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Juvenile Fibroadenoma With Pseudoangiomatous Stromal Hyperplasia of the Breast

Julie Dreadin

Texas Woman's University

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Subjective Data

Reason For Selecting Case

This case was chosen because it serves as an ideal example of why it is important to perform clinical breast exams in women, even the early adolescent female. A thorough history and physical assessment as well as radiographic imaging and pathologic analysis serve as essential tools in this instance in order to differentiate between a benign versus a potentially malignant tumor of the breast. Because the author rarely cares for the early adolescent in the Breast Evaluation Clinic at Parkland Health and Hospital System, this project provides a rare educational exercise and opportunity in evaluating and treating a patient representing this particular population.

Patient Profile

Identifying Factors

D.G. is a 12-year-old Hispanic female who presented to Parkland Health and Hospital System Breast Evaluation Clinic accompanied by her mother on December 4, 2009. She was referred from Children's Medical Center (CMC) where she is an established patient.

Background Information

Chief Complaint

D.G. initially presented to CMC in early November with complaints of a tender left breast mass she noticed and reported to her mother a couple of weeks prior. The mass had begun to get sore over the last few days. She denied nipple discharge, skin changes, nausea, vomiting, fever, or chills.

History of Present Illness

D.G. is a 12-year-old Hispanic female who was initially seen at CMC for a patient-detected, tender left breast mass that had been present for approximately two weeks. She was subsequently sent to Parkland's Trauma and Surgery Clinic (TASC) for evaluation due to potential need for breast imaging (not available at CMC). She was given a trial of antibiotic therapy (Clindamycin 300 mg every 6 hours for 10 days) for treatment of a potential breast abscess and returned on November 17, 2009 for follow up. D.G.'s mother reported that the mass might have decreased slightly in size, but D.G. still reported mild pain at the site. No erythema or edema was noted per the clinic note. She was then sent to the Diagnostic Breast Imaging Clinic for assessment via ultrasound.

She arrived for radiologic evaluation on November 24, 2009. Sonography revealed a benign-appearing mass in the 9:00 axis of the left breast for which ultrasound guided core biopsy was recommended and performed the same day. Pathologic results revealed a fibroadenoma with pseudoangiomatous stromal hyperplasia (PASH). D.G. was then referred to the Breast Evaluation Clinic on December 4, 2009 to discuss possible excision due to the size of the mass and the pathologic findings.

Past Medical History

Illnesses: None

Allergies: NKDA

Surgeries: None

Medications: None

Health Maintenance: All immunizations are up to date per the patient's mother. Recent immunizations include:

1. Influenza – October 2009
2. Tdap (Tetanus/Diptheria/Pertussis) – March 2009
3. MCV4 (Meningococcal conjugate vaccine) – March 2009

4. Varicella #2 – April 2008

Other examinations include:

1. Eye exam – April 2009
2. Dental exam – July 2009
3. Well child exam – March 2009

Obstetrical History

1. G0 P0

Social History

D.G. lives at home with her parents and two siblings in Dallas, Texas. She is a sixth grader at one of the local junior high schools. Her mother works at a day care center in a suburb of Dallas, and her father works in construction. She has two younger brothers ages 7 and 9 who attend elementary school (grades 2 and 4 respectively) in the Dallas area. D.G's mother reports that D.G. does well in school and has no behavioral problems. D.G states she gets along well with her siblings. She most enjoys playing with her friends, and her favorite subject in school is science. Because her parents' jobs do not provide health insurance, she is funded through the Parkland Health Plus Program. D.G. has never been sexually active and reports no alcohol, illicit drug, or tobacco use. She has no tattoos or body piercings, and she has never had a blood transfusion. D.G. nor her mother report any safety concerns, and they are active in a local Catholic church.

Family History

D.G.'s family history is negative for breast cancer (see Appendix). Her mother is 35, alive and well, and her father is 36, alive and well. She has two brothers ages 7 and 9. The youngest brother has mild asthma for which he uses an inhaler. Her maternal grandfather is 60 with hypertension and her maternal grandmother is 60 with osteoarthritis. Her paternal grandfather died at the age of 45 in a car accident, and her paternal grandmother is 63, alive and well.

Breast Cancer Risk Profile

Menarche:	Age 12
Oral contraceptives:	No history of OCP use
Gravida/Parity:	G0 P0
First live birth:	Nulligravida
Breastfeeding:	None
Hormone replacement therapy:	No history of HRT use
Menopause:	Not applicable
Family history:	None reported

(American Cancer Society, 2009b)

Review of Systems

General:	No fever, chills, anorexia, or unexplained weight loss.
Skin/Hair/Nails:	No excess sweating, dryness, hair loss, or nail changes.
HEENT:	No vision changes, floaters, or drainage from eyes. No head congestion or sinus problems. No hearing loss or changes. No difficulty swallowing. No mouth ulcerations
Neck/Lymph:	No swelling in neck. No tender lymph nodes. No difficulties with range of motion.
Chest/Lungs:	No shortness of breath. No hemoptysis or activity intolerance. No orthopnea or paroxysmal nocturnal dyspnea. She sleeps on one pillow. No cough.
Breast:	Mildly tender mass in the medial left breast. No skin changes, nipple discharge/retraction.
Cardiovascular:	No chest pain or palpitations. No edema. No EKG performed.
Gastrointestinal:	No heartburn or indigestion. She denies nausea, vomiting, diarrhea, constipation, or abdominal pain. No black or tarry stools. No bright red blood in stools.
Genitourinary:	Menarche age 12. LMP December 7, 2009. No dysuria or urinary incontinence.
Endocrine:	No temperature intolerance. No polydypsia, polyuria, or polyphagia.
Musculoskeletal:	She denies pain in sternum or back. She denies joint pain or swelling. No muscle weakness or pain.
Neurological:	She denies headache, dizziness, diplopia, focal weakness, or peripheral paresthesias. No seizure activity or tremors.
Psychological:	Denies depression or anxiety.

Brief Discussion of Pathophysiology

The fibroadenoma is the most common benign lesion occurring in the breast (Guray & Sahin, 2006). It is most often found in women in the early reproductive phase of life (i.e.,

adolescent girls and young women) and arises from the stroma within a breast lobule (Guray & Sahin; Goel, Knight, Pandey, Riddick-Young, Paredes, & Trivedi, 2005). Fibroadenomas are hormonally dependent and usually present as unilateral, mobile, firm, non-tender breast masses on clinical breast exam (Guray & Sahin). Juvenile fibroadenoma is a variant of the fibroadenoma which usually presents as a large (i.e., greater than 5 cm), single, unilateral, painless mass between ages 10 and 18 years of age (Guray & Sahin). Because these masses can reach up to 15 to 20 cm, surgical excision is recommended. This particular type of fibroadenoma is histologically characterized by prominent stromal cellularity and epithelial hyperplasia (Goel et al.)

PASH is a benign myofibroblastic proliferation of nonspecialized mammary stroma (Guray & Sahin, 2006). It is a clinicopathologic entity that can be incidentally recognized on microscopic examination as a complex network of "…anastomosing slit-like spaces within a densely collagenous stroma" or visibly apparent on mammography and/or ultrasound as a breast mass (Guray & Sahin, PASH section, ¶ 3). Seldom, cases of PASH may be clinically portrayed as a well-circumscribed, dense, rubbery mass strongly resembling a fibroadenoma (Guray & Sahin). Radiologic findings are also nonspecific and may mimic a fibroadenoma as well (Abdullgaffar, 2009).

Objective Data

Physical Examination

Vital signs:	Ht: 60 inches Weight: 100 lb Temp: 37 BP: 110/70 Pulse: 72 Respirations: 18
General:	D.G. is a 12-year-old Hispanic female. She is an alert, pleasant girl in no acute distress. She is well groomed and appears of stated age. Her performance status is 0. She appears well nourished and well developed.
Skin/Hair/Nails:	Her skin is warm and dry. No skin rashes or lesions. No excessive dryness of skin or hair. Skin turgor is normal with brisk recoil.

Head:	Normocephalic. No lesions noted. Temporal arteries without bruit.
Eyes:	No exopthalmos. Pupils equal, round, reactive to light, and accommodation. Extraocular movements intact without nystagmus. Visual fields intact. Sclera white, conjunctiva clear without drainage. Fundoscopic exam: distinct borders of optic disc, no bulging or cupping. No hemorrhages or exudates noted. Nonicteric.
Ears:	Bilateral tympanic membranes are pearly gray with visible landmarks. Ear canals without drainage or excessive cerumen.
Nose:	Nasal mucosa pink without edema or drainage. Nasal septum midline and intact. No sinus tenderness with palpation.
Throat:	Oropharynx without erythema, exudates, ulcerations, petechiae, or thrush noted. Tonsils 2+ bilaterally. Uvula midline with symmetrical elevation. Soft and hard palate intact. Tongue midline, without deviation. No dental caries. Gums are pink.
Neck:	Full ROM. No thyromegaly. No nodules palpable. No bruit. No difficulty swallowing. Trachea midline. Carotid pulse 2+.
Lymph node survey:	No obvious masses were appreciated with palpation of bilateral axillae. No preauricular, submandibular, cervical, supraclavicular, infraclavicular, or axillary lymphadenopathy appreciated.
Chest/Lungs:	Symmetrical excursion of chest wall. Respirations unlabored. Lungs clear to auscultation bilaterally/no wheezing or rhonchi noted. No use of accessory muscles. AP/Lateral chest diameter 1:2.
Heart:	Regular rate and rhythm with normal S1 and S2. No murmurs, rubs, or gallops appreciated. Apical pulse 72. No edema noted.
Breasts:	Right breast with no masses, skin changes, or nipple discharge/ retraction. Left breast exam with an approximately 4 cm mobile, firm mass in the 9:00 axis. No nipple discharge/retraction, or skin changes. Tanner stage 4.
Abdomen:	Soft, nontender, nondistended with no hepatosplenomegaly or appreciable masses or lesions. Bowel sounds present in all four quadrants. No rebound or guarding. No aortic, renal, or iliac bruits. No CVA tenderness.
Genitourinary:	Deferred
Musculoskeletal:	No tenderness to palpation of the spine. Joints symmetrical, without swelling, redness, or edema. Full ROM of all joints. Strength equal bilaterally at 5/5.
Extremities:	Extremities are warm with no lesions, cyanosis, or clubbing appreciated. Peripheral pulses are 2+ bilaterally. No edema or varicosities are noted.
Neurological:	Cranial nerves II-XII grossly intact. Finger to nose and rapid alternating movement intact. No tremors appreciated. Speech is clear and appropriate. No facial droop. Romberg negative. Normal gait. DTR’s 2+ bilaterally. Sensation intact symmetrically.

Psychological:	Awake, alert, and oriented to person, place, and time. Short and long term memory intact. Patient is cooperative with appropriate response to surroundings. Answers questions appropriately.
Tests:	Ultrasound left breast November 24, 2009 – Solid, homogenous, circumscribed, oval mass measuring 3.9 x 2.1 x 4.5 cm in the 9:00 axis. Negative axillary evaluation. Probable benign fibroadenoma. BIRADS 4a (mildly suspicious). Ultrasound guided core biopsy November 24, 2009 – pathology revealing fibroadenoma and PASH.

Scientific Underpinnings/Evidence/Rationale

Only ultrasound was utilized as an imaging technique in evaluating this patient due to her young age. Sonography is more sensitive than mammography in detecting breast lesions in women with dense breast tissue (i.e., women < 30 years of age) (Klein, 2005). Sonography is also more beneficial to the provider in diagnosing clinically benign palpable masses (Klein). Typically the signs of a benign mass are an oval shape and circumscribed margins (Constantini, Belli, Lombardi, Franceschini, Mule, & Bonomo, 2006). The current management of patients with clinically or radiologically suspected fibroadenoma (benign mass) is biopsy for tissue diagnosis (Guray & Sahin, 2006). Tea, Asseryanis, Kroiss, Kubista, and Wagner (2008) studied 37 female patients with 43 palpable breast lesions between the ages of 12 to 18 years of age and found ductal carcinoma in situ in two of these cases. The most common histology was fibroadenoma (n = 27). Due to these findings, the authors encourage histopathologic analysis of all adolescent breast tumors.

Core needle biopsy (CNB) is the recommended method in order to obtain a pathological diagnosis of these breast tumors, thus allowing for appropriate evaluation for malignancy and/or other breast pathology (Guray & Sahin, 2006). CNB has been found to be superior to the more cost effective fine needle aspiration biopsy (FNAB). CNB is the procedure utilized by the Diagnostic Breast Imaging Clinic in order to obtain tissue specimens for histological evaluation. In a study by Vimpeli, Saarenmaa, Huhtala, and Soimakallio (2008), 590 FNAB's and 98 CNB's

were evaluated. The false negative rate for FNAB was19% and for CNB 11%. False positive rates were 9% and 1% respectively (Vimpeli et al.).

Discussion of Findings

The ultrasound guided core biopsy revealed a cellular (juvenile) fibroadenoma and PASH. The biopsy was performed following a patient-detected, palpable left breast mass that did not respond to antibiotic therapy with subsequent sonographic imaging demonstrating a solid, homogenous, circumscribed, oval mass measuring 3.9 x 2.1 x 4.5 cm in the medial left breast.

Assessment

Acute Diagnosis

1. Juvenile fibroadenoma (217.0)
2. PASH (793.80)

Differential Diagnosis

Juvenile Fibroadenoma

1. Phyllodes tumor (benign/malignant) (238.3)
2. Juvenile papillomatosis (229.9)
3. Breast malignancy (174.9)

(Stanford School of Medicine, 2010)

PASH

1. Fibroadenoma (217.0)
2. Breast malignancy (174.9)

(Abdullgaffar, 2009; Choi, Ko, & Kook, 2008).

Chronic Diagnosis

None

Assessment of Presenting Complaint

D.G. is a 12-year-old Hispanic female with a palpable, tender left breast mass present approximately 2 weeks upon arriving for initial evaluation at CMC/Parkland TASC. She was given a trial of antibiotic therapy for a possible breast abscess. No change occurred with

medication, and the patient was subsequently sent for breast imaging. Ultrasound of the area of concern revealed a benign-appearing, circumscribed, oval mass resembling a fibroadenoma; however, due to its large size (> 1 cm), further analysis with core biopsy was recommended in order to pathologically assess for the above mentioned differential diagnoses, the most common being the phyllodes tumor.

Phyllodes tumors are rare, rapidly growing (average size of 5 cm), fibroepithelial lesions which occur in less than 1% of all breast masses (Lannin, Konstantakos, & Raaf, 2009; Jacklin, Ridgway, Ziprin, Healy, Hadjiminas, & Darzi, 2006). These tumors can behave in both a benign or malignant manner with the ability to metastasize to the lung, skeleton, heart, and liver (Lannin et al.). Both radiographically (i.e., well-circumscribed, oval) and pathologically (i.e., elongated ductal component, epithelium lines papillary protrusions of stromal connective tissue), the phyllodes tumor is similar in appearance to the fibroadenoma; therefore, clinical correlation with histology is indicated (Kopans, 2007; Jacklin et al.). If a phyllodes tumor is misdiagnosed as a fibroadenoma, the mass can be incompletely resected (i.e., important to obtain negative margins/excise tumor completely) or inappropriately treated with observation (i.e., excision is standard due to potential for rapid growth and/or malignancy) (Jacklin et al.).

Juvenile papillomatosis is a benign, distinct mass usually occurring in the breasts of young females (Kempson & Rouse, 2005). The mass is usually circumscribed, solitary, and between 1 to 8 cm in size (Kempson & Rouse). Juvenile fibroadenoma and juvenile papillomatosis differ histologically with the former having cellular stroma and canalicular and tubular epithelium and the latter consisting of paucicellular stroma and prominent cysts (Kempson & Rouse).

As discussed above, clinically, radiologically, and cytologically, PASH can resemble the fibroadenoma. In both of these primary diagnoses (i.e., juvenile fibroadenoma and PASH), if a rapidly growing lesion is detected, suspicion for malignancy is raised and thus tissue diagnosis with core biopsy or surgical excision is warranted.

Following retrieval of the pathology results, the radiologist referred the patient for surgical assessment. From a radiologic view, the biopsy results were not considered discordant with the imaging findings, but due to the small potential for phyllodes tumor given the size of the mass, referral for definitive surgical management was initiated, and an appointment was made to the Breast Evaluation Clinic to discuss surgical options.

Psychosocial and End of Life Issues

The psychosocial issues addressed with D.G. are that of body image and personal identity. Adolescence is a time where peer acceptance and approval is heightened; therefore, issues with a very private part of the body such as the breast can produce significant body image disturbances for this particular patient (American Academy of Child and Adolescent's Facts for Families, 2008). Worry about being viewed as "normal" by friends is common in this age group (American Academy of Child and Adolescent's Facts for Families).

Explaining in detail the plan of care and surgical procedure is imperative in decreasing patient as well as parent anxiety. It is anticipated that only a small incision will be necessary in order to achieve safe, effective and complete removal of the mass. Thus, minimal scarring and virtually no breast deformity are expected postoperatively. The procedure was described thoroughly to the patient and her mother. Appropriate questions were asked and addressed regarding incision size, scarring, and concern for breast deformity following surgery.

Care after surgery was also a focus of discussion given that D.G. was concerned about being able to play with her friends. No heavy lifting is important for the first week post procedure as well as the use of a support bra to decrease scarring. Dissolvable sutures will be placed; as a result no suture removal will be necessary. D.G. verbalized understanding of these instructions, and is ready to have the procedure performed. There are no *End of Life* issues to address with this patient.

Plan With Rationale

Evidence-Based Basis for Plan of Care

Surgical

Left breast excisional biopsy (CPT code 19180)

Limited tissue obtained from core biopsies lends to great morphologic similarities between phyllodes and fibroadenoma tumors (Jara-Lazaro & Tan, 2008). In a study by Tan et al. (2005), fibroadenomas occurred simultaneously in 4.2% of 335 phyllodes tumors. Because sonographic features of PASH are nonspecific, biopsy of the mass/lesion of concern is necessary in order to rule out malignancy as well (Guray & Sahin, 2006). The treatment of PASH is wide local excisional biopsy (Guray & Sahin).

Excisional biopsy was planned in order to ensure definitive diagnostic characterization of the left breast mass due to its size and growth rate. An excisional biopsy removes the entire mass or lesion of concern with an attempt to remove surrounding margins of breast tissue (American Cancer Society, 2009a). Large tumors or tumors that have exhibited rapid growth warrant surgical excision (Jayasinghe & Simmons, 2009).

Diagnostics

Other than the previously performed breast ultrasound and core biopsy, no further diagnostic studies are necessary in this patient who is healthy.

Labs

No labs are necessary in this patient who is healthy.

Pharmacologic

The patient was given Lortab 5/500 for postoperative pain (National Library of Medicine, n.d.). She was instructed to take one pill by mouth every 6 hours as needed. Thirty tablets were dispensed.

Opiates are considered suitable for moderate to severe acute pain (Sachs, 2005).

Psychosocial Care Issues

The above-mentioned psychosocial care issues pertaining to body image, peer influence, and concern for normality were addressed with assistance from the social worker and Child Life Department at CMC. Referral was initiated preoperatively.

Continuity of Care

Interdisciplinary Care

1. Diagnostic Breast Imaging
2. CMC Primary Care Clinic

Outcome of the Intervention

At her initial visit to the Breast Evaluation Clinic a complete history and physical examination was performed. A discussion regarding the imaging and pathologic findings with the patient and her mother took place, and the recommendation for excisional biopsy reviewed. This discussion and suggestion was considered appropriate given the size of the breast mass and the patient’s young age.

The patient and her mother were agreeable to this plan, and a left breast excisional biopsy was performed on December 21, 2009. Pathology results confirmed a definitive diagnosis of patchy PASH and a 3 cm cellular fibroadenoma with transected anterior and lateral margins and positive medial, superior, posterior, and inferior margins in the first specimen. Additional margins were obtained intraoperatively due to the uncertainty of pathology at that time. These margins revealed only breast tissue with no residual tumor with patchy PASH.

The patient was seen for postoperative evaluation on December 30, 2009. Her incision was healing well and she complained of no pain. The benign pathology findings were discussed with D.G. and her mother and questions were answered regarding need for future follow up. She and her mother were very pleased with the results, both medically and cosmetically.

Referrals

1. Social Work
2. Child Life Specialist (CMC)

Family and Patient Education

The patient and family were educated on the diagnosis of fibroadenoma and PASH. Because these are both benign entities, the patient is not at an increased risk for developing breast cancer in the future (Singletary, Robb, & Hortobagyi, 2004). She should perform self breast examinations monthly and notify her parent or provider if any changes occur at the surgical site (i.e., mass, skin changes) or throughout either breast (i.e., nipple discharge, pain).

Follow Up

The patient was given an appointment to return to the Parkland Breast Evaluation Clinic in 6 months for a follow up examination. If she has a benign exam at that time, she will then be referred to her primary care provider at CMC for routine health maintenance examinations. Return to the Breast Evaluation Clinic is only warranted if new or recurrent breast issues arise.

Assistance from the Social Work Department was elicited in order to ensure D.G. had follow up with CMC's Child Life Specialists in order to assist with the potential above-mentioned psychosocial issues.

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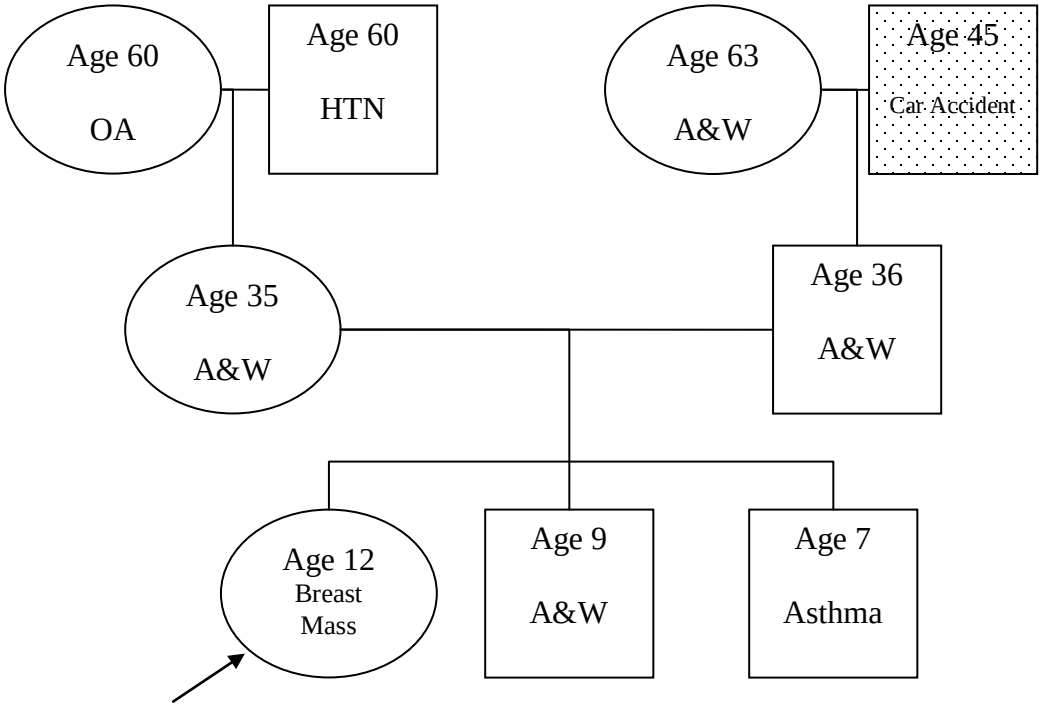
Appendix

Pedigree


Age 60
OA
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Car Accident
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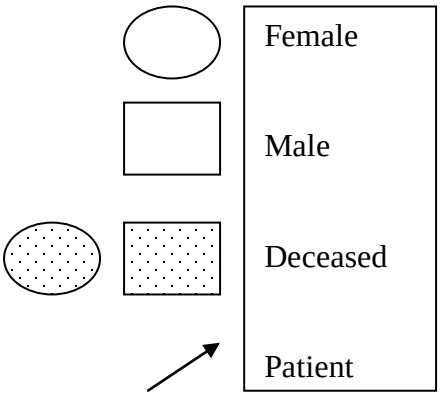
Breast
Mass
Age 9
A&W
Age 7
Asthma


Female
Male
Deceased
Patient