

Ovarian Cysts

Background

1. Definitions

- Simple cyst
 - Fluid-filled structure within the parenchyma of the ovary with smooth walls and echogenic center
- Complex cyst
 - Fluid-filled structure with solid components or septa
 - Higher risk of malignancy

Pathophysiology

1. Pathology

- Follicular cysts
 - Most common type of cyst
 - Occur when the dominant follicle does not rupture or when an immature follicle does not undergo atresia
 - Rarely >8 cm in diameter
- Corpus luteum cysts
 - Caused by the luteinization of a granulosa cell after ovulation
 - Called a cyst if diameter > 3 cm
 - Always occur in the luteal phase
- Theca lutein cysts
 - Mostly bilateral
 - Least common type of cyst
 - Usually associated with abnormal pregnancy
 - Caused by increased stimulation of the ovary by gonadotropins
 - May be very large (up to 30 cm)
 - Usually resolve spontaneously
- Polycystic ovarian syndrome
 - Characterized by abnormal menstrual pattern, evidence of hyperandrogenism, and exclusion of other causes
 - Often associated with multiple simple cysts on ultrasound
- Endometrioma
 - Growth of ectopic endometrial tissue
 - "Chocolate cyst"
 - Complex mass on US
 - Common cause of elevated CA125
 - 50% of women with endometriosis develop endometriomas³
- Serous and mucinous cystadenoma
 - Among the most common benign ovarian tumors
 - Can be uni- or multilocular
- Dermoid (benign teratoma)
 - Neoplastic cyst, usually benign
 - Bilateral in 15% of pts
 - Echogenic areas on ultrasound
 - Requires surgical removal

2. Incidence/prevalence
 - Up to 25% of all women of reproductive ages have ovarian cysts
 - Most are asymptomatic
3. Risk factors
 - Menstruation
 - Smoking
 - Increases risk of cyst 2-fold
4. Morbidity/mortality
 - Rupture
 - Fluid leaking from cyst may cause peritoneal irritation
 - May be difficult to distinguish from peritonitis
 - A corpus luteum cyst can become hemorrhagic and cause intraperitoneal bleeding, which can be a surgical emergency
 - Rupture of follicular cyst with pain at midcycle called Mittelschmerz
 - Ovarian torsion
 - Risk increases as cysts get larger
 - Emergency surgery necessary to maintain blood supply to ovary

Diagnostics

1. History
 - Symptoms
 - Pelvic/abdominal pain caused by a cyst expanding, leakage of fluid, or torsion of the ovary
 - Pain is usually constant/persistent but can be cyclic
 - For ovarian torsion, pain is severe/sudden
 - Usually unilateral
 - Many pts. asymptomatic and mass only noted on exam
 - May have other complaint if neoplastic process (eg, androgen-secreting tumor)
2. Physical exam
 - May have mild focal unilateral lower abdominal/adnexal tenderness
 - Diffuse lower abdominal tenderness if complications occur
 - Ovarian mass
3. Diagnostic testing
 - Laboratory
 - Usually not indicated unless other disorder suspected (eg, PID, ectopic pregnancy)
 - In healthy patients in general population with no family history of ovarian carcinoma, positive predictive value of CA-125 is only 2.3%⁴
 - USPSTF recommends against routine screening for ovarian cancer
4. Diagnostic imaging
 - Ultrasound
 - Imaging modality of choice
 - Will characterize cyst and detect presence of peritoneal fluid (which may indicate either leakage or rupture of cyst)

- Malignant cysts are associated with:
 - Irregular borders
 - Size greater than 10 cm
 - Thick septa
 - Solid components
 - See Ovarian cancer

Special Populations

1. Postmenopausal women
 - Approximately 18% of asymptomatic women > 50 have unilocular cysts⁵
 - At least 30% of ovarian masses in women >50 are malignant⁶
 - Doppler flow studies
 - Can help differentiate benign from malignant cysts
 - CA-125
 - Upper limit of 35 U/mL
 - Sensitivity: 50-83%
 - False positive values in women with endometriosis, infections, effusions
 - In postmenopausal patients with CA-125 >65 U/mL and a suspicious mass on ultrasound, PPV 97% for malignancy⁷
 - Serial ultrasounds to demonstrate stability of cyst
 - Unilocular cysts
 - Majority resolve spontaneously
 - If <5 cm, manage with serial ultrasound, CA-125 levels every 6 mo
 - Complex cyst
 - If <5 cm and normal CA-125, repeat ultrasound and CA-125 in 1 mo
 - If >5 cm or elevated CA-125, need surgery
 - Surgical removal if any abnormalities
2. Pregnant women
 - All types of cysts are seen during pregnancy
 - CA-125 normally elevated during pregnancy (thus, not useful)
 - Usually diagnosed by routine ultrasound
 - If surgical intervention indicated, second trimester best
 - Most cysts involute by middle of second trimester (~20 wk)
3. Prepubertal girls
 - Small ovarian cysts common in infancy and childhood
 - Can have cysts that secrete estrogen, mimicking precocious puberty
 - Associated with cafe au lait spots in McCune Albright syndrome
 - Multicystic ovaries can be associated with hypothyroidism

Differential Diagnosis

1. Ectopic pregnancy
2. Ovarian cancer
3. Ovarian torsion
4. Appendicitis (if on the right)
5. PID or tuboovarian abscess

Therapeutics

1. Reassurance
 - If cyst <4 cm and simple on ultrasound appearance
 - Most cysts in reproductive-age women will resolve within 1-3 cycles⁸
2. Observation with repeat ultrasound in 1-3 mo
 - Indicated if cyst >4-5 cm
 - To document resolution of cyst
3. Needle aspiration
 - No benefit in rate of resolution compared to simple observation⁹
4. Laparoscopy
 - For cysts 8-10 cm in size (due to high risk of torsion)
 - For cystectomy, not oophorectomy
 - Early surgical intervention if suspicious for malignancy
5. Role of oral contraceptive pills
 - While OCPs may prevent cysts from forming, a Cochrane Review found OCPs to have no benefit in treating functional ovarian cysts¹⁰

Follow-Up

1. Ultrasound in 1-3 mo if cyst is complex or large
2. Routine if asymptomatic

Prevention

1. Ovulatory suppression will reduce chances of cyst development

Patient Education

1. <http://www.aafp.org.offcampus.lib.washington.edu/afp/20030601/2375ph.html>

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