Rationale: The occurrence of bleeding at times other than expected menses is common. Accurate diagnosis of abnormal uterine bleeding is necessary for appropriate management.

Intended Learning Outcomes:
The student will demonstrate the ability to:
- Define the normal menstrual cycle and describe its endocrinology and physiology
- Define abnormal uterine bleeding
- Describe the pathophysiology and identify etiologies of abnormal uterine bleeding
- Discuss the steps in the evaluation of abnormal uterine bleeding
- Explain medical and surgical management options for patients with abnormal uterine bleeding
- Counsel patients about management options for abnormal uterine bleeding

TEACHING CASE

CASE: A 45 year-old G2P0020, with LMP 21 days ago, presents with heavy menstrual bleeding. Prior to 6 months ago her cycles came 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 coming every 25-32 days, lasting 7-10 days and associated with cramps not relieved by ibuprofen, passing clots and using 2 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 exam, BP=130/88; P= 100; Ht=5’6’’; Wt=150 pounds. She appears pale. Pelvic exam shows normal vulva, vagina and cervix; normal size, mildly tender, mobile uterus; non-tender adnexae without palpable masses. Labs show Hgb: 9.0, HCT: 27%, HCG: negative, Endometrial biopsy: normal secretory endometrium, Pelvic ultrasound: heterogeneous myometrium, endometrial lining 1.4cm and irregular consistent with endometrial polyp, normal ovaries.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:
1. What are the parameters of a normal menstrual cycle?

- Interval: 24 to 35 days (Mean: 28 days)
- Duration: 6 to 7 days (Mean: 5 days)
- Volume: < 80 ml (Mean: 35 ml)
- Composition: Nonclotting blood, endometrial debris, dead and living endometrial cells

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 transforms 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.

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

- Dysfunctional uterine bleeding
- Thyroid disorders
- Endometrial polyp
- Leiomyoma
- Adenomyosis
- Endometrial hyperplasia/carcinoma
- Bleeding dyscrasia
- Endometritis

5. Which of these etiologies is associated with anovulation?

- Endometrial hyperplasia
- Endometrial carcinoma
- Dysfunctional uterine bleeding
- Thyroid disorder

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 don’t 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: current one is secretory, rules out anovulation in this cycle
- LH surge kit (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 further tests would indicate if there was an anatomic problem?
9. Describe 3 possible medical and 2 possible surgical therapies.

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

REFERENCES

