Abnormal Uterine Bleeding

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Case 1: 46-yr-old woman, gravida 3, para 2 (1 therapeutic abortion), presents with increasingly heavy, irregular menses (every 2 wk to 2 mo) over past 8 mo; bleeding with clots lasts 10 days; patient reports few hot flashes; medical history includes diabetes and obesity

Terminology: normal cycle 28 ±7 days and lasts 2 to 7 days; degree of heaviness of menses self-defined; amenorrhea or oligomenorrhea — too little bleeding; menorrhagia — bleeding regular, but heavy or lasts >7 days; metrorrhagia — irregular bleeding; menometrorrhagia — irregular and excessive bleeding

Pathophysiology: estrogen builds up endometrium; progesterone stabilizes endometrium; anovulatory cycle characterized by unopposed estrogen; normally, ordered bleeding occurs as corpus luteum atrophies; anovulatory bleeding heavy and irregular

Case 1 diagnosis: menometrorrhagia; anovulation most likely cause, followed by anatomic and structural causes (ie, fibroids and sometimes polyps), neoplastic causes (ie, hyperplasia), and pregnancy; infectious causes include endometritis and pelvic inflammatory disease (bleeding often light); anovulation — in nonpregnant woman, most common cause of anovulation physiologic (ovaries either premature [in young women] or postmatue [in perimenopausal women] and do not ovulate every month); in all women, most common cause pregnancy followed by polycystic ovary syndrome (PCOS) and obesity; anorexia, excessive exercise, and pituitary adenoma associated with amenorrhea or spotting; hyper- and hypothyroidism cause of many types of menstrual abnormalities

Evaluation: begins with pregnancy test and test for thyrotropin (TSH) level; in some cases, test for hematocrit level and coagulopathy and perform endometrial biopsy (EMB); transvaginal ultrasonography (TVUS) not indicated during initial evaluation; tests for follicle-stimulating hormone (FSH), luteinizing hormone, testosterone, and estradiol levels usually not needed

Indications for EMB: EMB first-line test in women >45 yr of age with abnormal uterine bleeding (AUB); however, menopause may last 4 yr, and only 12% of women stop bleeding at that time; 18% develop longer or heavier menses; 70% have short and irregular menses; performance of multiple biopsies before menopause in these women impractical

Algorithm for EMB: EMB (or TVUS) required in postmenopausal women with AUB; treat first for recent onset of irregular bleeding, then perform EMB if problem does not resolve; risk for cancer increases with age; women >50 yr of age with recurrent irregular bleeding should be biopsied unless periods becoming lighter and less frequent; perform EMB in women 45 to 50 yr of age if irregular bleeding recurrent and risk factor for cancer present, or if menometrorrhagia persists for >6 mo; women <45 yr of age with long history of untreated anovulatory bleeding should be biopsied; perform biopsy in younger patients if irregular bleeding present for 5 to 10 yr; other indications for biopsy include atypical glandular cells or endometrial cells on Papanicolaou test; continued bleeding necessitates additional evaluation because EMB <100% sensitive

Indications for TVUS: 80% of women with heavy bleeding have no anatomic pathology; if TVUS performed too early, may reveal incidental findings (such as simple cysts) that lead to anxiety and interventions; TVUS needed only if treatment for bleeding ineffective; in postmenopausal women, TVUS may replace EMB; TVUS used to measure endometrial stripe (thickness >4 mm considered abnormal), but finding non-specific because thickness may be due to myoma or polyp; thickness of endometrium not informative in premenopausal women; sensitivity and negative predictive value of TVUS similar to that of EMB, but specificity of TVUS lower (40% to 50% of women who undergo TVUS require further evaluation because of abnormal results); speaker offers choice if results can be obtained quickly; TVUS involves insertion of probe for ≈20 min, which may be especially bothersome in postmeno-pausal women

Evaluation of case: EMB recommended because patient not postmenopausal; treat patient and delay TVUS unless bleeding persists; perform urine pregnancy test; test for FSH level indicated only in young women with amenorrhea to rule out premature ovarian failure (POF); FSH level not useful for predicting menopause; testosterone and dehydroepiandrosterone sulfate occasionally indicated in women with PCOS; on EMB, patient had disordered, proliferative endometrium without hyperplasia or carcinoma; disordered, proliferative, or dysynchronous endometrium synonymous with anovulation

Management: nonsteroidal anti-inflammatory drugs (NSAIDs) — use for initial treatment; NSAIDs decrease volume of bleeding by ≈40% when given for 5 days beginning at onset of bleeding; levonorgestrel intrauterine device (IUD) — best hormonal treatment; protects against pregnancy, decreases blood loss by 80%, decreases cramping during menses, and prevents and treats hyperplasia; unlike estrogen-containing methods, IUD has few contraindications; amount of blood loss and satisfaction similar to that afforded by hysterectomy; other hormonal methods — if patient declines IUD, consider oral contraceptive pill (OCP), patch, ring, or medroxyprogesterone (Depo-Provera); low-dose OCP safe in perimenopausal women

Educational Objectives

The goals of this program are to improve management of abnormal uterine bleeding and interpretation of fetal heart monitoring. After hearing and assimilating this program, the clinician will be better able to:
1. Evaluate abnormal uterine bleeding, taking into account patient age and comorbidities.
2. Determine appropriate patients for endometrial biopsy.
3. Diagnose and treat patients with amenorrhea.
4. Sketch a flowchart for management of suspected ectopic pregnancy.
5. Explain the lack of agreement among physicians who interpret fetal heart rate tracings.

Faculty Disclosure
In adherence to ACCME Standards for Commercial Support, Audio Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, members of the faculty and planning committee reported nothing to disclose.
who do not have hypertension, complicated diabetes, or other con-
traindications; cyclic progestins — less effective than NSAIDs, OCP, or IUD; 21-day course more effective than 10-day course; associated with breast tenderness and bloating; hormone replace-
ment therapy — postmenopausal doses ineffective in premeno-
pausal women; tranexamic acid — expensive antifibrinolytic agent; takes 3 cycles to work; use only if other treatments have failed and if anatomic lesion not visualized on TVUS; probably more effec-
tive for acute hemorrhage than for monthly heavy bleeding; dilation and curettage — considered diagnostic tool, not treatment for bleed-
ing; endometrial ablation — effective and may be completed in office; many women prefer ablation over hormonal methods; 25% of patients require repeat ablation or hysterectomy within 5 yr, but 90% satisfied with treatment; ablation decreases bleeding but may not eliminate menses

Case 2: same as case 1, except patient has fibroids; uterus 16 wk in size and irregular

Fibroids: present in 75% of women 50 yr of age; 50% of fibroids asymptomatic; most common bleeding pattern normal or men-
orrhagic; most fibroids intramural; intracavitary myomas cause menometrorrhagia because endometrium unstable over fibroid; pedunculated and subserosal fibroids do not affect bleeding; large fibroids cause discomfort and pressure rather than pain, but may cause dysmenorrhea; increased bleeding in patients with fibroids occurs secondary to increased volume of endome-
trial cavity; treatment for anovulatory bleeding often effective

Algorithm for fibroids: rule out cancer and pregnancy; treat ini-
tially with NSAIDs and hormones; TVUS indicated if bleeding does not improve

Management of fibroids: perimenopausal patients may be treated with leuprolide (Lupron) or surgery; hysteroscopy pre-
ferred for intracavitary fibroids; hysterectomy strongly asso-
ciated with patient satisfaction; uterine artery embolization associated with improvement in bleeding and decrease in size of uterus, but ability of arteries to regrow unknown; emboli-
zation and ablation not recommended in women who wish to preserve fertility; after embolization, most patients require 1-
to 2-night stay for control of pain; interruption of blood supply to myoma results in painful, anoxic degeneration; pain con-
tinues for 2 wk and may delay return to full activity; 1% to 2%
of patients require emergent hysterectomy, 5% expel myoma through cervix, and 40% develop fever

Case 3: 41-yr-old woman presents with dizziness and heavy vagi-
nal bleeding for 2 wk; patient had occasional irregular periods in past, but current episode more severe; hemoglobin 9 g/dL

Management of case 3: transfusion may be needed; if treating with OCP taper, continue with OCP after taper ends (patient may need antiemetic agent); high-dose medroxyprogesterone may also be effective; begin taper with 2 to 4 OCPs, depend-
ing on volume of bleeding and hematocrit level; to prevent vomiting in patient taking 4 OCPs, prescribe one-half dose in morning and one-half at night; after tapering to 1 OCP, patient should complete 3 packs of OCPs before doing placebos (to allow endometrium to thin and hematocrit levels to recover before next period)

Amenorrhea: risk factors — pregnancy; excessive growth of hair or acne (indicates PCOS); obesity; breast secretions (indi-
cates hyperprolactinemia); excessive thinness, overexercise, or increased stress (indicates hypothalamic amenorrhea); hot flashes (indicates POF); recent pregnancy complicated by infection, or history of uterine surgery (indicates Asherman syndrome)

Evaluation of amenorrhea: obtain urine pregnancy test; test for TSH and prolactin levels; FSH test helpful if patient reports hot flashes; deep voice or clitoromegaly in patient with hirsutism or obesity possible indication of testosteron-secreting tumor

Management of amenorrhea: protect endometrium from unop-
posed estrogen (primary concern in patients with PCOS); first-line treatment OCP because it also treats hair growth; sec-
ond-line treatment progestin only; provide same treatment for obesity-induced anovulation; patients with hyperprolactinemia due to microadenoma do not need treatment, but may take OCP if symptoms bothersome; bromocriptine not used unless pregnancy desired or symptoms uncontrolled; protecting bones from effects of inadequate estrogen primary concern in func-
tional, hypothalamic amenorrhea (OCP best therapy); provide same treatment for POF; perform hysteroscopic procedure to remove scarring in patients with Asherman syndrome

Case 4: patient reports irregular menses for 2 yr with occasional hot flashes; for past 2 mo, patient has had daily light bleeding and cramping; history of infertility, laparoscopic adhesiolysis, and nonpatent tubes; anovulatory bleeding most likely diag-
nosis, but pregnancy test positive; two-thirds of women who die of ectopic pregnancy diagnosed too late or incorrectly; early diagnosis imperative; rupture may occur at any level of β-HCG, even if level falling; methotrexate (MTX) and conser-
vative surgical treatment available if ectopic pregnancy diag-
nosed early

Management of suspected ectopic pregnancy: perform TVUS immediately; if pregnancy not visualized, determine whether pregnancy normal; if pregnancy desired, measure serial, quan-
titative β-HCG level (level may rise appropriately in ectopic pregnancy; fall or inadequate rise in β-HCG indicates abnor-
mal pregnancy); if pregnancy abnormal or undesired, uterus should be aspirated; if no placental tissue present, treatment for ectopic pregnancy should be instituted; only 2% of TVUS diag-
nostic for ectopic pregnancy; TVUS used primarily to visualize intrauterine pregnancy (IUP); MTX — requires careful follow-
up and compliant patient; 5% of ectopic pregnancies rupture despite treatment with MTX; MTX less effective than surgery (considered second-line treatment in selected patients; how-
ever, fertility rates similar after either treatment); role of pro-
vider — patients should be assessed for Rh factor; if same-day TVUS not available, patient should see gynecologist; if consul-
tation unavailable, patient should go to emergency department

Spontaneous abortion: 15% to 20% of clinically recognized pregnancies end in miscarriage; missed abortion now called early pregnancy failure; treatment options include expectant management, misoprostol, and uterine aspiration; miscarriage may result in hemorrhage; patient should be seen if filling >1 pad/hr for 2 hr; physician should emphasize that miscarriage common, not preventable, and not caused by patient; patient may attempt another pregnancy without delay

Intraobserver Variability in
Interpretation of Fetal Heart Monitoring

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History: despite widespread use of electronic fetal monitoring (EFM), no change in rate of cerebral palsy observed since 1970s, although rate of cesarean delivery has increased signifi-
cantly; EFM adopted without adequate testing or defined indi-
cations; tracings assigned to 1 of 3 categories; most problems of interpretation associated with category II tracings

Studies: 1 generalist and 4 maternal-fetal medicine (MFM) spe-
cialists were shown 100 nonreassuring tracings and asked to
describe variability, accelerations, bradycardia, decelerations, and tachycardia, state whether tracing reassuring, and predict type of delivery (vaginal vs cesarean) and whether low Apgar score or low pH likely; all values of k ≤ 0.6 (1 indicates perfect agreement); using 3-tiered system, subsequent study assessed interpretation by 3 MFM specialists following training session; examiners looked at 154 tracings while referring to classification system; this study also showed low values of k

Algorithm: developed for management of category II tracings; can be delayed ≤30 min while practitioner attempts to resolve category II tracing; can be reapplied every 30 min in patient consistently category II; cannot be used any longer if category
I or III occurs; does not apply in premature infants; override if not considered to be in best interest of patient

Objectives of current study: examined agreement among observers on 3-tier categorization, identification of nonreassuring tracings, and intervention for category II tracings

Methods: 10 tracings selected from patients who underwent cesarean delivery for nonreassuring fetal heart rate; tracings reviewed by MFM specialists, generalists, residents, and computer program; examiners asked to determine whether tracing reassuring and whether to intervene with cesarean delivery or proceed to vaginal delivery; answers of practitioners compared to those obtained using PeriGen PeriCALM application

Results: pH of delivered fetuses 7.12 to 7.31; base excess -2 mmol/L to -19 mmol/L; k values indicated moderate to poor agreement; upon assessment of whether tracing reassuring, agreement varied from 40% to 100%

Limitations of study: reviewers received limited clinical information and only snapshot of tracing; study not performed under stress of labor and delivery environment; study used only 10 tracings

Final remarks: experiences of reviewers influence their interpretations of tracings; EFM may not be enough information on which to base algorithm

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Suggested Reading

ABNORMAL UTERINE BLEEDING/FETAL HEART MONITORING

To test online, go to www.audiodigest.org and sign in to online services.
To submit a test form by mail or fax, complete Pretest section before listening and Posttest section after listening.

1. Which of the following is the most likely cause of recent-onset menometrorrhagia in a 46-yr-old obese woman?
   (A) Fibroids
   (B) Endometrial hyperplasia
   (C) Endometritis
   (D) Anovulation

2. Which of the following tests should be included in the initial evaluation of a perimenopausal patient with menometrorrhagia?
   (A) Testosterone
   (B) Follicle-stimulating hormone
   (C) Thyrotropin
   (D) Estradiol

3. Which of the following is an indicator for endometrial biopsy (EMB) in a 40-yr-old woman?
   (A) Amenorrhea
   (B) Endometrial cells on Papanicolaou test
   (C) Hot flashes
   (D) Irregular bleeding for 3 mo

4. All the following statements about transvaginal ultrasonography (TVUS) are true, except:
   (A) May reveal incidental findings that lead to anxiety and interventions
   (B) Not considered a replacement for EMB in postmenopausal women
   (C) Used to measure thickness of endometrial stripe
   (D) Has low specificity compared to EMB

5. Which of the following is the most appropriate initial treatment for AUB in a premenopausal patient?
   (A) Tranexamic acid
   (B) Nonsteroidal anti-inflammatory drugs
   (C) Cyclic medroxyprogesterone
   (D) Hormone replacement therapy

6. Which of the following statements about uterine artery embolization is true?
   (A) May be used in women who want to preserve their fertility
   (B) Uterine arteries usually regrow after treatment
   (C) Size of the uterus decreases
   (D) Patient rarely develops fever

7. Which of the following is the preferred treatment in a 39-yr-old nonpregnant woman who has acute uterine bleeding sufficiently heavy to necessitate transfusion?
   (A) High-dose medroxyprogesterone
   (B) Dilation and curettage
   (C) Endometrial ablation
   (D) Oral contraceptive pill (OCP)

8. In a patient with amenorrhea, treatment with OCP is not required if the cause is:
   (A) Hyperprolactinemia
   (B) Polycystic ovary syndrome
   (C) Obesity
   (D) Excessive exercise

9. A patient who does not desire a pregnancy presents with a positive pregnancy test, pain, and bleeding. TVUS reveals no pregnancy. What should the practitioner do next?
   (A) Follow levels of β-human chorionic gonadotropin
   (B) Aspirate the uterine content
   (C) Give methotrexate
   (D) Repeat TVUS

10. Most problems of interpretation of electronic fetal monitoring are associated with tracings in:
    (A) Category I
    (B) Category II
    (C) Category III
    (D) Categories II and III

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