyrexia with redness of breast, which are signs of inflammation and infection, as well as palpable mass in the breast.^[8] A typical infected cyst is seen as a round or oval elongated mass, containing echogenic fluid, with posterior enhancement and increased peripheral vascularity. It is thought that the infection may be due to the fact that infection can occur more readily in developing mammary glands

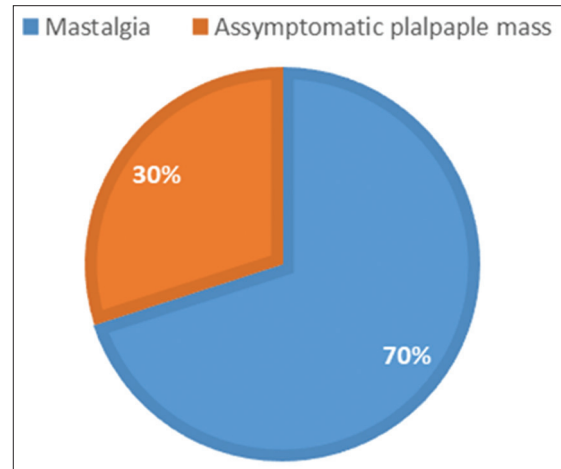


Figure 3: The two most common clinical presentations by pediatric patients with Montgomery gland cysts extracted from a total of 50 patients shown in Table 1 with our two reported cases, 35 (70%) patients present with mastalgia and 15 (30%) patients present with asymptomatic palpable mass

during childhood.^[4] Generally, infected cysts respond well to antibiotics directed against *Staphylococcus* and to nonsteroidal anti-inflammatory drugs, which help in the reduction of inflammation. No invasive procedures are therefore, needed in the absence of sepsis or severe pain, which rules out abscess.^[2,10] In contrast, a simple asymptomatic noninfected cyst appears in ultrasound as homogenous cyst with a smooth outline and posterior enhancement that sometimes contains septa of 1–2 mm.^[8] Simple cysts need a follow - up only.^[2] Generally, symptoms of cysts of Montgomery respond well to treatment. However, a palpable mass may persist, but shrink with time and get resolved in a period up to 2 years.^[10] Finally, hormonal disturbance should be considered when a cyst lasts for more than 6 months.^[2]

Conclusion

Cyst of Montgomery is under-reported. The main management of a cyst of Montgomery is conservative though, infected cysts usually increase the need for antibiotics and nonsteroidal anti-inflammatory drugs. There should be no surgical intervention without a confirmation of the diagnosis by sonographic examination supported by clinical examination.

Further reporting is required to identify the incidence, process pathologically, and characterization of its

presence with respect to the normal development of the breast.

Declaration of patient consent

The author certifies that she obtained the appropriate consent from the patients to publish the case report. On the consent forms, were the patients' /parents' consent for the publication of their images and other clinical information in the journal. The patients/parents understood that their names and initials would not be published and every effort would be made to conceal their identities though anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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