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Gynecologic Emergencies: Case Studies

The emergency department evaluation of the nonpregnant woman presenting with various gynecologic complaints will be discussed through a case studies approach. Differential diagnoses and current management options will be covered, as well as recommendations for appropriate follow-up.

- Describe the workup of common gynecologic complaints in nonpregnant woman, such as vaginal bleeding, pelvic discomfort, vaginal discharge, and dysuria.
- Discuss the appropriate treatment options and follow-up management for each of the cases presented.

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FACULTY

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Course Objectives

- Describe the workup of common gynecologic complaints in nonpregnant woman, such as vaginal bleeding, pelvic discomfort, vaginal discharge, and dysuria.
- Discuss the appropriate treatment options and follow-up management for each of the cases presented.

Course Outline

This syllabus presents three illustrative cases and then discusses the differential diagnosis of each disease entity in turn with an emphasis on diagnostic and therapeutic pitfalls for the emergency physician. Categorizing these disease entities neatly by chief complaint is a tidy didactic tool, but does not mirror real life well, since two or more of these three common complaints are often present in a given patient. As long as you recognize this, you and this syllabus will get along well.

I. Gynecologic Emergencies—Why so difficult?

High volume, high risk, high liability
Difficult history—The patient [and the physician] have to talk about things they normally don't talk about with strangers.
Broad differential
Often cannot make definitive diagnosis
Delayed diagnosis or misdiagnosis has serious medical implications (fertility problems, life-threatening hemorrhage) and social complications (relationship impact of a PID diagnosis)

II. Diseases Characterized by Vaginal Discharge

Case #1

A 20-year-old woman presents complaining of a foul-smelling vaginal discharge for one week. She has no fever or lower abdominal pain. LMP 10 days prior, no history of STDs, two sexual partners in the past 6 months, and no significant PMH. The physical exam reveals no abdominal tenderness, and a heavy, white vaginal discharge that is somewhat malodorous. The cervix appears normal; there is no cervical motion tenderness, and no uterine or adnexal abnormalities that you can detect.

What should be your workup (if any)?

Differential diagnosis:
Bacterial Vaginosis
Trichomonas
Vulvovaginal Candidiasis

Bacterial Vaginosis

- Results from replacement of *Lactobacillus* sp. with high concentrations of anaerobic bacteria, most commonly *Gardnerella vaginalis*.
- Associated with having multiple sexual partners, but can occur in non-sexually active women. The pathogenesis and transmission is poorly understood, so it should NOT be labeled as a sexually transmitted disease.
- Treatment of the male sex partner has not been beneficial in preventing recurrences.
- Typically presents as vaginal discharge with a foul odor, but about half the women who meet the clinical diagnostic criteria are asymptomatic.

Diagnosis

CDC diagnostic criteria:

Gram Stain

- Detection of the altered flora typical of BV
- Culture not recommended

OR

Clinical Criteria (any three of the following)

- Homogenous, white, inflammatory discharge that smoothly coats the vaginal walls
- Presence of clue cells
- Vaginal fluid pH>4.5
- Fishy odor of vaginal discharge before or after the addition of 10% KOH (whiff test)

Treatment

- All women with symptomatic BV should be treated, regardless of pregnancy status
- BV during pregnancy is associated with an increased risk of pre-

term delivery. Treatment of BV, whether symptomatic or asymptomatic, in women at high risk for preterm delivery has been shown to reduce the incidence of prematurity.

- Therapy of nonpregnant women with asymptomatic BV is not currently recommended. However there is an association with PID following invasive procedures.

Recommended regimens for non-pregnant patients

Metronidazole 500mg BID x 7 days
Or
Metronidazole 2 grams PO single dose
Or
Clindamycin 300 mg BID x 7 days
Or
Clindamycin cream 2%, one applicator intravaginally qHS x 7 days
Or
Metronidazole gel 0.75%, one applicator intravaginally BID x 5 days

The intravaginal regimens provide the same cure rates as the oral regimens in clinical trials. Intravaginal metronidazole has the advantage of less GI distress than the oral regimen.

Recommended regimens for symptomatic pregnant patients

Metronidazole 250 mg TID x 7 days
Or
Metronidazole 2 grams PO single dose
Or
Clindamycin 300 mg BID x 7 days
Or
Metronidazole gel 0.75%, one applicator intravaginally BID x 5 days

A recent meta-analysis of available studies of metronidazole showed no evidence of teratogenicity in humans. Regardless, lower doses are recommended in pregnancy to minimize exposure of the fetus to metronidazole. Avoid treatment in the first trimester unless the patient is at high risk for pregnancy loss. Serum concentrations of metronidazole given intravaginally are <2% of an oral dose, but there is very little data on the use of intravaginal metronidazole in pregnancy. Use of intravaginal clindamycin in pregnancy is not recommended due to an increased risk of preterm delivery.

Trichomoniasis

- Caused by *T. vaginalis*, a protozoan
- Many patients are asymptomatic

- Most often presents as a yellow-green, foul smelling discharge, sometimes "foamy"
- Diagnosis is made by visualizing flagellates on wet mount exam
- Sexually transmitted

Treatment

Metronidazole 2 gram PO single dose
Or
Metronidazole 500 mg BID x 7 days

- Metronidazole gel does not generate the serum concentrations necessary to achieve therapeutic levels in the urethra and perivaginal glands, and so has a low cure rate for trichomoniasis.
- Metronidazole is the only oral medication effective for treatment of trichomoniasis in the United States. Patients with true allergies can be managed with desensitization to the drug (obviously a referral!). Clotrimazole 100 mg vaginal tablets qHS for two weeks provided a 20% cure rate in one study.
- Sexual partners MUST be treated. Men are almost always asymptomatic, and treatment of the sexual partner increases the cure rate and decreases the early recurrence rate
- Patients should be instructed to avoid sexual intercourse until they are asymptomatic AND their course of therapy is completed.

Treatment of pregnant patients after the first trimester is recommended, and the two-gram single dose provides a good cure rate while minimizing fetal exposure.

Vulvovaginal candidiasis

- Most commonly caused by *C. albicans*, but other *Candida* sp., *Torulopsis* sp, and other yeasts are occasionally responsible.
- Usually presents as pruritis and vaginal discharge, also a cause of dyspareunia and dysuria.
- Clinical findings: erythema and pruritis, with or without a white discharge. The discharge is classically described as "curd-like" or "cottage-cheese".
- Wet mount reveals yeast or pseudohyphae, and visualization of these form is improved by 10% KOH with destroy non-yeast cellular material.
- Commonly occurs in conjunction with STDs or as a result of systemic antibiotic therapy
- Commonly occurs in diabetics—may be presenting symptom

- Identifying yeast microscopically or by culture in asymptomatic patients does not merit treatment—20% of women are colonized with *Candida* sp.

Treatment

- Topical therapy is effective in 80-90% of patients who complete their treatment
- The azole drugs are generally more effective than nystatin.
- Butoconazole, clotrimazole, and miconazole, and tioconazole all have OTC preparations, and uncomplicated cases can utilize one of these.
- When used according to labeling, there is no benefit to a single dose vs. three-day regimen vs. a seven-day regimen.
- Severe infections, compromised hosts (i.e. diabetics), and those with recurrent infections should be treated with longer courses of topical or oral therapy (10-14 days)
- Treatment of sexual partners generally not needed, unless balanitis is present or in recurrent cases.
- Almost all topical preparation are oil-based and will weaken latex condoms—make sure you warn patients of this!
- Treatment with topical azole agents during pregnancy has been investigated and is safe.

Prescription topicals

Terconazole 0.4% cream 5 g intravaginally x 7 days
Terconazole 0.8% cream 5 g intravaginally x 3 days
Terconazole 80 mg vaginal suppository x 3 days

Oral Regimens

Fluconazole 150 mg PO single dose

Recurrent Vulvovaginal Candidiasis

- Defined as four or more episodes of symptomatic VVC in a year.
- Risk factors—poorly controlled diabetes, immunosuppression, corticosteroids
- There is no proven association with HIV
- CDC recommendations: Topical agent for 10 to 14 days, followed by ketoconazole 100 mg once daily for six months. Other suppressive regimens, such as once a week fluconazole, are under investigation.

Outcome for Case #1

A pregnancy test and a wet mount of the vaginal discharge are mandatory.

The patient was not pregnant and had visible clue cell with no flagellates on the wet mount. The "whiff test" was positive. She was treated with a single dose of oral metronidazole 2 grams and instructed to return to her primary care provider for follow-up if she remained symptomatic after 48 hours.

III. Pelvic Discomfort and Lower Abdominal Pain

Case # 2

A 22-year-old nulliparous woman presents with lower abdominal pain for 6 hours. She experienced dyspareunia with intercourse and this precipitated the ED visit. No fever. LMP 9 days ago, normal and on time. She denies vaginal bleeding or discharge, and has no history of STDs. She is sexually active with one partner and has no significant PMH. The physical exam is notable for a comfortable patient with tenderness in the right lower quadrant and suprapubic region, with no guarding or rebound, and pelvic exam reveals mild cervical motion tenderness, a thin, non-bloody vaginal discharge, and tenderness in the right adnexa.

What other history do you need?
Other exam findings you should be looking for?
How would you go about working this patient up?

A. Neurologic Considerations

1. Referred pain is the norm due to complex enervation of the pelvis
    a) T9-T10: ovary, fallopian tubes, ureter
    b) T11-L1: cervix, uterus, adnexa, ileum, colon, sigmorectum, bladder sympathetics
    c) L1-L4: vulva, urethra, clitoris, perineum, bladder, lumbar facets, and SI joints
2. Not all cyclic pain is gynecologic—adjacent structures can have cyclic pain related to menses due to local swelling

B. A Methodical Approach to the Problem

1. Initial Evaluation and Management
    a) The "primary survey"—assess for life-threatening emergencies and initiate stabilizing treatment
        (1) Hemorrhagic shock
        (2) Sepsis
        (3) Generalized peritonitis
2. The "secondary survey"—History, physical, labs, and imaging
    a) Historical clues
        (1) Cyclic vs. non-cyclic symptoms

(2) Somatic vs. visceral pain
(3) Sudden vs. gradual onset
(4) Dyspareunia & relationship to intercourse

Suggestive Symptom Complexes
Pain with defecation—endometriosis
Pain with intercourse—endometriosis, PID
Pain following intercourse—ruptured corpus luteum or follicular cyst
Midcycle pain—ovulation (Mittleschmerz)
Sudden onset of severe pain, nausea, vomiting—ovarian torsion
Severe dysmenorrhea/menorrhagia—endometriosis or leiomyomas

3. Physical exam
   a) Vital signs, including assessment of orthostasis
   b) Look for signs of peritonitis and extra-pelvic disease
   c) Pelvic exam essential, unless a clear-cut, uncomplicated UTI
      (1) Palpation of adnexa with assessment of masses & tenderness
      (2) Palpation of uterus, with estimate of size and irregularities
      (3) Assessment of peritoneal irritation
      (4) Speculum exam
      (5) Collection of specimens for wet mount, GC & chlamydia
      (6) Rectal exam—blood, levator spasm
4. Endovaginal sonography—essential in pregnancy, helpful in other settings, with use guided by history/physical & availability
   a) Bedside, by the EP
      (1) Presence/absence of IUP
      (2) Fetal heart motion
      (3) Myomata
      (4) Free intraperitoneal fluid
   b) "Formal" ultrasound
      (1) Graded compression of appendix
      (2) Adnexal abnormalities
5. Culdocentesis—rarely used since the advent of rapid pregnancy tests and readily available ultrasound. Mainly useful in unstable patient where US and rapid HCG not available.
6. Laboratory evaluation
   a) Quantitative HCG
   b) Type & Rh
   c) U/A

d) CBC

C. The Pregnant Patient with Pelvic Pain

1. Ectopic pregnancy
   - First consideration in any woman of child-bearing age with pelvic pain
   - Incidence is rising, probably due to improved treatment for PID, preserving fertility
   - Risk factors—PID, previous ectopic
   - Classic symptoms—Pain, bleeding, and adnexal mass
   - Modern diagnosis requires only suspicion, quantitative HCG, and endovaginal ultrasound
   - The finding of an intrauterine pregnancy as determined by the presence of a yolk sac virtually excludes ectopic pregnancy (incidence of heterotopic pregnancy is ~1:10,000)
   - The minimum HCG at which an IUP should be detectable (discriminatory zone) is institution and operator dependent ranging from 1,000 to 2,000, but the absence of a definite IUP on endovaginal ultrasound with HCG > 2,000 is an ectopic until proven otherwise and mandates gynecologic consultation
   - The stable patient with a HCG < 1000 without a definite IUP can generally be followed up at 48 hour intervals for repeat HCG (should double every 48 hours). A less than 66% rise in 48 hours mandates re-sonography
   - **Every patient without a proven IUP who presents as a potential ectopic should get a pelvic ultrasound. The literature is replete with patients who had a HCG <1000 and a clinically significant ectopic pregnancy**
   - Sonographic appearance of the ectopic is usually a complex adnexal mass with or without fluid in the cul-de-sac
   - Management
     - Unstable patient: immediate laparotomy.
     - Stable patient: Depending on size and site may be managed expectantly, with methotrexate, or by laparoscopy.
2. Abruptio placenta
3. Corpus luteum hematoma
4. Threatened or spontaneous abortion

D. Non-Pregnancy Related Pelvic Pain

1. Cyclic causes
    a) Endometriosis
        - Leading cause of chronic pelvic pain, and a frequent cause of acute presentations
        - Caused by ectopic endometrial implants on the peritoneum that are hormone responsive
        - Symptoms are dysmenorrhea, dyspareunia (often cyclic) and infertility
        - Physical findings are non-specific, with adnexal masses, nodularity in the cul-de-sac, induration and/or nodularity of the rectovaginal septum
        - Can cause significant scarring and distortion of pelvic structures
        - Endometrial implants on the ovary can become cystic can rupture, causing hemorrhage and presenting as an acute abdomen, mimicking ectopic pregnancy,
        - Usually atrophy after menopause, often misdiagnosed as PID.
        - Requires laparoscopy for definitive diagnosis
        - Treatment
            - Symptomatic therapy
            - Suppressive therapy such as Danazol or GnRH agonists.
    b) Primary dysmenorrhea
        - Prostaglandin mediated
        - Family history
        - Usually improves after first term delivery,
        - Not normally associated with dyspareunia
        - Treated with NSAIDs, OCPs if NSAIDs fail.
    c) Leieomyoma
        - 25% of women over 30, older nulliparous women are at increased risk
        - Twice as common in African-American women
        - Rarely undergo malignant transformation
        - Usually manifest as menorrhagia and dysmenorrhea.
        - Can cause acute pelvic pain by ischemic degeneration, torsion of a pedunculated fibroid, or an aborting submucosal fibroid
        - Treatment is generally symptomatic. GnRH agonists will cause regression, but most will recur after therapy is terminated. Most useful in near menopausal women to avoid hysterectomy

d) Cyst-related
   (1) Follicular
      - Result from a failed ovulation
      - Usually asymptomatic unless complicated by a torsion, hemorrhage, or rupture
      - Rupture associated with intercourse, exercise, or trauma
      - Pain may last for days, depending on cyst contents
      - Treatment usually conservative
   (2) Mittleschmerz
      - Results from ovulation.
      - Up to 25% of women have symptoms
      - Usually unilateral pain that lasts for a few hours
      - Day 14-16 of normal cycle
      - Treatment is symptomatic only
   (3) Corpus luteum
      - Normally palpable on a careful exam during the luteal phase
      - Can rupture or enlarge suddenly due to hemorrhage, usually day 20-26, and may have catastrophic hemorrhage

2. Non-cyclic
   a) Pelvic inflammatory disease
      - Clinicians have a PPV of 60-80% for PID compared to laparoscopy.
      - Can be tough to distinguish from appendicitis
      - Ultrasound invaluable—can identify pus-filled tubes, graded compression of appendix
      - Balance the social implications of a speculative diagnosis against risk of unrecognized PID

CDC Diagnosis and Treatment Guidelines (MMWR January 23, 1998 47:79-86)

"Because of the difficulty of diagnosis and the potential for damage to the reproductive health of women even by apparently mild or atypical PID, health-care providers should maintain a low threshold for the diagnosis of PID."

Empiric diagnosis in sexually active women at risk for STDs with the following <u>minimum criteria:</u>

- Lower abdominal tenderness

- Adnexal tenderness and,
- Cervical motion tenderness

Additional criteria that support the diagnosis:

- Oral temp > 101
- Cervical or vaginal discharge
- Elevated ESR
- Elevated C-reactive protein
- Documented N. gonorrhea or C. trachomatis

Definitive criteria

- Transvaginal sonography showing thickened fluid-filled tubes or tubo-ovarian complex.
- Endometritis on biopsy
- Laparoscopic PID

Treatment of PID

Parenteral regimens

[Cefotetan 2g q12 or Cefoxitin 2g q6] + Doxcycline 100mg IV or PO q12

Clindamycin 900mg q8 + Gentamicin 2mg/kg load then 1.5mg/kg q8

Oral regimens

Ofloxaxin 400mg PO BID x 14 d + Metronidazole 500mg PO BID x 14 d

[(Ceftriaxone 250mg IM) or (Cefoxitin 2g IM & Probenecid 1g PO) or (parenteral 3rd gen cephalosporin)] + Doxycycline 100mg PO BID x 14 d

". . . data are insufficient to recommend [azithromycin] this agent as a component of any of the treatment regimens for PID."

b) Tubo-ovarian abscess
   - Really a continuum with PID, treat as for PID
   - Often requires laparoscopic drainage
   - Does not necessarily require admission

c) Adnexal torsion
   - Usually associated with a large simple cyst or dermoid
   - 20% occur during pregnancy
   - Usually sudden onset of pain, maybe episodic
   - 2/3 have nausea/vomiting
   - Tender adnexal mass almost always present
   - Doppler endovaginal ultrasound valuable in diagnosis
   - Diagnosis mandates immediate consultation
   - Often can be managed laparoscopically

d) Intraovarian hemorrhage
- Usually into a cyst or tumor
- Sudden onset
- Unilateral tender mass

e) Foreign bodies

f) Uterine perforation
- First consideration in any woman with pelvic pain after intrauterine manipulation
- Consider in patients with IUD and pelvic pain
- Uterus very vulnerable in the post-partum period due to thinning of uterine wall
- Risk of peritonitis or serious hemorrhage
- Usually admitted for expectant management +/- antibiotics.

g) Appendicitis

h) Diverticulitis

i) Regional enteritis

j) Urinary tract infections

E. Chronic Pelvic Pain

1. Term is used in a number of ways:
   - Pelvic pain > 6 months duration from any cause
   - Pelvic pain with no apparent anatomic cause at laparoscopy
   - Pelvic pain accompanied by disturbance of mood and significantly altered physical activity
2. Usually a heterogeneous problem, not a single entity
3. Anatomic causes
   a) Endometriosis and adhesions (from surgery, infectious causes, or endometriosis) are the most common findings at laparoscopy
   b) Pelvic support problems
   c) Pelvic congestion—congestion of the pelvic venous system has been documented as a cause of chronic pelvic pain. Usually worse premenstrually, at the end of the day, and post-coitally. May improve with OCPs and may have a significant psychological component responsive to psychotherapy
   d) Musculoskeletal causes
      (1) Levator spasm
      (2) Lumbar musculature
   e) Myofascial pain—entrapment of the genitofemoral or ilioinguinal nerves following a Pfannensteil abdominal incision
   f) Irritable bowel syndrome

g) Interstitial cystitis

4. Psychiatric issues
   a) Chronic pelvic pain is frequently associated with:
      (1) A history of sexual abuse
      (2) Sexual dysfunction
      (3) Depression
      (4) Personality disorders
      (5) Marital and social difficulties
   b) Appropriate management is best accomplished by comprehensive therapy, including both anatomic and psychological treatments. These patients need referral to appropriate followup. Like all chronic pain patients in the ED, they should not automatically assumed to be drug seeking, and should treated with compassion and close consultation with the primary care physician.

F. Prepubertal Pelvic Pain

1. Foreign bodies
2. Sexual abuse with attendant STDs
3. Appendicitis
4. Other less common causes—ovarian torsion (frequently missed in this age group), vulvovaginits, cystitis, irritants, pinworms, vaginal outlet obstructions

Outcome for Case #2

The initial concerns were PID, an early pregnancy complication, UTI, and appendicitis. Wet mount of the cervical discharge showed no white blood cells, no clue cells, and no flagellates. HCG was negative. Urinalysis was normal, and a CBC revealed a white count of 8.2. Careful questioning revealed two important historical factors: the patient had a regular 23-day menstrual cycle, and the pain began abruptly during intercourse. A reasonable clinical diagnosis at this point would have been either Mittleschmerz or a ruptured follicular cyst. A pelvic ultrasound confirmed this diagnosis with the finding of a normal appearing and compressible appendix, normal appearing adnexa with normal blood flow, a small amount of free fluid in the cul-de-sac, and tenderness of the right ovary to probe pressure. The patient was discharged on NSAIDs, with careful instructions to return for fever or worsening abdominal pain, and primary care follow-up. A 2-week follow-up phone revealed that the patient was asymptomatic within hours of her ED visit and had never followed up.

IV. Abnormal Uterine Bleeding

Case 3

A 45-year-old G_3P_3 woman presents with painless vaginal bleeding for 3

days. Her last menstrual period began 17 days prior and was "light". She is now bleeding "heavy than a normal period." She has always been "very regular". No pain or cramping, no fever, no nausea. PMH is unremarkable. Exam is notable only for a small quantity of dark red blood in the vaginal vault, a mildly tender uterus, and no adnexal masses or tenderness.

What would be your workup?
Any other specific history that would be helpful?

The Menstrual Cycle
A good understanding of the menstrual cycle and a careful menstrual history will lead to a clear working diagnosis and plan for most patients with abnormal uterine bleeding.

An oversimplified but functional way of remembering the menstrual cycle:

- Proliferative phase: Estrogen stimulates growth of the endometrium
- Secretory phase: Production of progesterone by the corpus luteum after ovulation stops estrogen induced proliferation and supports and keeps stable the now thick endometrium.
- Menstrual phase: Failure of fertilization results in involution of the corpus luteum and loss of progesterone. Progesterone withdrawal results in uniform and orderly sloughing of the endometrium, and the cycle begins again.

Definitions
These terms are often used and abused by emergency physicians. Care should be taken to use these terms properly in order to communicate meaningfully with our gynecologic colleagues.

Abnormal uterine bleeding—garbage can term for any non-normal uterine bleeding.
Dysfunctional uterine bleeding—generally refers to any bleeding not related to anatomic lesions of the uterus. Often used as a synonym for anovulatory uterine bleeding, although DUB is a symptom, while AUB is a diagnosis.
Anovulatory uterine bleeding—more accurate and explanatory than DUB.
Menorrhagia—prolonged or "heavy" periods occurring at regular intervals
Metrorrhagia—irregularly occurring periods without excessive bleeding
Metromenorrhagia—heavy and irregular periods
Intermenstrual bleeding—Should be reserved for bleeding that is lighter and less frequent than that deserving the term metrorrhagia
Polymenorrhea—bleeding that occurs at regular intervals of less than 21 days
Oligomenorrhea—bleeding episodes that occur 35 days to 6 months apart

Amenorrhea—absence of uterine bleeding for >6 months

Differential diagnosis for abnormal uterine bleeding
- Pregnancy-related problem
- OCP or Norplant-related bleeding
- Endometrial cancer and precursor lesions
- Cervical cancer
- Leieomyoma and polyps
- Coagulation problems
- Thyroid disease
- Liver disease
- Leukemia
- Genital trauma or foreign body
- Sexually transmitted disease (or bacterial vaginosis)
- Anovulatory bleeding—the most common cause, but must the diagnosis of exclusion

Anovulatory Bleeding

Results from a failure of ovulation. Without progesterone production, the endometrium continues to proliferate in response to estrogen and begins to slough irregularly.

Commonly seen in polycystic ovarian disease and obesity

Most common on the extremes of the menstrual cycle

Adolescents
- Occurs in adolescents because of immaturity of the hypothalamic-pituitary-ovarian axis
- One-third of women will have not established regular ovulatory cycles by the fifth year of menstruation
- Strenuous exercise results in periodic large norepinepherine discharges which can interrupt the normal pulsatile release of LH and result in irregular periods or anovulatory cycles
- Up to 20% of adolescents with DUB will have a coagulation defect
- Generally treated with OCPs

Perimenopausal women
- Failing primordial follicles don't produce enough estradiol in response to FSH to stimulate the LH surge, so ovulation does not occur.
- Must always consider endometrial cancer as a possibility especially in women with prolonged unopposed estrogen exposure (PCO, obesity, prolonged history of anovulatory cycles).
- In one cohort of perimenopausal bleeders, 30% had significant

pathology of which 2/3 had malignant or pre-malignant lesions.
- The incidence of endometrial cancer increases steadily with increasing age after menopause.

Women in the reproductive years frequently have an occasional anovulatory cycle, usually manifest as a "heavy period".

Treatment

- Very heavy bleeding with hypovolemia or significant anemia mandates hospitalization. High dose intravenous estrogen (25 mg q2 hours x 2, then q4 hours for 24 to 48 hours) stops the bleeding in about 2/3 of patients within 5 hours, often following the first dose. Failure to control the bleeding with estrogen requires a D & C.
- Mild to moderate bleeding can be managed as an outpatient
- True anovulatory bleeding during the reproductive years can be controlled by a 10-day course of a progestin agent (i.e. Provera 10 mg qday). The patient should be warned to expect a decrease or cessation of bleeding while on the agent, and then a heavy period when the drug is stopped. Alternatively, any of the low-dose monophasic OCPs are effective. This regimen is also safe in peri-menopausal women.
- ALL peri-menopausal women must have clearly organized gynecologic follow-up, whether or not hormonal therapy is started in the ED.

Endometrial Carcinoma

- Peak incidence in the 60s, but can occur in women as young as 35, where the diagnosis is frequently delayed.
- Risk factors: obesity, smoking, PCO, prolonged unopposed estrogen administration
- Diagnosis: Endometrial biopsy, hysteroscopy
- Any suspicion mandates referral—make sure they have access to the follow-up

Contraceptive Related Bleeding

Often referred to as "breakthrough bleeding" due to insufficient estrogen in low dose contraceptives to support the proliferative endometrium in some women, or the patient is simply non-compliant with the regimen. Breakthrough bleeding is a particular problem with Norplant. By a different mechanism, Depo-Provera can also result in breakthrough bleeding. In most cases the bleeding is minor and can be referred to gynecology or primary care follow-up. If the EP feels immediate treatment is required, the problem can usually be resolved by changing the OCP to a higher estrogen dose, or adding a short course of conjugated estrogen.

Menorrhagia
Does NOT appear to have a hormonal cause
Usually due to leieomyomata, polyps, or endometriosis
If the patient is not hemodynamically compromised, should be referred for outpatient workup and treatment

Case # 3 Outcome
The patient was assumed to have anovulatory bleeding. A CBC was normal and the HCG was negative. The patient was seen by the OB/Gyn resident in consultation in the ED, where a Pipelle biopsy of the endometrium was done. The patient went home on low-dose OCPs. The patient's bleeding did not diminish after 48 hours, and the biopsy showed endometrial cancer. This patient would have been sent home on OCPs or nothing in most non-teaching EDs and told to follow-up. The importance of being sure that good follow-up can be organized for all perimenopausal women with abnormal uterine bleeding cannot be overemphasized.

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