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Abnormal uterine bleeding

Objectives:

- Describe the physiology of normal menstrual cycle.
- Define abnormal uterine bleeding AUB.
- Describe the pathophysiology and identify etiologies of AUB.
- Describe the steps in the evaluation and the management of AUB.
- Summarize medical and surgical options for AUB .

we strongly recommend you to study fifth lecture " Physiology of the menstrual cycle " to cover objective number 1 .

References: 433 Teamwork + Hacker.

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Introduction

Abnormal uterine bleeding : is menstrual flow outside of normal **regularity**, **frequency**, **volume** or **duration**. common and can range from complete absence of bleeding (amenorrhea) to life-threatening hemorrhage. The etiology of the bleeding irregularities includes benign or malignant growths, systemic disease, coagulation defects, and hormonal imbalance. Early pregnancy and its complications should always be ruled out as the cause of AUB in women of reproductive age

occurrence :

In the US more than 10 million women suffer from AUB. This common medical problem can adversely affect a woman's daily activities and responsibilities with significant social, medical, sexual and emotional impacts. Although AUB can affect adolescence and women of reproductive age, the majority of cases occur in the 5-10 years prior to menopause. AUB accounts for more than 70% of all gynecological consults for peri-menopausal and post-menopausal women

Terminology used to describe bleeding patterns:

Clinical Dimensions	Descriptive Terms	Normal Limits (5th to 95th Percentiles)
Frequency of menses (days)	Frequent Normal Infrequent Absent	<24 24-38 24-38 —
Regularity of menses, cycle-to-cycle variation over 12 months	Regular Irregular	Variation ± 2-20 days Variation >20 days
Duration of flow (days)	Prolonged Normal Shortened	>8.0 4.5-8.0 <4.5
Volume of monthly blood loss (mL)	Heavy Normal Light	>80 5-80 5-80

Etiology of AUB

❖ PALM COEIN acronym for AUB differentials:

1- structural (PALM, most common in peri and post-menopausal women):

- **P**olyp**.**
- **A**denomyosis**.**
- **L**eiomyoma**.**
- **M**alignancy**.**

2- functional (COEIN , most common in reproductive women):

- **C**oagulopathy: most common in adolescent women who presents with heavy bleeding, so it's important to check coagulation disorders such as Von Willebrand Disease.
- **O**vulatory Dysfunction: it is the most cause of AUB in adolescence from anovulatory bleeding from immaturity of the HPO axis. Regular periods will be established within 2-3 years of menarche. For women of reproductive age ovulatory dysfunction is caused by: PCOS (most common cause of ovulatory dysfunction) , pregnancy, STD (Gonorrhea and Chlamydia). Ovulatory dysfunction is also the cause of AUB in peri-menopausal women secondary to declying ovarian function.
- **E**ndometrial process: usually affect by estrogen
- **I**atrogenic.
- **N**ot yet classified.

Evaluation of AUB

❖ History : ask about heaviness and pattern of bleeding.

- If the period is irregular and not predictable : ovulatory dysfunction
- If there is bleeding between the periods : structural cause
- Heavy periods : coagulopathy

❖ Physical examination:

- **PCOS :** sign of weight gain, acne, hirsutism, evidence of insulin resistance
- **Coagulopathy**: petechiae, ecchymosis, skin pallor or swollen joints
- **Signs of thyroid disease**
- **Pelvic exam:** including bimanual exam to assess the size and contour of the uterus.

❖ Investigation:

1- Labs :

- **Pregnancy test**
- **CBC:** looking for anemia
- Serum iron and iron-binding capacity
- Thyroid function test
- Coagulation tests (PT, PTT, and INR)
- Liver function test

2- Endometrial biopsy : to rule out hyperplasia and cancer in high risk women. > 40, diabetic or obese women

3- Imaging tests, if indicated:
Pelvic ultrasonography

Treatment

- **Depends on the etiology of AUB.**

- Anovulatory bleeding:

1. Oral contraceptives.
2. Cyclic progesterone.
3. Levonorgestrel IUD.
4. Endometrial ablation (after ruling out endometrial hyperplasia by biopsy)

- Coagulopathy:

Antifibrinolytic Therapy: Tranexamic acid.

- structural source (polyps and fibroid) : surgical.

1. polypectomy
2. myomectomy
3. Hysterectomy

CASE

A 45 year-old G2P0020 woman, with LMP 21 days ago, presents with heavy menstrual bleeding. Prior to 6 months ago her cycles occurred every 28-30 days, lasted for 6 days, and were associated with cramps that were relieved by Ibuprofen. In the last 6 months there has been a change with menses occurring every 25-32 days, lasting 7-10 days and associated with cramps not relieved by ibuprofen, passing clots and using two boxes of maxi pads each cycle. She is worried about losing her job if the bleeding is not better controlled. She denies dizziness, but complains of feeling weak and fatigued. Her weight has not changed in the last year. She denies any bleeding disorders or reproductive cancers in the family. She uses condoms for contraception. She takes no daily medications and has no other medical problems. She is married and works in a factory.
On physical exam, her weight is 150 pounds, height is 5 feet, 6 inches, BP 130/88, P 100. She appears pale. Pelvic exam : shows normal vulva, vagina and cervix; normal sized, non-tender, mobile uterus; non-tender adnexae without palpable masses.

1. What are the parameters of a normal menstrual cycle?

-Interval 21-35 days (Mean: 28 days)

- Duration: 2-7 days (Mean: 5 days)
- Volume: <80ml (Mean 35 ml)
- Composition: Non-clotting blood, endometrial debris

2. Describe the normal endocrinologic and physiologic events that make the menstrual cycle possible.

- The menstrual cycle can be divided into two portions. From the perspective of the endometrium, the cycle consists of the proliferative phase and the secretory phase. From the perspective of the ovary, the cycle is composed of the follicular phase and the luteal phase. The two phases are demarcated by ovulation. Thus, the proliferative phase corresponds to the follicular phase and the secretory phase corresponds to the luteal phase.

Day 1 is the first day of bleeding. In a 28 day cycle, ovulation occurs on Day 14. During the early follicular phase, increasing FSH drive the growth of a cohort of follicles. The increase in follicles drives a corresponding increase in estradiol. As estradiol increases, the endometrium proliferates and hypertrophies in response. FSH decreases in response to the negative inhibitory effect of estradiol. As a result the follicle, which is most sensitive to FSH, becomes dominant, continuing to secrete estradiol. This is the follicle destined for ovulation. The massive amount of estradiol causes the LH surge which signals ovulation or the release of the oocyte. The corpus luteum is formed at the ovulation site and produces progesterone. This progesterone trans- forms the endometrium to make it receptive to implantation. If pregnancy does not occur, then the corpus luteum undergoes atresia with a consequent fall in progesterone. This progesterone withdrawal causes the endometrium to shed. The fall in progesterone also allows FSH to rise and a new cohort of follicles to develop, and a new cycle begins.

3. What is the definition of abnormal uterine bleeding?

Menstrual bleeding which falls outside the normal parameters is considered abnormal. **Menorrhagia** is prolonged excessive bleeding. **Metrorrhagia** is irregular or intermenstrual bleeding. The combination of these is menometrorrhagia. Bleeding that occurs after menopause has occurred is also considered abnormal uterine bleeding.

4. What possible etiologies could cause this patient's bleeding?

PALM-COEIN is an acronym that was published in 2011 by the International Federation of Gynecology and Obstetrics that was created for the purpose of establishing a universally accepted nomenclature to describe uterine bleeding abnormalities.

PALM-Structure Causes

- ❏ Polyp
- ❏ Adenomyosis
- ❏ Leiomyoma
- ❏ Malignancy and Hyperplasia

COEIN-functional Causes

- ❏ Coagulopathy
- ❏ Ovulatory Dysfunction
- ❏ Endometrial
- ❏ Iatrogenic
- ❏ Not Yet Classified

5. Which are the potential etiologies of ovulatory dysfunction?

- ❏ Hyperandrogenic anovulation (polycystic ovary syndrome, congenital adrenal hyperplasia, or androgen- producing tumors)
- ❏ Hypothalamic dysfunction (i.e. due to anorexia nervosa)
- ❏ Hyperprolactinemia
- ❏ Thyroid disorder
- ❏ Primary pituitary disease
- ❏ Premature ovarian failure
- ❏ Iatrogenic (due to radiation or chemotherapy)

6. Discuss the mechanism for anovulatory bleeding

Progesterone withdrawal signals the endometrium to shed in a uniform way by causing spiral artery spasm. Women who do not ovulate do not experience progesterone withdrawal because they do not form a corpus luteum and usually have bleeding due to unopposed estrogen with either estrogen withdrawal or estrogen excess. Neither of these mechanisms causes spiral artery spasm, and therefore can result in non-uniform shedding of the lining at irregular intervals.

7. How can you tell if this patient is having ovulatory cycles?

- History consistent with ovulatory cycles (regular, presence of molimina).
- Timed (luteal phase) endometrial biopsy is it secretory?
- LH surge kits (ovulation prediction kits) detect LH surge in urine which follows LH surge in serum but occurs before ovulation.
- Basal body temperature chart with small temperature increase (0.5 degrees) after ovulation.
- Day 21 serum progesterone level.

8. What are the appropriate lab tests that should be ordered in this patient?

- CBC, TSH, Prolactin
- Pregnancy Test
- Endometrial Biopsy
- Pelvic Ultrasound

9. Labs show Hgb: 9.0, HCT: 27%, HCG: negative, TSH and Prolactin are within normal limits. Endometrial biopsy shows normal secretory endometrium, Pelvic ultrasound shows a normal sized uterus with a heterogeneous myometrium, the endometrial lining is 1.4 cm and irregular consistent with endometrial polyp, normal ovaries. **What further tests would you order based on the following results?**

- Fluid-enhanced sonohysterogram
- Hysterosalpingogram
- Diagnostic hysteroscopy

10. Describe potential treatment options for this patient.

Certain etiologies will respond better to certain therapies. Ablation is most effective when there is no structural lesion. In this patient's case, because she likely has an anatomic abnormality, one may consider offering a hysteroscopy or a hysterectomy (if she does not desire childbearing and desires definitive treatment). Medical options include the following:

- Oral contraceptive pills
-Cyclic progestin
- GnRH agonist
- High dose NSAID's
- Tranexamic acid
- Levonorgestrol IUD (Mirena)

However, since the etiology of her abnormal uterine bleeding is likely an endometrial polyp, medical management is really only an option as temporizing measures if she is not a surgical candidate.

11. What are important considerations when counseling the patient and helping her choose the best option for her?

- Fertility: The patient's desire for future childbearing should be assessed
- Therapeutic goals: The patient should consider how permanent a solution she desires. The various possible therapies are associated with a failure rate and a recurrence risk.
- Operative risks: Patients who have significant comorbidities or who are severely anemic should approach surgical therapies carefully.
- Time to menopause: The length of time until likely menopause should be discussed with patient and should be taken into consideration in the patient who might be hesitant to pursue surgical therapy.