

Ministry of Education and Science of Ukraine  
V.N. Karazin Kharkiv National University

**DISORDERS OF THE MENSTRUAL FUNCTION.  
ABNORMAL UTERINE BLEEDING**

Guidelines to practical class in discipline of Obstetrics  
and Gynecology for higher medical education students

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The guidelines contain a list of theoretical questions on this topic for self-preparation of students for practical classes, a list of recommended and additional literature, as well as an example of test tasks.

These recommendations can be used for training 5th and 6th year students, interns and doctors.

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## LIST OF CONDITIONAL ABBREVIATIONS

AUB	Abnormal uterine bleeding
ACOG	American College of Obstetricians and Gynecologists
ADP	Adenosine-Diphosphate
ATP	Adenosine-Triphosphate
UAE	Uterine Artery Embolization
HCF	Health care facility
BMI	Body mass index
CRP	Clinical route of the patient
COC	Combined oral contraceptives
LNG-IUD	Levonorgestrel-releasing intrauterine system
LMCP	Local medical care protocol
ICD-10	International Classification of Diseases 10th revision
MHU	Ministry of Health of Ukraine
MPA	Medroxyprogesterone Acetate
NAMS of Ukraine	National Academy of Medical Sciences of Ukraine
FIGO	International Federation of Gynecologists and Obstetricians
NICE	National Institute for Health and Clinical Improvement (United Kingdom)
SEGO	Spanish Society of Gynecologists and Obstetricians
SOGC	Association of Obstetricians and Gynecologists of Canada
HMB	Heavy menstrual bleeding
VAS	Visual analog scale
ESR	Erythrocyte sedimentation rate

## INTRODUCTION

The problem of abnormal uterine bleeding (AUB) is one of leading places in modern gynecological practice. Uterine bleeding is the leading reason for urgent hospitalization. According to colleagues from different countries, 30% of women on the planet suffer from AUB, up to 65% of patients of reproductive age turn to doctors with complaints of excessive menstrual bleeding, and this pathology each year leads to 300,000 hysterectomies.

There is no data on the incidence and prevalence of AUB in Ukraine. Official statistics take into account general data on violations of menstrual cycle, which to some extent reflect the problem of anomalous uterine bleeding. According to the Center for Medical Statistics of the Ministry of Health of Ukraine, in 2013, 116,182 women fell ill with menstrual disorders for the first time of reproductive age, or 11.02 per 1000 women of reproductive age, and 17,833 adolescent girls (15–17 years), or 29.11 per 1,000 girls teenagers.

During the period 2008–2013, the incidence of menstrual disorders functions in women of childbearing age increased by 4.5% (2008 - 10.52, 2013 - 11.02).

Many new pieces of evidence have been accumulated in recent years, which led to a revision of diagnostic approaches and treatment regimens for uterine bleeding in women of different ages.

This is an urgent problem because the AUB promotes physical, emotional, social and material discomfort of the patient.

## SECTION I

### ***ETIOLOGY, PATHOGENESIS, CLASSIFICATION, RISK FACTORS FOR THE DEVELOPMENT OF THE AUB***

Uterine bleeding can be caused by a variety of reasons: uterine, ectopic and systemic.

The Working Group on Menstrual Disorders International Federation of Gynecologists and Obstetricians (International Federation of Gynecology and Obstetrics, FIGO) developed new approaches to related terminology with the AUB. The proposed nomenclature of the AUB is aimed at simplification of the clinical picture and replacement of such outdated terms as “menorrhagia”, “metrorrhagia”, “polymenorrhea” and “dysfunctional uterine bleeding”.

Classification in accordance with unified terminology, order № 353 “Abnormal uterine bleeding”:

**Abnormal uterine bleeding (AUB)** - any deviation from the flow cycle from the norm, which includes changes in regularity and frequency menstruation, duration of bleeding or amount of blood lost.

AUB can be divided into several types depending on the volume of blood loss, regularity, frequency, duration of bleeding or amount of blood that is lost.

**Acute AUB** - are episodes of bleeding in non-pregnant women of reproductive age, the intensity of which requires immediate intervention prevention of further blood loss.

**Chronic AUB** - are bleeding with abnormalities over three valence, volume and / or frequency that occur over time parts of the last 6 months.

**Heavy menstrual bleeding (HMB)** - excessive menstruation blood loss that adversely affects a woman's physical condition, social, emotional and/ or material aspects of her life. HMB can manifest alone or in combination with other symptoms.

**Intermenstrual bleeding** - often characterized by minor bloody discharge between clear periods of menstruation.

The FIGO (PALM - COEIN) classification system causes AUB in non-pregnant women of reproductive age. This classification includes 4 categories, causes of AUB associated with structural changes in reproductive bodies grouped by the abbreviation PALM and 5 categories not related to structural pathology, abbreviated COEIN.

**Classification of causes of AUB (PALM \ COEIN)**

Structural	Non-structural
P - polyps	C - Coagulopathy
A - Adenomyosis	O - Violation of ovulation
L - Leiomyoma	E - Pathology of the endometrium
M - Malignant tumors, hyperplasia	I - Iatrogenic
	N - Unclassified

The category of leiomyoma (L) is divided into two subtypes:

- Lsm for patients with at least one submucosal fibroid;
- Lo for patients in whom fibroids do not change the uterine cavity.

"N" corresponds to the category ("unclassified"), which allows you to open new reasons for future research.

**PATHOGENESIS**

Given the progress made in studying the physiology of the endometrium, the pathogenesis of AUB has not been studied thoroughly.

For the processes of normal endometrial rejection (menstruation) and timely cessation of bleeding requires a balance of mechanisms that contribute to bleeding and stop it.

Hemostasis is a set of physiological mechanisms aimed at kick bleeding in response to vascular damage. Thanks to this mechanism there is a stop of bleeding from small vessels with low blood pressure. Primary hemostasis consists of vascular and platelet components.

**I. Vascular component:****1. vasospasm at the site of injury (prevention of blood loss):**

- a) by the mechanism of axon-reflex,
  - b) due to serotonin, adrenaline and noradrenaline;
2. shunting of blood on the anastomosis above the site of injury.

**II. Platelet component:**

1. Adhesion (sticking) - 3-10 seconds. Normally, the vascular endothelium is charged negative as well as the platelet membrane, in addition, occurs secretion of prostacyclins (PGI-2), antithrombin, fibrinolysis activators vascular intima, which prevents blood clotting.

When blood vessels are damaged, the endothelium loses its negative charge and changes its on the positive. Negatively charged platelets stick to positively charged wound surfaces (adhesion).

Adhesion factors:

excess of positive charge at the site of damage; collagen sub-capillary endothelial - platelet activating factor; Hagemann factor (XII); Willebrand factor; fibropectin - a factor in the spread of platelets on the vascular wall.

2. Reversible aggregation (accumulation, adhesion of platelets with the formation of conglomerates of 10–20 platelets). When platelets stick to the place of damage, they change their charge from negative to positive, while they are attracted to a new batch of platelets that leads to the formation of platelet aggregate. But this process turns, i.e. mechanical impact or increase in blood pressure can lead to the breakdown of platelets.

Aggregation factors:

electrostatic interaction; ATP, ADP; adrenalin; serotonin.

3. Irreversible aggregation. When platelets are activated, reduction of actin and myosin filaments, which leads to degradation of platelets, the content of granules as if gluing platelets together.

Irreversible aggregation goes through stages:

- a) mild metamorphosis - the formation of bridges between platelets;
- b) irreversible metamorphosis - loss of platelet structure and formation of a homogeneous mass.

Factors:

1. thrombin (destruction of the platelet membrane);
2. PF;
- 3 platelet prothrombinase - fibrin threads;
4. retraction of platelet thrombus - strengthening and consolidation platelet thrombus in the damaged vessel due to actin-myosin-new platelet complex under the influence of thrombomodulin.

Platelet blockage is formed within 1-3 minutes from the moment damage and stops bleeding from small vessels.

In large vessels, the white blood clot can not withstand high pressure and is washed out. Therefore in them the hemostasis is carried out by formation of more strong fibrin thrombus (coagulation hemostasis).

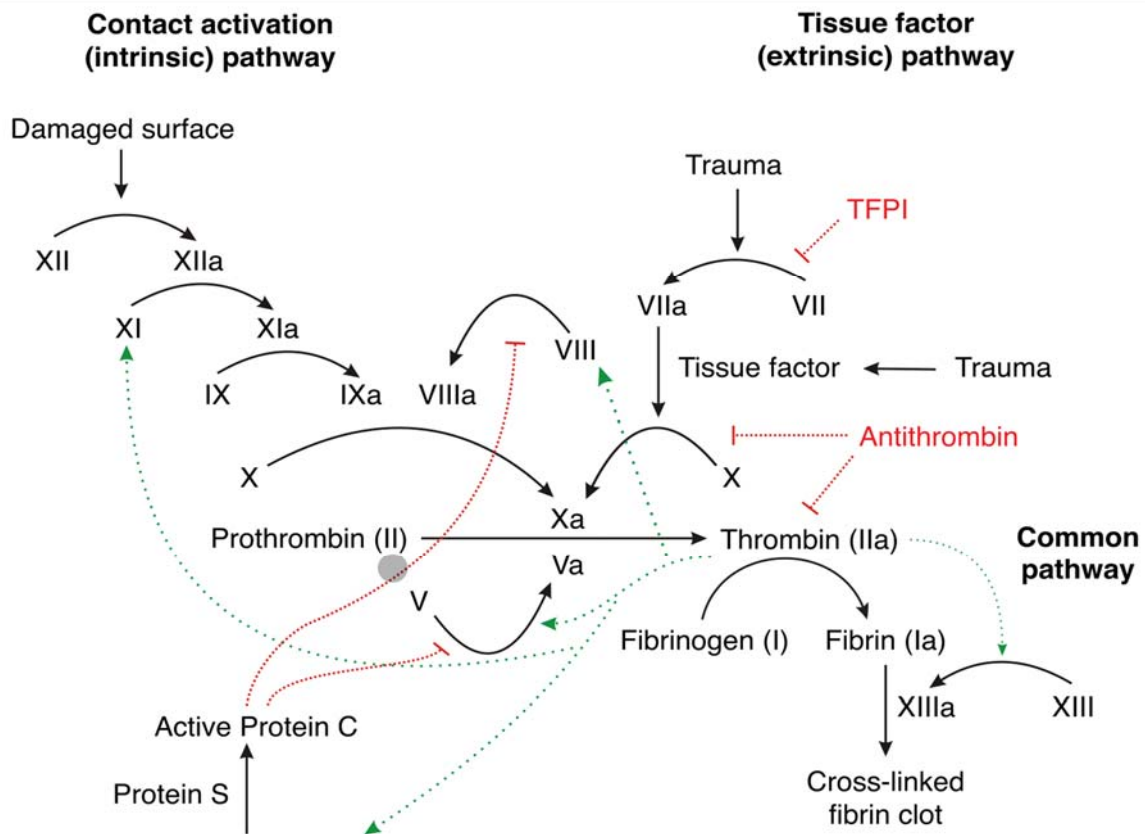
Coagulation hemostasis (secondary) is realized with the participation of melting, anticoagulant and fibrinolytic blood systems.

The blood clotting system is a series of interrelated reactions occurring with the participation of proteolytic enzymes, plasma proteins (coagulation factors) and ensure the formation of a permanent blood clot.

The process of blood clotting takes place in four successive phases:

1. The formation of prothrombokinase (complex fXa, fV, Ca<sup>2+</sup>, phospholipid platelets). It can take an "external" path - with participation tissue thromboplastin and "internal" - without his participation. However effective hemostasis is possible only with normal functioning of both mechanisms.
2. Formation of thrombin from prothrombin under the influence of prothrombinase complex.
3. Formation of fibrin from fibrinogen under the influence of thrombin.
4. Blood clot retraction

## Scheme of sequential activation of coagulation factors



Natural system of inhibitors of plasminogen activator, antiplasmin and other proteases aimed at maintaining balance between education fibrin and fibrinolysis by slowing down processes lysis. In over-dimensional activation plasmin can develop a pathological condition hyperfibrinolysis, which can initiate the AUB and prevent its termination.

In hemostasis in the endometrium, fibrinolysis is important.

Mechanisms are also revealed arose AUB in women with leiomyoma uterus: intensive development of venous vessels in the endometrium, slowing outflow of blood from the uterus, decreased resistance in the uterine arteries, deformity cavity and violation of the contractile ability of the uterus in the presence of submucosal nodes, increased endometrial area, local hyperestrogenemia, hypertension in the intramural vessels of the uterus. All of the above factors prevent blood clots and promote bleeding.

Damage to the endometrium in the AUB is accompanied by excessive entry into the bloodstream of plasminogen activators from tissues and endothelium damaged blood vessels, depleting the system of natural plasmin inhibitors. Stress hormones activate Hagemann factor and trigger Hagemann - dependent mechanism of fibrinolysis.

All of the above explains the relevance of diagnosis, prevention and treatment of hyperfibrinolysis in AUB.

### **Risk factors for abnormal uterine bleeding**

- uterine leiomyoma
- older age of women
- hereditary blood diseases - Von Willebrand's disease (VWF)
- endometriosis
- obesity
- a large number of births
- bad habits (smoking)
- psychological stress

## SECTION II

### *AUB: clinic, diagnosis, treatment*

#### **1. HISTORY**

History taking and physical examination help to establish the cause of the AUB, refer the woman for further examination, determine /clarify the tactics of the patient.

The *anamnesis* includes the following information:

- sexual and reproductive history (method of contraception, possibly the risk of pregnancy and sexually transmitted infections, future pregnancy, the presence of infertility, the passage of a woman cervical screening);
- manifestations of diseases that indicate systemic causes of bleeding (hypothyroidism, hyperprolactinemia, coagulation disorders, polycystic ovaries);
- family history and the presence of hereditary diseases.

In case of acute bleeding, additional methods of detecting AUB are not required, as the woman is mostly forced to seek medical help herself.

However, in the case of chronic AUB patients rarely pay attention to the nature of menstrual bleeding and it is not always considered necessary to discuss this with your doctor, who often seeks medical attention due to other problems (anemia or other diseases). These circumstances require the implementation of clear normatively determined recommendations to interview the patient to detect AUB.

During the collection of anamnesis the woman is asked the following questions:

- Does menstruation affect your daily activities (work, sports, communication with family)?
- Do you have to change hygiene products at night?
- Are there large blood clots (more than 1 cm) in the discharge?
- Do you feel weak, short of breath, tired? Have you ever been diagnosed with anemia?

**If the answer to one or more questions is positive, there are grounds to assume that the patient has AUB.**

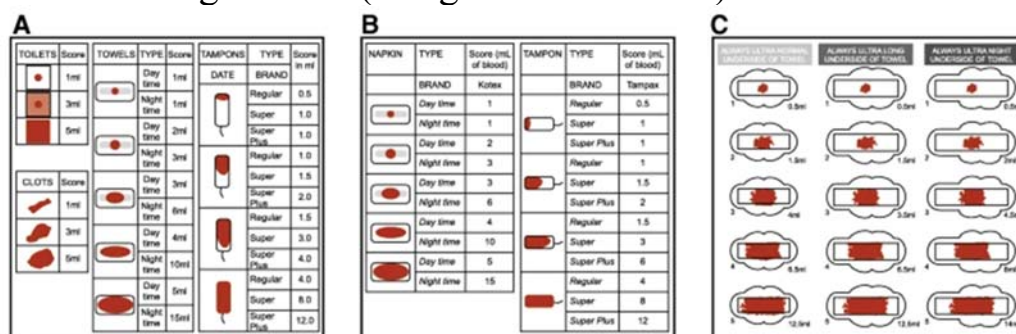
This questionnaire is recommended for use at the reception of general practitioners / family physicians, pediatricians patients about the symptoms of anemia, as well as at the reception of the obstetrician-gynecologist, even if the patient does not make active complaints of heavy menstruation.

It is advisable to find out the parameters of violations in accordance with parameters of normal menstruation.

**Normal limits for the menstrual cycle (FIGO, 2011)**

Parameters	Clinical Characteristics
Interval	24-38 days
Duration of bleeding	4,5-8 days
The amount of blood	5–80 ml / cycle

In order to diagnose, evaluate the effectiveness of treatment, as well as how a tool for self-diagnosis is possible to assess the volume of menstruation blood loss by visual-analog method (using the icon table 3).



Tabl. 3. Icon of self-assessment of blood loss during menstruation

**2. PHYSICAL EXAMINATION**

During the physical examination it is necessary to apply attention to manifest systemic diseases which can cause AUB, also necessary to assess the condition of the genital tract and pelvic organs to detect causes bleeding and rule out its anatomical causes such as leiomyoma, polyps uterus, etc. Important has a routine definition index body weight (BMI), as obesity is a risk factor for many diseases, including those associated with menstrual disorders.

**Physical assessment of the patient's condition with AUB**

Overall rating	Gynecological examination
The main indicators	Examination of the vulva, vagina, cervix, anus and urethra
Weight / body mass index	Bimanual examination of the uterus and ovaries
Examination of the thyroid gland	
Skin examination (pallor, bruising, stretch marks, hirsutism, petechiae)	Rectal examination if rectal bleeding is suspected or if there is a risk of concomitant pathology.

### **3. LABORATORY DIAGNOSTICS**

After a physical assessment of the patient's condition, an express pregnancy test is performed; Pap smear according to the indications; if an infection is suspected sexually transmitted, examination in accordance with the relevant protocol.

To identify the disease that caused or could cause development of AUB, investigated:

- general blood test (anemia screening), with normal content hemoglobin determination of ferritin level (state of iron depot);
- human chorionic gonadotropin ( $\beta$ -subunit) in serum or urine, rapid pregnancy test;
- thyroid-stimulating hormone (TSH) and free thyroxine (T4 Fr.), prolactin (detection of subclinical hypothyroidism and hyperprolactinemia);
- in the presence of a history of severe bleeding, starting with menarche; postpartum hemorrhage or bleeding after tooth extraction; other species bleeding or signs of coagulation disorders in the family history - recognized prothrombin time, activated partial thromboplastin time, ferritin, and a test for Willebrand's disease; hematologist consultation.

### **4. INSTRUMENTAL METHODS OF EXAMINATION**

Appointed in case of suspicion of structural causes of blood leaks; ineffectiveness of conservative treatment.

Transvaginal (transrectal) ultrasound (US) is the "gold standard" of diagnosis, which allows a detailed assessment of anatomical no features of the uterus and endometrium, as well as to detect structural pathology myometrium, cervix, fallopian tubes and ovaries. This method of research can help in the diagnosis of endometrial polyps, adenomyosis, leiomyoma uterus, endometrial thickening associated with hyperplasia and malignancy neoplasms.

In case of unconvincing ultrasound results, as well as in the presence of a risk of qualitative process requires hysteroscopy with histological examination endometrial lesions. Blind aspiration biopsy may be the method of choice.

*Conditions in which hysteroscopy with biopsy should be preferred endometrium in women with AUB in relation to blind biopsy:*

- age > 40 years;
- risk factors for endometrial cancer (obesity, absence history of childbirth, diabetes mellitus, polycystic ovary syndrome, colorectal cancer in the family history);
- previous ineffective treatment of AUB;
- intermenstrual bleeding.

The method of dilatation and scraping is not currently the standard of diagnosis state of the endometrium. This is a "blind" procedure, the risk of complications of which is identical to the risk of hysteroscopy. Applying this method for evaluation purposes endometrial condition is necessary only in the absence of other diagnostic opportunities.

## ***5. FORMULATION OF THE DIAGNOSIS***

Due to the unfoundedness and inconsistency of many reasons AUB, some of which may be combined in the same woman, FIGO adopted a new classification system (PALM - COEIN) to determine the causes of non-pregnancy AUBs.

After excluding organic causes, most cases of AUB are due to disorders of the hypothalamic-pituitary-ovarian regulation. In chronic nocturnal ovulation disorders endometrium undergoes prolonged estrogen stimulation without proper counteraction to progesterone, which leads to uncontrolled (enlarged glands and blood vessels) and poorly structured growth. According to this view, the AUB is caused by violations of ovulation and is also accompanied by structural abnormalities of the endometrium.

An example of the formulation of the diagnosis: AUB - abnormal uterine edema on the background of endometrial dysfunction, in particular luteal insufficiency phases of the menstrual cycle; AUB - abnormal uterine bleeding as a result of ovulation disorders.

## ***6. DIFFERENTIAL DIAGNOSIS***

When determining the diagnosis of HMB, it is necessary to exclude the presence of pathology, as well as bleeding associated with pregnancy.

Diagnosis and treatment of abnormal uterine bleeding organically originate their own specifics and are described in the relevant protocols.

In adolescence, the cause of abnormal uterine bleeding is ovulation disorders associated with hypothalamic immaturity are important pituitary-ovarian regulation (AUB-O). Special attention is paid to patients this category should be addressed to the exclusion of the AUB caused by parental pathology (coagulopathy, etc.), and bleeding due to arterio-venous malformations of the uterus.

## 7. TREATMENT

Treatment schemes:

### Acute AUB

In the case of acute AUB of violation of vital functions of the stabilization of their indicators (arterial pressure, heart rate) contractions, respiratory rate, temperature, cognitive function) and elimination hypovolemia.

Drug treatment is the treatment of choice in most patients (if clinical circumstances allow). The method of treatment is chosen from the severity of the condition, history, comorbidities and the presence of indications. One can be used to treat acute AUB of the following drugs: tranexamic acid, combined oral contraceptives, oral progestogens. When using hemostasis combined oral contraceptives take into account the risk of thromboembolic complications.

Medication	Single dose	Regime
COC	Single-phase (30-35 µg ethinyl estradiol)	3 times a day for 7 days or up to 4-5 times a day for 3-5 days, then decrease every 2 days for 1 tablet, the total period of application of COC is not less than 20 days
Tranexamova acid	1.5 g orally or 10 mg / kg intravenously (up to 600 mg)	3 times a day for 5 days, each 8 hours.
linestrenol *	5 mg orally	3 times a day for 7 days

\* Other progestins with other regimens may also be effective

The choice in favor of surgical treatment is considered in the case of:

- instability of the clinical condition of the woman,
- the presence of contraindications to medical treatment,
- no effect of drug treatment.

Among the surgical methods in the treatment of acute AUB depending on clinical situation and technical capabilities of the HCF are used: ablation/endometrial resection, uterine artery embolization, hysterectomy, specific surgical treatment in the detection of structural pathology (according to the relevant protocols).

Dilatation and curettage are not the method of choice, except in cases of severe condition due to acute AUB, which is not controlled by drug therapy and there is no possibility of other methods of surgery.

### Chronic AMK

If the cause of uterine bleeding is a systemic disease, it is necessary to carry out its specific treatment by a specialist.

If structural pathology of the pelvic organs is detected, treatment should be carried out in accordance with appropriate clinical protocols.

After the exclusion of structural pathology of the pelvic organs, the first line of therapy of the AUB should be considered drug treatment.

The treatment aims at the following:

- ☒  reduction of blood loss during menstruation,
- ☒  prevention of relapses,
- ☒  correction of anemia,
- ☒  improving the quality of life.

Drug treatment of iron deficiency anemia is carried out by oral forms of iron preparations (tablets, liquid forms). In the case of acute API, intravenous iron preparations may be used.

The effectiveness of drug treatment is evidenced by an increase in hemoglobin levels after 21 days by 20 g / l from the beginning of drug treatment. If the response to treatment is positive - treatment continues; a general blood test is performed every month; treatment lasts for 3 months after normalization of hemoglobin and ferritin levels (protocol for patients with iron deficiency anemia).

It should be noted that especially in patients with hyperproliferative processes of the endometrium, it is important to avoid hypoxia and oxidative stress caused by anemia.

### **Medical treatment of the AUB**

Before prescribing treatment, a woman's reproductive plans and the need for hormonal contraception are clarified.

Ethamsylate is not used for medical treatment of AUB.

The question of the use of surgical treatment is considered only after the ineffective use of these methods of conservative therapy or in the event of a clinical situation that requires surgery.

In the case of prescribing a drug for the treatment of AUB, the instructions of which do not specify the indication, the doctor provides relevant information to the woman (or parents of the child).

### **Hormonal treatments**

In the absence of contraindications and with the approval of the woman of this method of treatment, the following hormonal drugs are prescribed: intrauterine system with progestogen or combination of estradiol valerate with dienogest in the mode of dynamic dosing; combined oral contraceptives; oral progestogens or long-acting progesterone injections.

#### *Intrauterine system with progestin*

The intrauterine system with levonorgestrel (LNG-IUD) in the absence of significant structural pathology significantly reduces menstrual blood loss, increases hemoglobin and ferritin.

### *Combined oral contraceptives*

The only combination of estrogen and progestin, which indicates the treatment of AUB, is estradiol valerate + dienogest in dynamic dosing.

Combined oral contraceptives containing ethinyl estradiol can be used in the treatment of chronic AUB both cyclically and preferably continuously, taking into account thrombotic risks.

*Oral progestins.* The use of progestins in the regime from the 5th to the 25th day of the menstrual cycle (at least 20 days in a cycle) is accompanied by a reduction in menstrual blood loss.

*Contraceptive patches and vaginal rings* have not been specifically studied to treat AUB, but they have been shown to reduce menstrual blood loss.

*Gonadotropin-releasing hormone agonists.* The use of gonadotropin-releasing hormone agonists is considered when all other treatments are contraindicated or associated with a high risk of complications or the patient refuses to use them.

### **Non-hormonal treatments**

If AUB is accompanied by dysmenorrhea, non-steroidal anti-inflammatory drugs (NSAIDs) are preferred to tranexamic acid.

*NSAIDs* inhibit prostaglandin synthesis by altering the ratio of prostaglandins to thromboxane, which promotes vasoconstriction in the uterus. As planned, NSAID therapy should be started the day before menstruation and continued until the bleeding has stopped (3-5 days). No significant differences in efficacy between different NSAIDs were found.

*Fibrinolysis inhibitors.* In women with AUB in the endometrium increased levels of plasminogen activators with more pronounced local fibrinolytic activity. Tranexamic acid (plasminogen activator inhibitor) is an antifibrinolytic that inversely binds to plasminogen, reducing local fibrin degradation without altering coagulation parameters.

NSAIDs and / or tranexamic acid should be discontinued unless there is a positive reduction in bleeding during the three menstrual cycles.

### **Indicators of ineffectiveness of drug therapy:**

- ☐ in acute AUB - no dynamics of reduction of blood loss within 12 hours after prescribing therapy with the development of hemodynamic and / or hematological complications;
- ☐ in case of chronic AUB - no dynamics of reduction of blood loss within 3 months after prescribing therapy.

### **Surgical methods of treatment of AUB**

#### **Indications for surgical treatment of women with AUB:**

- ineffectiveness of drug therapy,
- impossibility of drug therapy (side effects, contraindications, etc.),
- structural pathology of the uterus.

### **Surgical methods:**

- ☐ hysteroscopic ablation / resection with obligatory histological examination of the endometrium;
- ☐ dilatation and curettage (scraping of the uterine cavity) with histological examination of the endometrium;
- ☐ endometrial ablation;
- ☐ embolization of uterine arteries;
- ☐ hysterectomy;
- ☐ surgical methods of treatment of structural pathology of the uterus (see relevant protocols).

The ideal approach to therapy is to select treatments ranging from less invasive to more invasive.

**Endometrial ablation** is a minimally invasive surgical treatment for severe menstrual bleeding. Ablation is performed in the presence of indications for surgical treatment and the patient's lack of reproductive plans.

#### **Indications for endometrial ablation:**

- ☐ For the initial treatment of AUB after full discussion with the woman of the risks and benefits of other treatments;
- ☐ in the absence of structural or morphological abnormalities.

Two methods of endometrial ablation are currently used. The first involves hysteroscopic resection and / or ablation. Non-hysteroscopic or second-generation techniques include a number of different methods that destroy the endometrium without direct imaging.

**Endometrial ablation** is the destruction of the entire thickness of the endometrium. At this operation it is impossible to take fabric for histologic research.

**Endometrial resection** - excision of the entire thickness of the endometrium - is the possibility of histological examination of excised tissue.

#### **Conditions for removal - resection of the endometrium:**

To obtain optimal results in hysteroscopic resection of the endometrium in the AUB, the destruction of its basal layer is accompanied by the removal of 1-3 mm of the myometrium.

#### **Removal techniques - endometrial resection:**

*1) Techniques of the first generation* or resectoscopic removal of the endometrium are performed under direct examination of the endometrial cavity. Carried out by endometrial evaporation using a round ball or resection of the endometrium using a unipolar or bipolar loop, or a combination of both techniques.

*2) Second generation techniques* - hardware methods of destroying the endometrium with different types of energy.

Prior to **endometrial ablation-resection**, a preliminary histological examination of the endometrium should be performed.

Risks associated with endometrial ablation/resection include perforation of the uterus, infection, bleeding and injury to the bowel or bladder, and the development of a hematometra with or without cyclic pain with or without hematosalpinx. Possible negative consequences of hysteroscopic methods include hypervolemia, especially with the use of hypotonic solutions, hyponatremia and its complications.

#### **Management of the postoperative period:**

1. Women should be advised to avoid further pregnancy and, if necessary, use effective contraception after endometrial ablation.
2. The use of LNG-IUD after hysteroscopic ablation.

The method of **dilatation and curettage** is considered as a medical-diagnostic technique used in the AUB in case of ineffectiveness of drug therapy and in case of impossibility of biopsy selection of endometrial sample and / or hysteroscopy.

In certain clinical situations, uterine artery embolization may be performed in case of bleeding.

**Hysterectomy** is a radical method of treating abnormal uterine bleeding. Hysterectomy is used in women with AUB as the final method of therapy.

#### **Indications for hysterectomy:**

- ineffective, contraindicated or rejected by the patient other methods of treatment.

#### ***The decision on which way to use depends on:***

-from the size of the uterus, its motility, the condition of the cervix, the size and shape of the vagina;

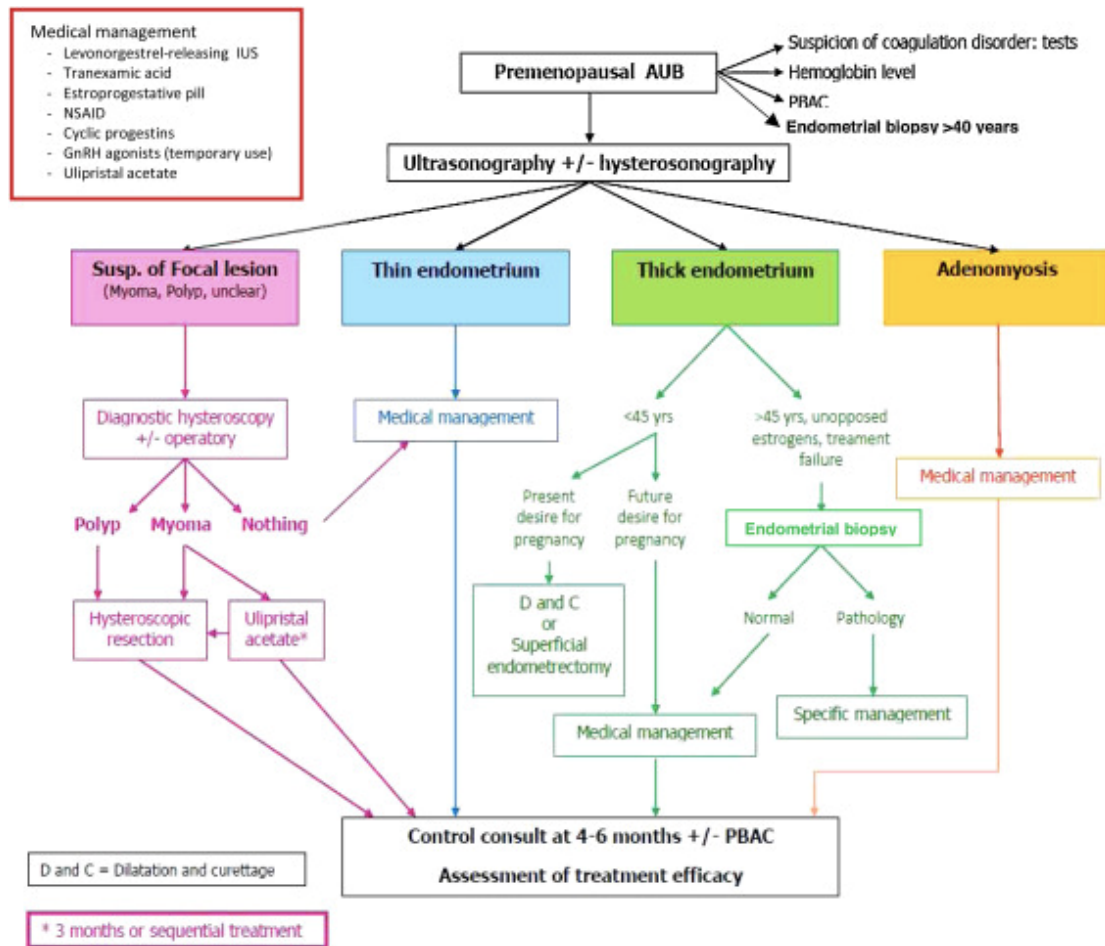
-presence of the mating process, transferred operations on the organs abdominal cavity and pelvis.

#### **Recommendations for hysterectomy**

Women who are offered a hysterectomy:

- should have a full discussion of the content of the operation and its consequences before decision making. Discussions should include: sexual feelings, effects on fertility and sexuality, urinary function bubble, necessary the need for further treatment, complications of treatment, women's expectations, alternative surgeries and psychological impact;
- should be informed of the increased serious risk complications (such as surgery-related bleeding or injury other bodies abdominal cavities) related with hysterectomy when there is a pronounced mating process;
- be aware of the risk of possible ovarian loss and its consequences, even if the ovaries are preserved during a hysterectomy.

In fig. 1 presented algorithm curative tactics at the A depending on the etiology, reproductive plans and preferences of the patient.



*Figure 1. AUB treatment algorithm*

The main objectives of anti relapse therapy are the normalization of the hypothalamic-pituitary-ovarian system, the restoration of ovulation, and filling the deficiency of sex steroid hormones. Therefore, it is very important to understand the type of bleeding, which will ensure the correct selection and dose of the drug.

## SECTION III

### *AUB IN GIRLS: clinic, diagnosis, treatment*

In the presence of vaginal bleeding in girls under 9 years, subject to the exclusion of structural pathology of the uterus, vulva and vagina, examination and treatment is carried out for the diagnosis of premature sexual development and treatment according to the protocol.

The PALM-COIEN classification is also used in the differential diagnosis of AUB in children and adolescents.

The principles and methods of treatment of both acute and chronic AUB in children are consistent with the above in this protocol for women of childbearing age.

In the treatment of girls with chronic AUB, preference is given to tactics aimed at forming a two-phase menstrual cycle by identifying and eliminating the causes of its violation.

In all urgent cases, girls with AUB must follow the general principles of emergency resuscitation. Assessment of basic vital signs (measurement of blood pressure, heart rate, pale skin, etc.) allows to identify patients with heavy menstrual bleeding (HMB). In girls with signs of hypovolemia caused by HMB, intensive care should be started immediately in accordance with relevant medical and technological documents.

## TEST QUESTIONS

1. A 13-year-old girl complains of prolonged vaginal bleeding for 3 weeks, weakness. The last menstruation was 3 months ago. In the blood: Hb - 74 g / l, er. -  $2.8 \cdot 10^9 / l$ , platelets -  $280 \cdot 10^9 / l$ . At recto-abdominal examination: the uterus is not enlarged, the appendages are unchanged. Which diagnosis is most likely?

- A. Willebrand's disease
- B. Thrombocytopenic purpura
- C. Abortion in progress
- D. Werlhof's disease
- E. Juvenile uterine bleeding

2. A 13-year-old girl has bruises of various sizes and colors on her skin. She complains of dizziness, uterine bleeding. On examination - a severe condition, pale skin, auscultation of the heart rate of 140 beats / min. Rough systolic noise, blood pressure - 90/40 mm Hg. Liver, spleen are not enlarged. In the clinical analysis of blood Er.- $1,8 \times 10^{12} / l$ , HB-50 g / l, KP - 0.7, ret - 4%, platelets -  $20 \times 10^9 / l$ , L- $12 \times 10^9 / l$ , e-2%, p- 5%, c-75%, l-16%, m-2%, ESR-15 mm/h. Hematocrit - 0.25. What determines the severity of the patient's condition?

- A. Thrombocytopenia
- B. Acute blood loss
- C. Heart failure
- D. Symptoms of intoxication
- E. Reduction of blood pressure

3. A 14-year-old girl complained of significant bloody discharge from the genital tract within 10 days after delaying menstruation for 1.5 months. Such bleeding recurs periodically from the age of 12 on the background of an unspecified cycle. Rectal examination of the pathology of the internal genitals did not reveal. In the clinical analysis of blood: HB - 70g/l, erythrocytes  $2,3 \times 10^{12} / l$ , hematocrit - 20%. Your diagnosis?

- A. Juvenile bleeding, posthemorrhagic anemia
- B. Werlhof's disease
- C. Sclerocystic ovary syndrome
- D. Hormone-producing ovarian tumor
- E. Incomplete miscarriage

4. A 48-year-old patient applied to the gynecology department with complaints of heavy bleeding from the genital tract after delayed menstruation for 5 months,

weakness, and dizziness. Objectively: pale skin, tachycardia. At gynecological examination: the body of the uterus is normal size, painless, mobile; appendages on both sides are not defined. What is the probable diagnosis of the patient?

- A. Menopausal dysfunctional bleeding
- B. Uterine leiomyoma
- C. Incomplete abortion
- D. Adenocarcinoma of the endometrium
- E. Internal endometriosis

5. A 15-year-old patient was admitted to the gynecology department with complaints of significant bloody discharge from the genital tract, general weakness. Bleeding lasts for 8 days after 2 months of delayed menstruation. She did not live a sexual life. Through the rectum: the body of the uterus is dense, slightly reduced, painless, mobile, and is in a normal position. The ratio between the cervix and the body is 1: 1. Appendages on both sides are not defined. Coagulogram is normal. What is the clinical diagnosis?

- A. Impaired uterine pregnancy
- B. Dysfunctional uterine bleeding of juvenile age
- C. Malignant tumor of the uterus
- D. Ovarian cyst
- E. Werlhof's disease

6. A 51-year-old patient complains of significant vaginal bleeding for 15 days. From the anamnesis: menstrual dysfunction is noted during the year, as well as increased irritability, sleep disturbances. At ultrasound: uterus 60mm meets age standards, appendages without features, endometrial thickness 14 mm. Your tactics?

- A. Diagnostic fractional scraping of the uterine wall
- B. Conservative treatment of bleeding
- C. Hysterectomy
- D. Supravaginal amputation of the uterus without appendages
- E. Examination for TORCH infection

7. A 46-year-old patient consulted a woman with complaints of moderate vaginal bleeding that occurred after 1.5 months of delayed menstruation. During gynecological examination, the cervix is clean, the body of the uterus is not enlarged, mobile, not painful, the appendages are not changed. Your diagnosis?

- A. Adenomyosis
- B. Dysfunctional uterine bleeding
- C. Ectopic pregnancy
- D. Submucosal leiomyoma of the uterus
- E. Cancer of the uterine body

## LIST OF RECOMMENDED LITERATURE

### *Required*

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*Information resources*

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2. <http://www.moz.gov.ua> - Ministry of Health of Ukraine.
3. <http://medstandart.net/byspec/9> - Standards of medical care in Ukraine.

## NOTES

Навчальне видання

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## **ПОРУШЕННЯ МЕНСТРУАЛЬНОГО ЦИКЛУ. АНОМАЛЬНІ МАТКОВІ КРОВОТЕЧІ**

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