MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

International Faculty

Department of obstetrics and gynecology

CONFIRMED by
Vice-rector for scientific and pedagogical work
Eduard BURIACHKIVSKYI
«29» August, 2024

METHODOLOGICAL RECOMMENDATIONS

FOR LECTURE

International Faculty, Course V

Discipline "Obstetrics and Gynecology"

Lecture №4. Topic: Hypertensive disorders during pregnancy. Preeclampsia. Emergency care.

Approved:

Meeting of the Department of Obstetrics and Gynecology of Odesa National Medical University

Protocol No. 1 dated August 29, 2024.

Head of the Department of_____(Ihor GLADCHUK)

Developer:
Ph.D., DSc.(Med) Professor_____(V. Artyomenko)

LECTURE № 4:

HYPERTENSIVE DISORDERS DURING PREGNANCY. PREECLAMPSIA, ECLAMPSIA. EMERGENCY CARE.

RELEVANCE: Etiology and pathogenesis, modern diagnostic methods, volumetric survey of patients, clinical features, classification of preeclampsia and eclampsia are basic to understand here to provide qualified emergency care, modern principles of prevention and medical rehabilitation of the patients. Unless well studied, this can make impossible to master physiological and pathological obstetric care.

LEARNING OBJECTIVE is to gain basic knowledge about the etiology, pathogenesis, the clinic, methods and algorithm for diagnosing preeclampsia and eclampsia in pregnant women. Get knowledge about modern treatment and prevention principles of pregnant women with preeclampsia during pregnancy and principles of rehabilitation. Develop a special vigilance in the prevention and early diagnosis preeclampsia and eclampsia of pregnant women in students. Form a sense of moral and legal responsibility for the timeliness and quality of medical care obstetric patients. To familiarize students with the contribution of Ukrainian midwifery school issues prevention, diagnosis of preeclampsia and eclampsia of pregnant women, treatment and rehabilitation patients.

BASIC CONCEPTS: Etiology and pathogenesis of preeclampsia and eclampsia. Modern diagnostic methods for preeclampsia and eclampsia, volumetric survey of patients. Clinic of preeclampsia and eclampsia. Classification of preeclampsia and eclampsia. Principles of pregnant women with early gestosis, preeclampsia and eclampsia. Emergency care. Modern principles of prevention preeclampsia and eclampsia, medical rehabilitation patients.

PLAN AND ORGANIZATIONAL STRUCTURE OF THE LECTURE

№	The main stages of the lecture, their content	Type of lecture, equipment of the lecture	Time distribution
1.	*Preparatory stage*		
	❑ Defining of educational goals		3 min
	❑ Providing of positive motivation		2 min
2.	*The main stage*		
	❑ Presentation of lecture material	Clinical	90%
	Plan:		

	– Early gestosis. Terminology, classification, clinical features, diagnostics, treatment principles, prophylactics, prevention. - Hypertensive disorders during pregnancy. Terminology, classification, clinical features, diagnostics, treatment principles, prophylactics, prevention. - Preeclampsia. Terminology, classification, clinical features, diagnostics, treatment principles, prophylactics, prevention, rehabilitation. Emergency care in severe preeclampsia. - Eclampsia. Terminology, classification, clinical features, diagnostics, treatment principles, prophylactics, prevention, rehabilitation Emergency care in eclampsia.	Multimedia equipment (computer, projector, screen, TV). Power Point presentation	25 min 15 min 20 min 20 min.
3.	*The final stage* Lecture summary. Answers to questions. Tasks for self-preparation		5 min

EDUCATIONAL MATERIALS

Early gestosis

The concept of "early gestosis" exists only in the practice of obstetricians - gynecologists CIS. In obstetric practice of foreign countries such thing does not exist, there is state assessed as 'minor' complications of pregnancy, or "unpleasant symptoms during pregnancy". But in the HIC-10, section XV, topic O21 includes vomiting varying degrees of severity during pregnancy, and headings O26 and O28 provide other conditions associated with pregnancy. We therefore consider it appropriate to consider in a separate section of the particular state of pregnancy, under the heading "early gestosis".

The pathology of pregnancy is divided into two groups (for the clinical course):

1. Early gestosis, which often occurs - vomiting of pregnant, excessive salivation, pruritus gravidarum.
2. Early gestosis, which is rare - dermatosis of pregnant, cholestatic hepatosis pregnancy, acute liver steatosis of pregnant, tetania gravidarum, chorea gravidarum, osteomalacia gravidarum, bronchial asthma of pregnancy.

Etiology and pathogenesis of early gestosis.

To explain the causes of early gestosis suggested many theories (toxemic, allergic, endocrine, neurogenic, psychogenic, immune, etc.).

In modern theories of early gestosis is considering as a consequence of violations of neuro-vegetative-immuno-endocrinic-metabolic-regulation, in which the leading role played by the functional state of CNS.
It lasted from excessive impulse fetal egg causes excessive irritation areas of the hypothalamus, brain stem and entities that are involved in the regulation of autonomic functions and inhibition of neural processes in the cerebral cortex. As a consequence - the predominance of excitatory processes in the brain stem (in particular, vomiting center).
Risk factors of early gestosis
• Spouse or acquired deficiency of the neuroendocrine regulation of adaptive responses (hypoxia, infection, intoxication, violation of the regime in childhood and adolescence, and the like).
• Extragenital diseases.
• Violations of the function of the nervous system, stress situations.
• Past medical genital organs, which can cause changes in the receptor apparatus of the uterus and the occurrence of pathological impulse to the CNS.

Vomiting of pregnant
Vomiting of pregnant (emesis gravidarum) is a complex clinical syndrome. The act of vomiting - one of the manifestations of the disease, which develops diarrheal, nimble, secretory, sensory, vascular and other disorders.
In terms of severity, light vomiting (less than 5 times a day), moderate (5 to 10 times) and severe vomiting (hyperemesis gravidarum) with metabolic disorders (more than 10 times a day). It should be noted that in 50% of pregnant women in early pregnancy occurs "morning vomiting, which does not have a pathological nature and does not require medical treatment.

Degree	Status	Frequency of vomiting	Weight loss	HR	laboratory research
I. Light (neurosis phase)	Satisfactory	Up to 5 times	Not more than 3 kg	Norm	Norm
II. Moderate (toxicosis phase)	Relatively satisfactory	6 -10 times	More than 3 kg	Up to 100	Acetone in the urine ++
III. Severe (dystrophy phase)	Severe	Up to 25 times and more	8 - 10 kg and more	Above 100	Acetone in the urine ++++

In determining the severity of the disease determine the clinical manifestations: State of the pregnant woman, dry skin, yellow sclera and skin, the presence or lack of appetite, salivation, nausea, vomiting frequency and intensity, the curve of weight loss, dehydration, heart rate, blood pressure, sub-febrile temperature, value diuresis. Assessment of the severity of vomiting pregnant includes host and the results of laboratory tests: specific gravity of urine, the presence of ketonuria, the presence of acetonitrile, well in urine, the level of bilirubin, creatinine in the blood.

To diagnose and monitor the effectiveness of treatment conducted the following studies:

• control of body weight;
• control of diuresis;
• The dynamics of BP;
• Determining hematocrit and hemoglobin;
• urine (specific gravity, acetone, ketone bodies, protein);
• biochemical study of the blood (bilirubin and its fractions, liver enzyme, creatinine);
• Determining the level of electrolytes in the blood (K, Na, Cl);
• identification of acid-base balance Blood (KFL).

Differential diagnosis of vomiting pregnant should be conducted with the following diseases: food poisoning, gastritis, pancreatitis, pyelonephritis, cholelithiasis, hepatitis, appendicitis, meningitis, brain tumors, etc.

Treatment of vomiting pregnant

A large number of recommended treatments reflect the majority of theories that explain the causes of vomiting pregnant. But uncontrolled use of these treatments for early gestosis in some cases may be harmful, taking into account the fact that in early pregnancy occurs embryogenesis.

Mild vomiting. It is recommended not to hospitalize pregnant women with mild vomiting. We recommend correction of dietary intake: minor (5-6 times a day), balanced nutrition, drink vitamins. Patients were given a light meal, which is well absorbed (biscuits, mashed potatoes, tea, cocoa, coffee, lean meat, fish, eggs, butter, etc.). Take her trail, lying, frequently and in small portions, preferably in chilled.

Non-traditional methods of treatment can be used: reflexology, hypnosis, central electroanalgesia, homeopathic therapy, and others.

Moderate and severe vomiting: pregnant woman needs hospitalization and medical treatment.

Before the reception ability to hold food, medicines should be entered only parenterally. For the influence of the central nervous system as the main pathogenetic factor, to harassment excitability of the vomiting center designate: Etaperazin to 0,002 g, orally, 3-4 times a day, 10-12 days (if the patient holds the tablets); torekan by 1.0 ml intramuscular injection, or 6.5 mg in the form of tablets or rectal suppositories 2 -3 times a day; droperidol on 0,5 - 1,0 ml intramuscularly 1-3 times a day; cerucal 10 mg intramuscularly or orally.

To eliminate hypoproteinemia and dehydration, intravenous targeted administration of protein (plasma), Ringer-Locke solution is necessary. In general, all infusions are

carried out only according to indications based on laboratory tests. The amount of fluid is determined by the state of the water balance.
Complication: Excessive vomiting can lead to dehydration, exhaustion, and Mallory-Weiss syndrome (rupture of the stomach lining). In some cases, it is necessary to prematurely terminate the mother's pregnancy. The indication for this is the lack of effect of treatment within 7-10 days, threatening the life of the mother, stable tachycardia, hyperthermia, proteinuria and progressive cylindruria, the presence of jaundice and acetone in the urine.
Prevention of early preeclampsia is the early identification of pregnant women at risk for early development of preeclampsia, and their rehabilitation, treatment of comorbidity, and early registration of pregnancy.

Drooling (*hyper salivation) of *pregnant woman.

Drooling (ptyalismus) observed at pukes, and sometimes self-expression and preeclampsia. The number of saliva during hyper salivation may reach 1.0 liters per day. Drooling does not involve serious disturbances in the body, but also suppresses the psyche of patients, causes maceration of the skin and mucous membrane of the lips. Sometimes, in order to reduce the secretion of the salivary glands prescribed intramuscular injection of atropine on 0,5 ml 0,1% solution of 2 times a day. Mouth rinse with infusion of sage, mint, chamomile, oak, measles and other astringent agents. Termination of pregnancy in this pathology is not necessary.

Pruritus gravidarum

Itching of pregnancy (pruritus gravidarum) which can be restricted by the region of the vulva and spread all over the body causing irritability and disturbances of sleep is the most frequent form of dermatosis.
Itching of pregnant women should be differentiated with allergic reactions, mycoses, trichomoniasis, diabetes mellitus and helminthoses.
Antihistamine and sedative drugs, vitamins of B group and ultraviolet radiation are used for the treatment.

Rare forms of gestosis

Dermatosis of pregnant women is a group of diseases that arise in connection with pregnancy and disappear after its termination. Prevalence adds 1 in 200 pregnancies. Skin diseases during pregnancy depend on the functional imbalance between the cortex and the subcortex, increased excitability of the autonomic nervous system, which is accompanied by disturbances in the innervation of the skin, metabolic, microcirculatory changes in it. Dermatosis of pregnant women manifests itself in the form of itching of the skin, less often in the form of eczema, urticaria, erythema, papular rashes. The disease does not affect the condition of the fetus.
Treatment of dermatosis: food with limited fats and proteins, drugs that regulate the function of the nervous system and metabolism, antihistamines, rarely systemic or local corticosteroids.
Pemphigoid of pregnant women is a liquid but severe pathology, which is accompanied by premature birth, fetal growth retardation, fetal distress, and increased perinatal mortality. Itchy rashes first appear on the skin of the abdomen near the navel, and then spread to the limbs, arms and reaching the feet. First, these are papules and plaques, after 2 weeks they transform into vesicles and dense

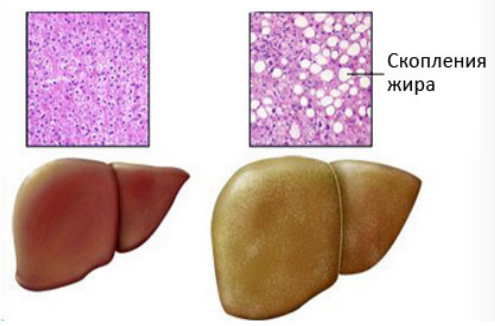
vesicles. Diagnosis is based on the detection of complement in the basement membrane of the epidermis. Treatment: Topical 1% hydrocortisone cream or systemic corticosteroids and sedative antihistamines.

Pregnancy with **cholestatic hepatosis** can occur at different stages of pregnancy, but most often occurs in the third trimester and occurs in 1 in 2000 pregnant women. The pathogenesis of this disease has not been studied sufficiently. Factors such as the inhibitory effect of progesterone on the function of cholexcretion, increase in cholesterol production, a decrease in the tone of the biliary system, and an increase in the viscosity of bile can be significant in origin. The onset of jaundice is preceded by the spread of intense itching of the skin. The general situation of patients with cholestatic hepatosis of pregnant women does not change significantly. During laboratory examination, moderate leukocytosis, neutrophilosis, as well as something more pronounced than in uncomplicated pregnancy, an increase in WIDE, is determined. The content of bilirubin in the blood is increased (up to 90 mmol / l) and quickly returns to normal after delivery. Alkaline phosphatase levels rise. There was no increase in liver enzymes such as ALT and AST.

A differential diagnosis should be made when the liver and biliary tract are damaged by mechanical or infectious factors, as well as a result of metabolic disorders. Jaundice may develop as a result of severe intoxication in severe early preeclampsia.

Treatment of cholestatic hepatosis consists in the appointment of a balanced diet (diet No. 5) and in the use of funds that help eliminate itching. 3 of this order to use cholestyramine 12-15 mg / day (salt binds bile acids). The use of ursodeoxyholic acid improves liver function. In some cases, this may become necessary when terminating a pregnancy due to an exacerbation of the clinical manifestations of the disease and damage to the fetus. It is advisable to prescribe vitamin K a week before the scheduled birth to reduce the risk of postpartum hemorrhage.

Acute liver steatosis of pregnant women is one of the most severe forms of preeclampsia, which often occurs in late pregnancy (33-40 weeks) with a prevalence of 1 per 100,000 pregnant women and is characterized by a very acute onset and high mortality. Morphologically, this is a pronounced fatty degeneration of the hepatocyte in the absence of signs of necrosis. In the clinical course of fatty degeneration of the liver, two stages are distinguished. Before jaundice, there is abdominal pain, weakness, headache, nausea, debilitating heartburn, itchy skin. Jaundice aggravates the symptoms of hepatic and renal failure, intoxication, encephalopathy, DIC syndrome develops, and fetal death often occurs. The immediate cause of death in a pregnant woman is cerebral edema and severe bleeding coagulopathy.



Treatment of this serious complication is correction of coagulopathy and electrolyte imbalances, cardiorespiratory support, and delivery as feasible by the vaginal route, if possible.

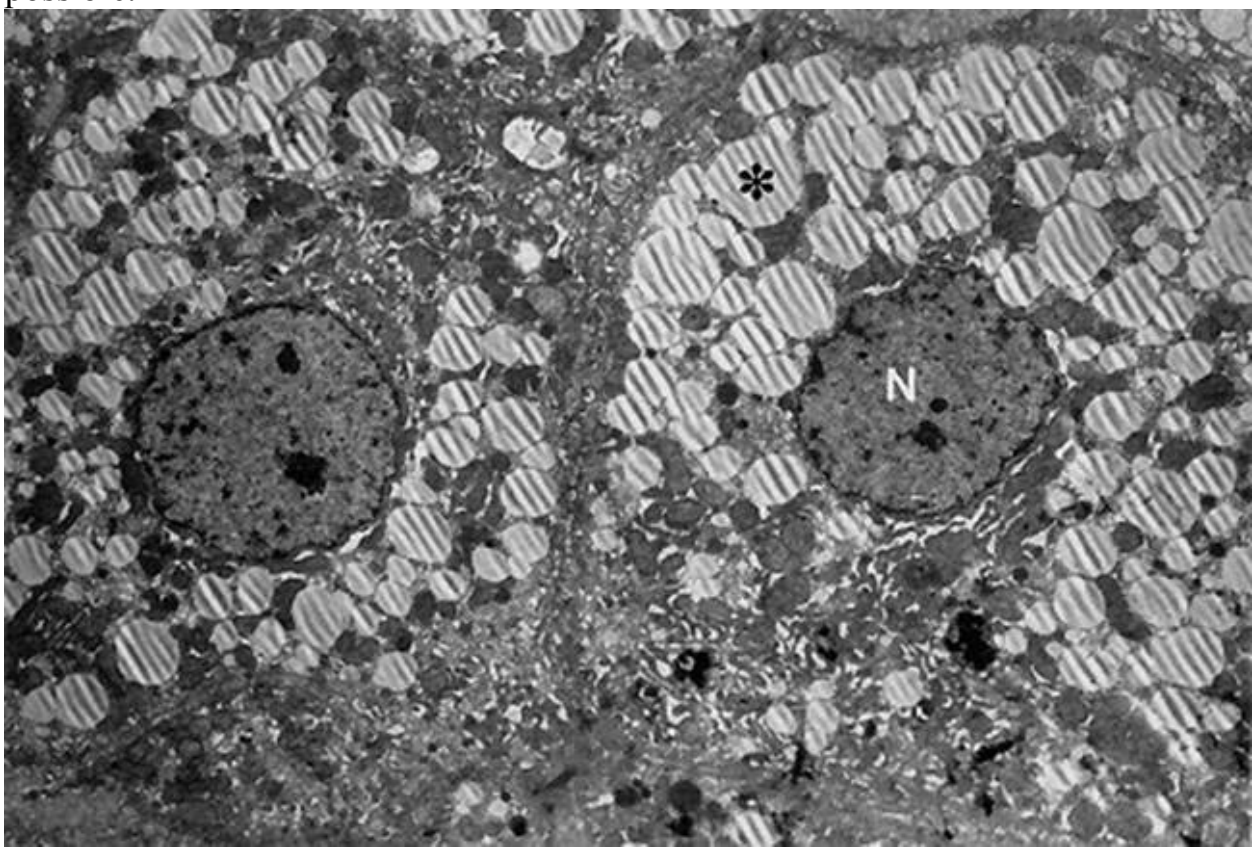


Fig.1 Fatty liver of pregnancy. Electron photomicrograph of two hepatocytes containing numerus microvesicular fat droplets (*). The nuclei (N) remain centered within the cells, unlike with the case of macrovesicular fat deposition. (Courtesy of Dr. Don Wheeler.)

Bronchial asthma of pregnancy

Occurs rarely but it is difficult. The main symptoms of asthma in pregnant women are attacks of suffocation and chronic dry cough. Pregnant bronchial asthma should be distinguished from the usual form bronchial asthma which is normally present before the beginning of pregnancy.

Treatment includes appointment

- preparations of calcium,
- sedatives,
- vitamins.

Tetania gravidarum

Tetany of pregnancy (tetania gravidarum) can manifest by convulsions of the upper (“obstetrician’s hands”) or lower extremities (“ballerina’s leg”), face (“fish’s mouth”). Disease is related to the reduction of function of parathyroid glands, disturbance of calcium metabolism, rheumatism. Parathyreoidin, calcium preparations, vitamin of B groups, calciferol (D) and tocopherol acetate (E) are used. During the severe course of the disease or ineffective treatment it is recommended to make an abortion.

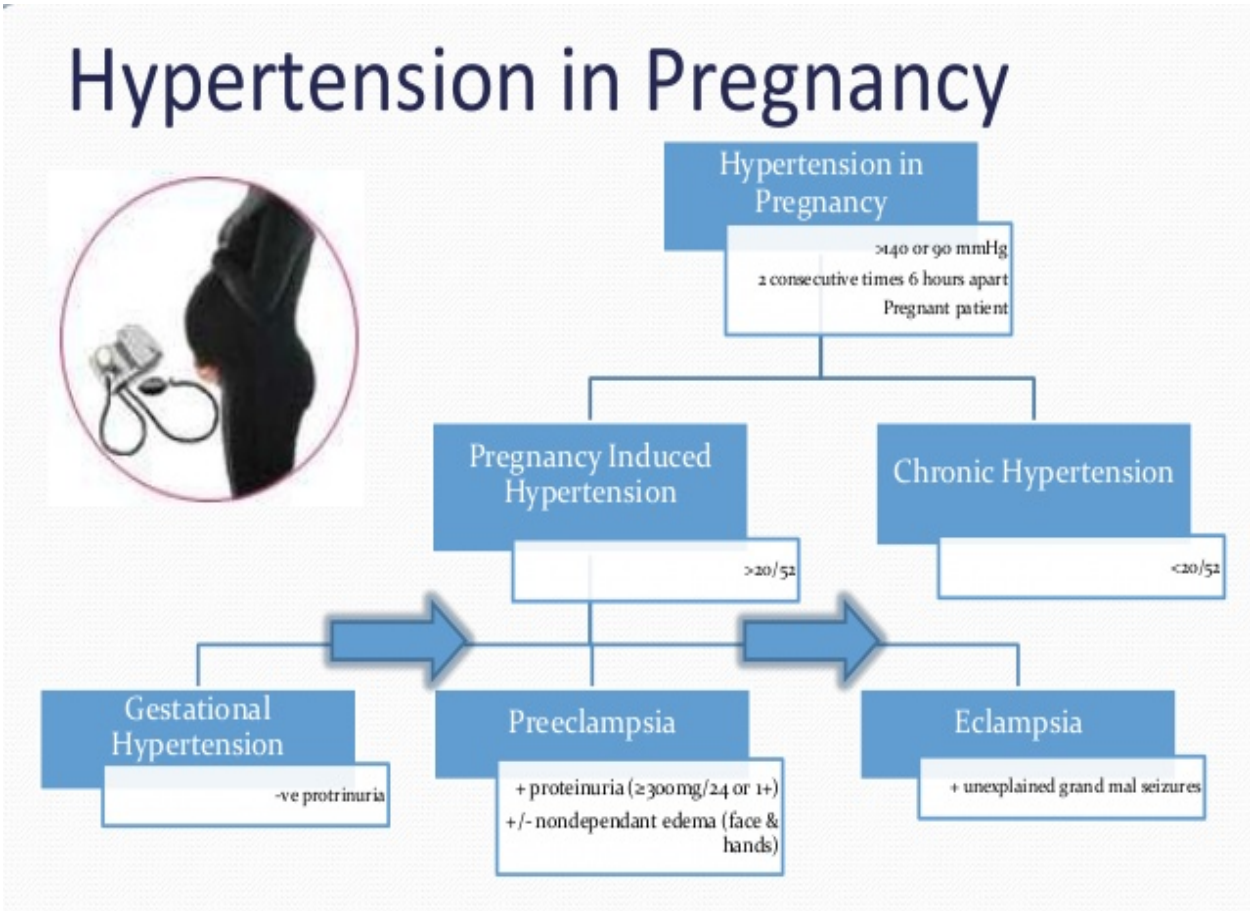
Chorea gravidarum is the term given to chorea occurring during pregnancy. This is not an etiologically or pathologically distinct morbid entity but a generic term for chorea of any cause starting during pregnancy. Chorea is an involuntary abnormal movement, characterized by abrupt, brief, nonrhythmic, nonrepetitive movement of any limb, often associated with no patterned facial grimaces.

Chorea can also be a manifestation of drug toxicity (for example, anticonvulsants, antiparkinson agents, neuroleptics, steroids, and estrogen), or a result of an infectious disease such as meningovascular syphilis, Lyme disease, viral encephalitis, and many others.

Drug treatment is indicated for patients with severe disabling chorea. It is treated with haloperidol, chlorpromazine alone or in combination with diazepam, and also pimozide, which is another neuroleptic drug which may have fewer adverse effects than haloperidol. Valproic acid, chloral hydrate, risperidone, or phenobarbital can also be used. Psychotherapy, massage, and muscle stretching exercises used to relieve symptoms during an attack.

Osteomalacia gravidarum is an extremely rare and predetermined decalcification of bone and soft tissue. Most often affects the bones of the pelvis and spine, which is accompanied by their painless stretching. During the palpation of the pubic symphysis a pregnant woman feels painfulness. On X-ray examination of the pelvis sometimes divergence of the bones of the pubic symphysis is detected, however, despite of real osteomalacia, destructive changes in bones are absent.
Treatment of osteomalacia is to normalize phosphor-calcium metabolism. At the present stage, the entire metabolism of minerals in bones, leading to their resorption, is diagnosed using densitometry - a modern ultrasound method for studying bone. Fish fat, calciferol (vitamin D) and ultraviolet radiation are used.

Prevention of early gestosis
Prevention of early preeclampsia consists in the treatment of chronic extragenital diseases of pregnant women, psychoemotional rest of pregnant women, and reducing the influence of environmental factors.
Pregnant women with early preeclampsia, especially with its recurrence, put at risk obstetric and perinatal pathologies (miscarriage, pregnancy, placental insufficiency, fetal hypotrophy, pathology of the newborn), including the prevention of these complications.
Hypertensive disorders in pregnancy.
Hypertension is one of the common medical complications of pregnancy and contributes significantly to maternal and perinatal morbidity and mortality. Hypertension is a sign of an underlying pathology which may be preexisting or appears for the first time during pregnancy. The identification of this clinical entity and effective management play a significant role in the outcome of pregnancy, both for the mother and the baby. In the developing countries with inadequately cared pregnancy, this entity on many occasions remains undetected till major complications supervene. In Ukraine, there is different terminology regarding this pathology. Until then, use the term - hypertension, pregnancy, this can be considered obsolete. The modern terms are – preeclampsia, hypertensive disorders of pregnancy.



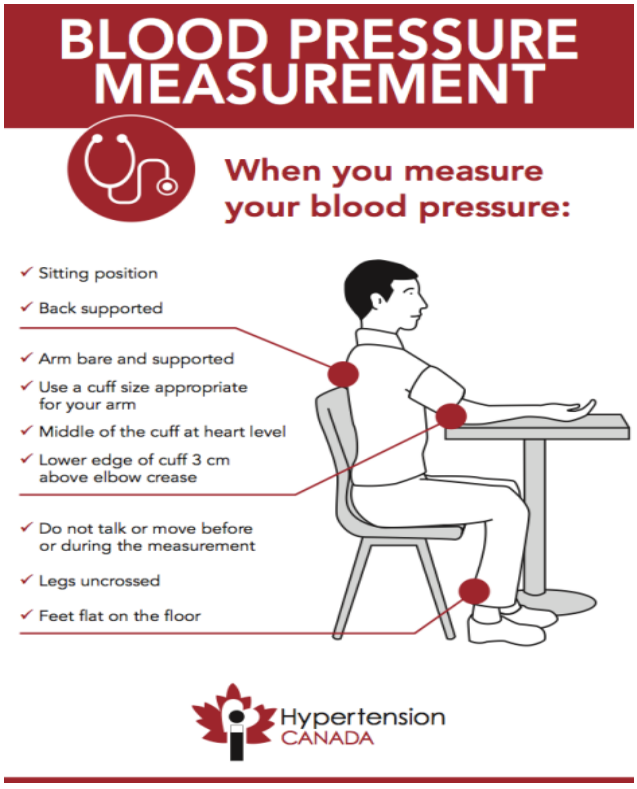
Classification of Hypertension in Pregnancy (National High Blood Pressure Education Program 2000)

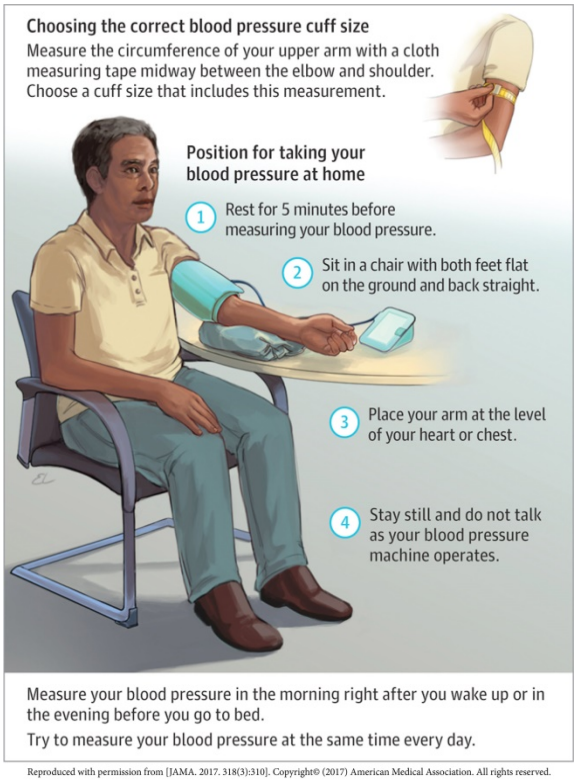
Disorder	Definition	Disorder	Definition
Hypertension	BP ≥ 140/90 mm Hg measured 2 times with at least a 6-hour interval	Chronic hypertension with super imposed preeclampsia and eclampsia	The common causes of chronic hypertension: (a) Essential hypertension (b) Chronic renal disease (reno vascular) (c) Coarctation of aorta (d) Endocrine disorders (diabetes mellitus, pheochromocytoma, thyrotoxicosis (e) Connective tissue diseases (Lupus erythematosus). t The criteria for diagnosis of super imposed pre-eclampsia: (i) New onset of proteinuria >0.5 gm/24 hours specimen. (ii) Aggravation of hypertension. (iii)
Proteinuria	Urinary excretion of ≥ 0.3 gm protein/24 hours specimen or 0.1 gm/L		
Gestational hypertension	BP ≥ 140/90 mm Hg for the first time in pregnancy after 20 weeks, without proteinuria		
Pre-eclampsia	Gestational hypertension with proteinuria		
Eclampsia	Women with pre-eclampsia complicated with convulsions and/ or coma		

Chronic hypertension	Known hypertension before pregnancy or hypertension diagnosed first time before 20 weeks of pregnancy	Thrombocytopenia or (iv) Raise of liver enzymes
Superimposed pre-eclampsia or eclampsia	Occurrence of new onset of proteinuria in women with chronic hypertension	

DC Dutta, Hiralal Konar, 2013

Blood preassure measurement





Treatment

Drug	Dosage	Comments
Labetalol	200–2,400 mg/d orally in two to three divided doses. Commonly initiated at 100–200 mg twice daily	Potential bronchoconstrictive effects. Avoid in women with asthma, preexisting myocardial disease, decompensated cardiac function, and heart block and bradycardia.
Nifedipine	30–120 mg/d orally of an extended-release preparation. Commonly initiated at 30–60 mg once daily (extended-release)	Do not use sublingual form. Immediate-release formulation should generally be reserved for control of severe, acutely elevated blood pressures in hospitalized patients. Should be avoided in tachycardia.
Methyldopa	500–3,000 mg/d orally in two to four divided doses. Commonly initiated at 250 mg twice or three times daily	Safety data up to 7 years of age in offspring. May not be as effective as other medications, especially in control of severe hypertension. Use limited by side effect profile (sedation, depression, dizziness).
Hydrochlorothiazide	12.5–50 mg daily	Second-line or third-line agent

Drug	Dose	Comments	Onset of Action
Labetalol	10–20 mg IV, then 20–80 mg every 10–30 minutes to a maximum cumulative dosage of 300 mg; or constant infusion 1–2 mg/min IV	Tachycardia is less common and fewer adverse effects. Avoid in women with asthma, preexisting myocardial disease, decompensated cardiac function, and heart block and bradycardia.	1–2 minutes
Hydralazine	5 mg IV or IM, then 5–10 mg IV every 20–40 minutes to a maximum cumulative dosage of 20 mg; or constant infusion of 0.5–10 mg/hr	Higher or frequent dosage associated with maternal hypotension, headaches, and abnormal fetal heart rate tracings; may be more common than other agents.	10–20 minutes
Nifedipine (immediate release)	10–20 mg orally, repeat in 20 minutes if needed; then 10–20 mg every 2–6 hours; maximum daily dose is 180 mg	May observe reflex tachycardia and headaches	5–10 minutes

ACOG Practice Bulletin No. 203: Chronic Hypertension in Pregnancy

Pre-eclampsia

Pre-eclampsia (PE) is a multisystem disorder of pregnancy previously defined by the onset of hypertension accompanied by significant proteinuria after 20 weeks of gestation. Recently, the definition of PE has been broadened.2–5 PE typically affects 2%–5% of pregnant women and is one of the leading causes of maternal and perinatal morbidity and mortality, especially when the condition is of early onset.6,7 Globally, 76 000 women and 500 000 babies die each year from this disorder.8 Furthermore, women in low-resource countries are at a higher risk of developing PE compared with those in high-resource countries.

Classification Preeclampsia HIC-10: O13-O15

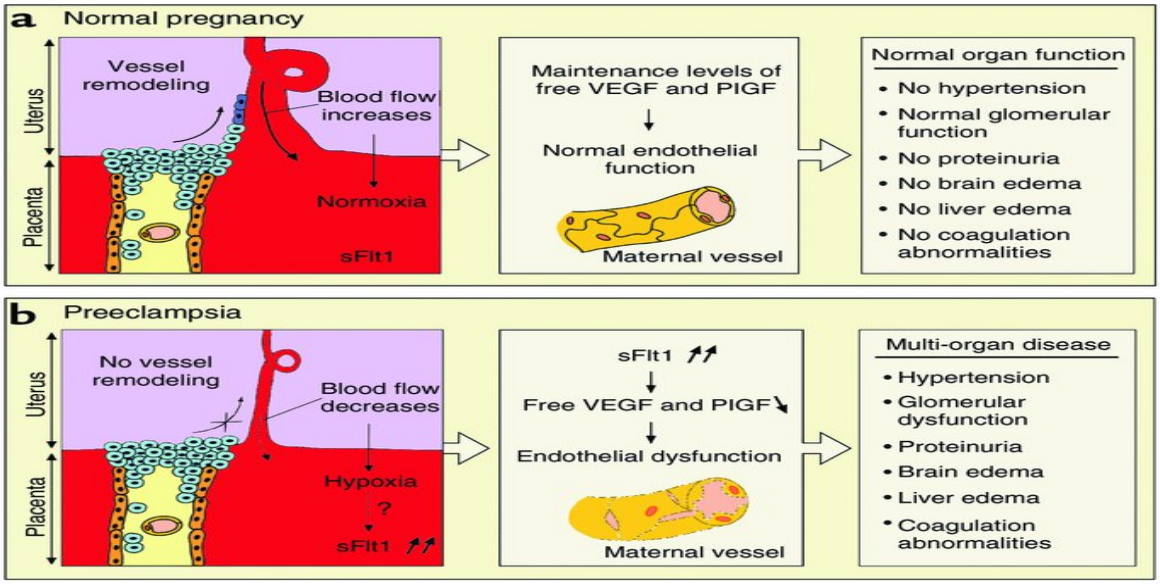
- Light Preeclampsia or gestational hypertension without significant proteinuria
- Preeclampsia moderate
- Heavy Preeclampsia
- Preeclampsia unspecified
- Eclampsia
- Eclampsia during pregnancy

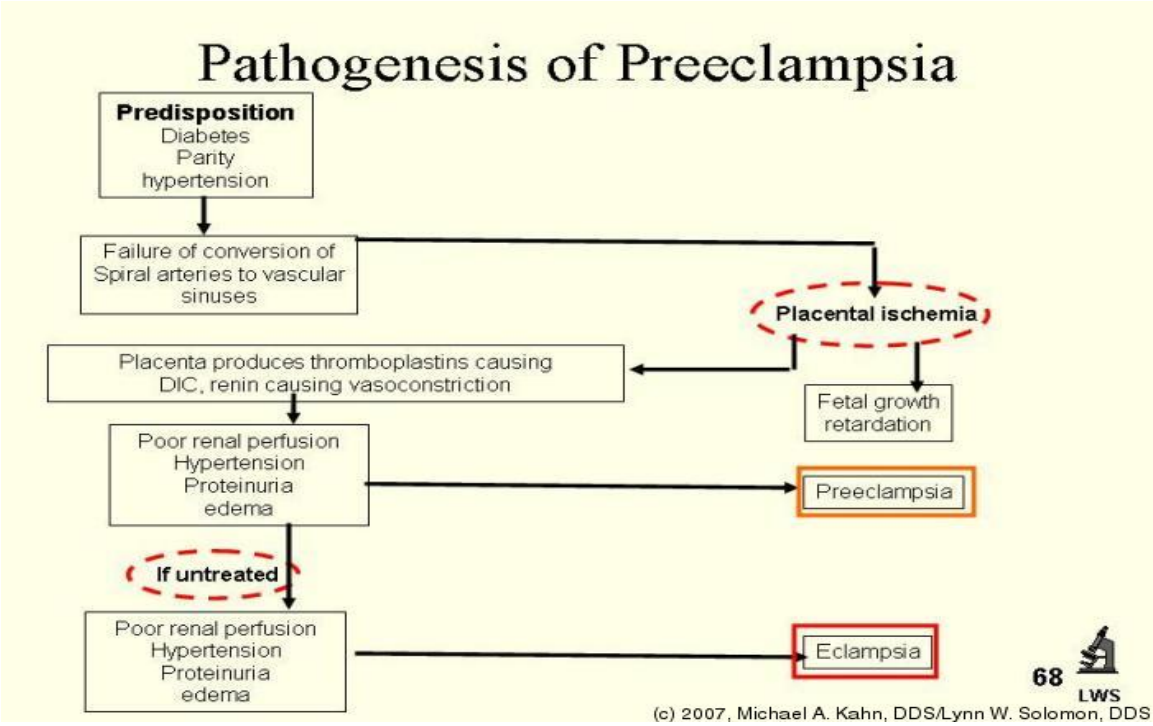
- Eclampsia childbirth
- Eclampsia in the postpartum period
- Eclampsia unspecified for the period
- Etiopatogenesis of Preeclampsia

There are about 30 different theories. Among the causes of preeclampsia, especially severe, the leading place belongs to extragenital, autoimmunological disorders, endocrine diseases. A large number of different theories of the pathogenesis of preeclampsia suggest that none of them fully describes it.

Important role in the origin Preeclampsia belongs to:
1. failure of the spiral arterioles of the uterus, which causes violation of placental blood circulation
2. endothelial dysfunction associated with autoimmunal disorder caused by pregnancy.

Changes in the organs characteristic of preeclampsia:
1. In the cardiovascular system: generalized vasospasm, increased peripheral vascular resistance, hypovolemia.
2. Hematologic changes: Activation of platelets, which is accompanied by consumption coagulopathy, reduced plasma volume, increase blood viscosity, haemoconcentration.
3. In the kidneys: proteinuria, reduced glomerular filtration rate, reduced excretion of uric acid.
4. In the liver: pericortal necrosis, subcapsular hematoma.
5. In CNS: Brain edema, intracranial hemorrhage.





There is a severe form of clinical preeclampsia - HELLP-syndrome (Hemolysis-microangiopathic hemolytic anemia, Elevation of Liver enzymes - increased concentration of liver enzymes in blood plasma, Low platelet count - decreased platelets). Pathophysiological changes in HELLP syndrome occur mainly in the liver. Segmental vasospasm leads to impaired blood flow in the liver and swelling of the Glisson's capsule (pain in the upper abdominal area). Hepatocellular necrosis associated with increased transaminases.

Thrombocytopenia and hemolysis occur as a result of endothelial damage in vascular changes. If this vicious circle of endothelial damage and intravascular activation coagulation should not be interrupted, then WIS syndrome with fatal bleeding develops within a few hours.

Risk factors of preeclampsia:

1. Extragenital pathology: kidney, liver, hypertension, chronic lung and bronchus, heart defects, diabetes mellitus, obesity.
2. Obstetric and gynecologic risk factors:

• presence of hypertensive disorders in family history;
• a previous pre-eclampsia;
• age of the pregnant woman (less than 20, more than 30 years);
• hydramnios, twins;
• anemia of pregnant women;
• isosensibilization for Rh-factor and the ABO-system;

3. Social and domestic factors:

• bad habits;
• occupational hazards;
• unbalanced diet.

Presence of

Hypertension

- SBP ≥ 140 or DBP ≥ 90
- 2 readings 6 hours apart
- > 20/52 gestation

Proteinuria

- ≥ 1+ Urine dipstick (not sensitive)
- ≥ 300 mg / 24

Nondependent Edema

- Hand
- Face
- Not sensitive or specific

Preeclampsia – Risk Factors

- Nulliparous
- Previous preeclampsia
- Multiple Gestation
- Abnormal Placentation

Immunogenic Related

- Chronic HTN
- Chronic Renal Disease
- Collagen Vascular Disease
- Pregestational DM

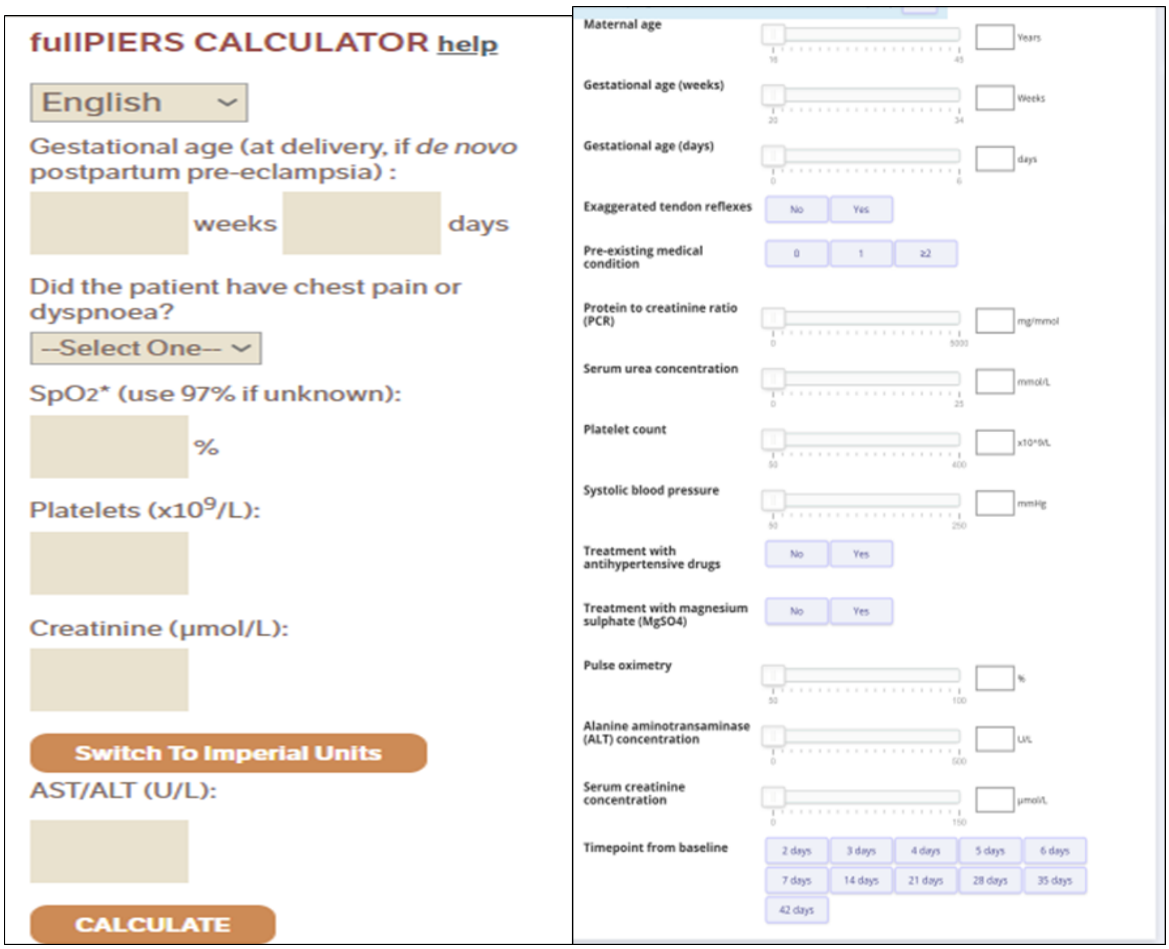
Disease Related

- African American
- Obesity
- 35 < Age < 20
- New paternity
- Cohabiliation < 1 year

Maternal Related

- Relatives
- Mother-in-Law

Family History



Knowledge of risk factors of preeclampsia and allow for timely detection of risk groups on the occurrence of preeclampsia.

Clinical manifestations

The classic triad of preeclampsia symptoms (edema, proteinuria, hypertension), described in 1913 by the German obstetrician Zangemeister.

Headache, blurred vision, pain in the epigastrium and right hypogastric area are clinical manifestations of severe preeclampsia.

Diagnosis

Diagnosis of preeclampsia at gestational age more than 20 weeks in the presence of blood pressure more than 140/90 mm hg or with an increase in diastolic blood pressure by 15% of the initial in the first trimester of pregnancy in the presence of proteinuria (protein in daily urine more than 0.3 g / l) and general edema (an increase in the body weight of a pregnant woman more than 900.0 g per week, or 3 kg per month). The diagnosis of preeclampsia determines the presence of hypertension and proteinuria or general edema or the presence of all three signs.

Diagnostic criteria of severe preeclampsia / eclampsia.

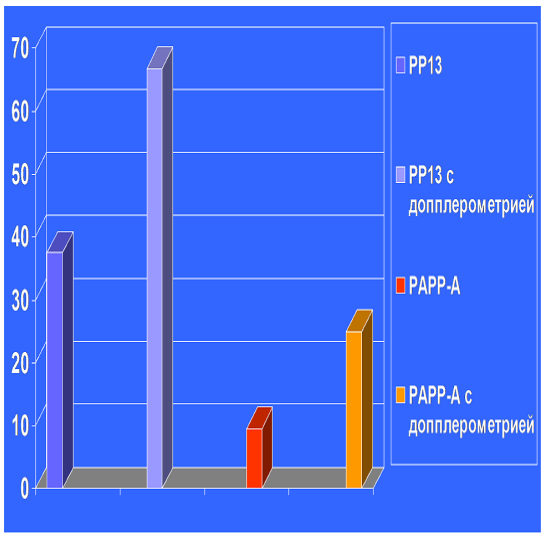
Diagnosis	Diast. BP mm. hg	Proteinuria g / ext	Other signs

Gestational hypertension or mild preeclampsia	90-99	<0,3	-
Preeclampsia moderate	100-109	0,3-5,0	Swelling in the face, hands Sometimes a headache
Severe preeclampsia	≥110	>5	Swelling generalize, significant Headache Dysopia Pain in the epigastrium and / or right hypochondrium Hyperreflexia Oliguria (<500 ml / ext) Thrombocytopenia
Eclampsia	≥90	≥0,3	Convulsive attack (one or more)

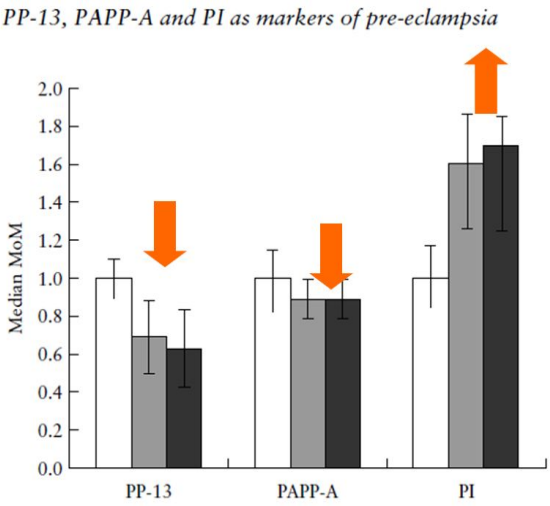
NB! Available in a pregnant woman at least one of the criteria for more severe preeclampsia is the basis for a diagnosis.
At this time there is «pure» and «complicated» form of preeclampsia. Complicated preeclampsia develops on the background of extragenital diseases.
!!!!! As a criterion for severity!!! examination of hypertension in pregnancy, indications for the beginning of antihypertensive treatment and evaluate its effectiveness using only the value diastolic BP. To determine the latter should take into account V Korotkov's tone (but not IV, as before).
To diagnose preeclampsia also need to identify additional clinical and laboratory criteria (Table.2). Additional clinical and laboratory criteria of preeclampsia

Signs of preeclampsia	Light	Moderately	Heavy
Uric acid, mlmol / l	<0,35	0,35-0,45	> 0,45
Urea, mlmol / l	<4,5	4,5-8,0	> 8
Creatinine, Umol / l	<75	75-120	> 120 or oliguria
x 109 platelets / l	> 150	80-150	<80

Prognostic significance

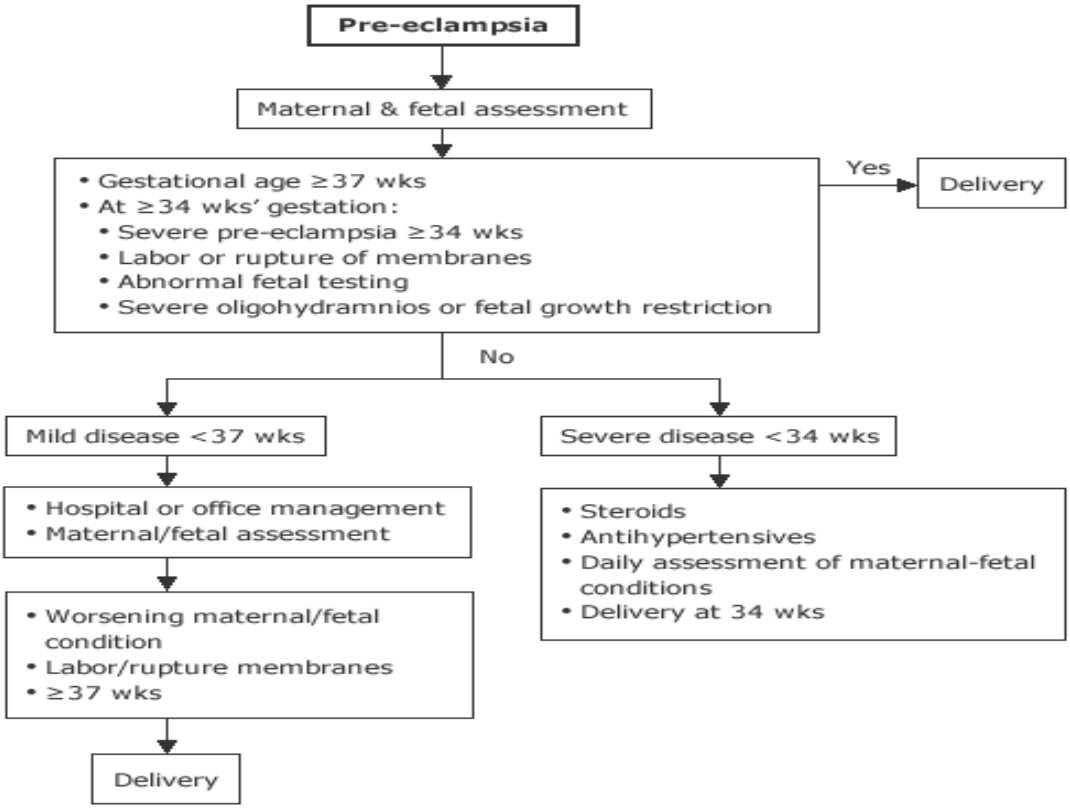


Khalil A., 2010 ., Odibo A.O.,2011



Spencer K. 2007

Treatment of Preeclampsia



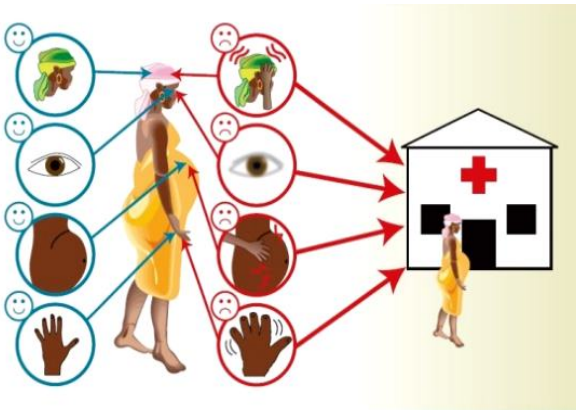
Provision of assistance depends on the pregnant woman, the parameters of BP and proteinuria.

Mild Preeclampsia

In the case of the pregnant woman match the criteria for mild Preeclampsia of pregnancy before 37 weeks of possible care in a hospital day stay. Conduct research:

measuring blood pressure, monitoring fluid balance and edema, checking fetal movements.
Conduct laboratory tests: general urine analysis, daily proteinuria, plasma creatinine and urea, hemoglobin, hematocrit, platelet count, coagulogram, ALT and AST, fetal determination (if possible, not a stress test). Drug therapy is not indicated. Do not limit your intake of liquids and table salt.
Indications for hospitalization
The appearance of at least one sign of moderate preeclampsia; fetal hypoxia.
In the case of a stable state of women within the criteria of light preeclampsia tactics of pregnancy expectant. Delivery – per vias naturalis.

Moderate Preeclampsia
Hospitalization of a pregnant woman in a hospital. Initial laboratory tests: complete blood count, hematocrit, platelet count, coagulogram, ALT and AST, blood group and Rh factor (in the absence of accurate information), general urinalysis, determination of daily proteinuria, creatinine, urea, uric acid, plasma electrolytes (sodium and potassium), fetal health assessment.
Protective regime - limitation of physical and mental stress.



Nutrition: High-protein food, no salt and water restrictions, and non-thirsty foods.
A complex of vitamins and minerals for pregnant women, if necessary, an iron supplement. When diastolic BP> 100 mm Hg Appointment of antihypertensive drugs (metildopa of 0,25-0,5 g 3-4 times a day, maximum dose - 3 g per day, and if necessary add nifedipine 10 mg 2-3 times a day, maximum daily dose - 100 mg).
In term pregnancy before 34 weeks of prescribed corticosteroids for prevention of respiratory distress syndrome (RDS) - dexamethasone 6 mg every 12 hours, four times over 2 days.
Research is carried out with a fixed multiplicity of dynamic monitoring indicators:
- blood pressure control - every 6 hours on the first day, then - twice a day;
- auscultation of the fetal heart every 8 hours;
- urine - daily;
- daily proteinuria
- hemoglobin, hematocrit, coagulogram, platelet count, ALT and AST, creatinine Urea - every three days;
- Daily monitoring of fetus

In progress of preeclampsia begin preparations for delivery:

Delivery.

Progression of preeclampsia or deterioration of fetal state - begin preparations for delivery:

- in the case of "immature" cervix - prostaglandin E2 (locally).
- not effective – Cesearian section
- "mature" cervix – stimulation of patrimonal activity and delivery per vias naturalis.

Go to the conduct of pregnant for heavy preeclampsia algorithm is performed in cases of increase of at least one of the following:

• diastolic BP> 110 mm Hg.;
• headache;
• visual impairment;
• pain in the epigastric area and right hypogastric;
• signs of liver failure;
• oliguria (<25 ml / year);
• thrombocytopenia (<100 • 109 / L);
• Signs of WIS-syndrome;
• Enhancement of ALT and AST.

Sever Preeclampsia

The pregnant woman is admitted to the Anesthesiology Unit and Intensive Care Unit Level III to assess the maternal and fetal risk of pregnancy and select a delivery method within 24 hours. Allocate an individual ward for round-the-clock supervision of medical personnel. Immediate consultation by therapists, neurologist, ophthalmologist. Catheterization of peripheral veins. Initial laboratory tests: complete blood count, hematocrit, platelet count, coagulogram, ALT and AST, blood group and Rh factor (if not), total urine, determination of proteinuria, creatinine, urea, total protein, bilirubin and its fractions, electrolytes.

Careful observation of the dynamic:

• Blood pressure control - every hour;
• Urine test - every 4 hours;
• Monitoring of hourly urine output (bladder catheterization)
• Hemoglobin, hematocrit, platelet count, liver function tests, plasma creatinine - every day;
• Auscultation of the fetal heart - every 15 minutes;

- Monitoring of the fetus: the number of movements in 1 hour, heart rate - every day, if possible - Doppler monitoring of blood circulation in the vessels of the umbilical cord, vessels of the fetal brain, placenta and fetoplacental complex;

- Assessment of amniotic fluid and fetal biophysical profile;
- Cardiotocography

Treatment.

Conservative treatment (severe hospital beds). In term of pregnancy to 34 weeks - corticosteroids for the prevention of RDS-dexamethasone 6 mg every 12 hours, four times, for 2 days. The tactics is active with delivery in the next 24 hours from the moment of diagnosis, regardless of the gestational age.

Antihypertensive therapy.

Treatment of hypertension is not pathogenic, but necessary for the mother and fetus. Lowering systolic pressure is intended to prevent hypertensive encephalopathy and cerebral hemorrhage. It should seek to bring the systolic pressure to a safe level (150 / 90-160 / 100 mm Hg, Not lower!), Ensure the maintenance of adequate cerebral and placental blood flow. Antihypertensive therapy is performed with an elevated diastolic pressure> 100 mm Hg. It has been proven that pharmaceutical antihypertensive therapy should not be started if blood pressure is <150/100 mm Hg. Lowering blood pressure with drug therapy can improve the effects of pregnancy on the mother, but not on the fetus. Of the antihypertensive drugs used during pregnancy: Methyldopa 1.0-3.0 g per day (drug of choice), nifedipine 5-10 mg sublingually, labetalol 10 mg intravenously, blockers, clonidine 0.5-1 ml 0.01%. solution intravenously or intramuscularly, or 0.15-0.2 mg under the tongue 4-6 times a day, hydralazine 20 mg (1 ml) intravenously, if it is possible to study the type of hemodynamics, antihypertensive therapy is carried out for its purpose. In the case of hypersynetics, it is advisable to use a combination of labetalol with nifedipine, in the case of hypocinetic - clonidine, nifedipine against the renewal of the BCC, with eucinetic – methyldopa and nifedipine.

The use of diuretics should be avoided, especially in cases of preeclampsia (with the exception of pulmonary edema or renal failure). Angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers are absolutely contraindicated.

How do anticonvulsants work with the antihypertensive effects of magnesium sulfate, which is the drug of choice for the prevention and treatment of seizures that occur in hospitalized women as a result of inadequate treatment of severe preeclampsia.

It is absolutely proven that magnesium sulfate prevents the development of eclampsia and is the drug of choice for its treatment. All women with eclampsia should receive magnesium sulfate during labor and within 24 hours after birth. Magnesium sulfate therapy - bolus of 4 g dry weight of magnesium sulfate (w / w 5 minutes) followed by continuous intravenous infusion at a rate determined by the patient. Magnesium sulfate therapy is started from the moment of hospitalization if the diastolic blood pressure is> 130 mm Hg. The appointment of magnesium sulfate therapy is to maintain the concentration of magnesium ions in the blood of pregnant women at the level necessary to prevent seizures.

Signs of magnesium intoxication are possible even against the background of therapeutic plasma concentrations of magnesium, provided that it is combined with other drugs, especially calcium channel blockers. When signs of magnesium sulfate toxicity appear, 1 g of calcium gluconate (10 ml of a 10% solution) intravenously is prescribed, which should always be at the patient's bedside.

Monitoring a pregnant woman during antihypertensive therapy and magnesium sulfate therapy includes measuring blood pressure every 20 minutes, monitoring the heart rate, frequency and breathing pattern (at least 14 in 1 minute). Determination of O2 saturation (not less than 95%); ECG, check of knee reflexes every 2 hours, control of urine output (at least 50 ml / hour). In addition, control symptoms severity increased preeclampsia: headache, visual impairment (double vision, "flickering flies" in the eyes), epigastric pain, symptoms of possible pulmonary edema (chest tightness, cough, suffocating fever, increased CVP, appearance of crepitus or wet rales on auscultation), increased heart rate and signs of hypoxia, decreased level of fetal consciousness (auscultation of the heart hourly, fetal monitoring).

Fluid management.

A prerequisite for adequate fluid therapy is strict control of volume, fluid and diuresis. Diuresis should be at least 50 ml / h. The total volume of injected fluid should satisfy the daily physiological needs of the woman (on average 30-35 ml / kg) with the addition of volumetric non-physiological costs (blood loss, etc.). The rate of fluid introduction should not exceed 85 ml / hour, or diuresis 30 ml / hour. The drugs of choice for infusion therapy at the time of delivery are isotonic solution (Ringer, NaCl 0.9%). If it is necessary to resume the BCC, the optimal therapy is 6% or 10% solutions of hydroxyethyl starch (Stabizol, Refortan). Hydroxyethyl starch or dextran should be injected with crystalloid in a ratio of 2: 1. It is advisable to include donor fresh frozen plasma in the infusion-transfusion program to eliminate hypoproteinemia (plasma protein values <55 g / l), normalize the anticoagulant / procoagulants, which is the prevention of bleeding during delivery and in the postpartum period.

Do not use hypoosmotic solutions - 5% and 10% glucose and their mixtures with electrolytes (polarization mixture), because they often cause hypoglycemia in the fetus and increase the accumulation of lactate in the mother's brain, worsen the neurological prognosis in case of eclampsia. Before the administration of glucose solutions, a patient with severe preeclampsia succeeds only according to absolute indications - hypoglycemia, hypernatremia and hypertensive dehydration, sometimes - in patients with diabetes mellitus to prevent hypoglycemia.

Tactics of delivery.

Delivery conducted with a view of obstetric situation. Preference is given to vaginal delivery with adequate anesthesia (epidural or nitrous oxide inhalation). Provided ready to spend maternity ways amniotomy with induction of labor with oxytocin.

With an unprepared cervix and the absence of the effect of the drug, prostaglandin is prescribed, or in case of progression of hypertension, the threat of a convulsive seizure, deterioration of the condition, a cesarean section is performed.

The indication for elective cesarean section in cases of severe preeclampsia is the progression of preeclampsia or deterioration of the fetus in pregnant women with premature birth.

If the condition of a pregnant woman or a fetus worsens in the second stage of labor, forceps are applied or vacuum extraction of the fetus is performed against the background of adequate anesthesia.

In the third stage of labor - uterotonic therapy to prevent bleeding (intravenous oxytocin). Metilergometine not apply!

After starting treatment, preeclampsia continues depending on the woman's condition, clinical symptoms and laboratory parameters. Blood pressure control and antihypertensive therapy are required. Doses of antihypertensive drugs are gradually reduced, but not earlier than 48 hours after delivery. Magnesium sulfate therapy lasts at least 24 hours after birth.

Preeclampsia postpartum

Assign a protective mode, blood pressure control, balanced diet. Laboratory examination: General blood test (hemoglobin, hematocrit, platelet count) and urine, biochemical blood test (ALT and AST, bilirubin, creatinine, urea, total protein), coagulogram.

Treatment. Provided that antihypertensive drugs are used during delivery, their administration is continued in the postpartum period. In case of insufficient effectiveness of therapy, thiazide diuretics are added. If this is your first time postpartum hypertension, start treatment with a thiazide diuretic. Magnesium sulfate is prescribed for indications in case of risk of eclampsia. They closely monitor uterine involution. Prevention of bleeding with oxytocin.

Eclampsia

The term eclampsia is derived from a Greek word, meaning “like a flash of lightening”. It may occur quite abruptly, without any warning manifestations. In majority (over 80%); however, the disease is preceded by features of severe pre-eclampsia

The high risk of developing eclampsia suggest: Severe headache, high hypertension (diastolic BP > 120 mm Hg), nausea, pukes, blurred vision, pain in the right hypogastric and or epigastric site.

The main objectives of emergency:

• cessation of seizures;

• renewal of the entrance of the respiratory tract.

Problems of intensive care after the elimination of seizures:

• prevention of recurrent convulsive attacks;

• elimination of hypoxia and acidosis (respiratory and metabolic);

• Prevention of aspiration syndrome;

• Emergency delivery.

Eclamptic convulsion or fit: The fits are epileptiform and consist of four stages

— Premonitory stage: The patient becomes unconscious. There is twitching of the muscles of the face, tongue, and limbs. Eyeballs roll or are turned to one side and become fixed. This stage lasts for about 30 seconds.

— Tonic stage: The whole body goes into a tonic spasm — the trunk-opisthotonus, limbs are flexed and hands clenched. Respiration ceases and the tongue protrudes between the teeth. Cyanosis appears. Eyeballs become fixed. This stage lasts for about 30 seconds.

— Clonic stage: All the voluntary muscles undergo alternate contraction and relaxation. The twitchings start in the face then involve one side of the extremities and ultimately the whole body is involved in the convulsion. Biting of the tongue occurs. Breathing is stertorous and blood stained frothy secretions fill the mouth; cyanosis gradually disappears. This stage lasts for 1–4 minutes.

— Stage of coma: Following the fit, the patient passes on to the stage of coma. It may last for a brief period or in others deep coma persists till another convulsion. On occasion, the patient appears to be in a confused state following the fit and fails to remember the happenings. Rarely, the coma occurs without prior convulsion.

First aid for an attack of eclampsia.

In the event of a seizure attack, treatment begins on the spot. Deploy Intensive Care Unit or to the separation of hospitalized pregnant anesthesiology and intensive care. Put the patient on a flat surface, quickly release the airways, open the mouth and push the lower jaw forward, evacuate the contents of the oral cavity. If possible, if maintained spontaneous breathing, introduced airtransfer and carry oxygen inhalation. With the development of lingering apnea, mechanical ventilation is immediately started through a nasal mask with 100% oxygen supply in the mode of positive pressure at the end of expiration. If convulsions recur or the patient remains in a coma, muscle relaxants are administered and the patient is transferred to artificial ventilation (ALV) and moderate hyperventilation. Artificial lung ventilation (ALV) is not the main method of treating eclampsia, but the elimination of hypoxia (an important pathogenetic factor in the development of multiple organ failure) is a necessary condition for other measures.

With complete recovery of consciousness, the absence of seizures, anticonvulsants are not used, hemodynamic stabilization, stability of the hemostasis system, restoration of the oxygen capacity of the blood (hemoglobin 80 g / l) is followed by a planned cessation of mechanical ventilation, which should be accompanied by a complete cancellation of sedative therapy.

In the case of a cerebral hemorrhage and a coma of a pregnant woman, mechanical ventilation is canceled not earlier than two days later. Continue intensive care in full.

Peripheral vein catheterization is performed and the administration of anticonvulsants (magnesium sulfate - 4 g bolus for 5 minutes intravenously, then maintenance therapy 1-2 g / year) is started under close blood pressure control. Catheterization of bladder. All manipulations (catheterization of veins, urinary bladder, obstetric manipulations) are performed under general anesthesia. After elimination of seizures, metabolic disorders, water-electrolyte balance and acid-base status, and protein metabolism are corrected. Conduct an examination by a neurologist and ophthalmologist. Laboratory tests: complete blood count (thrombocytes, hematocrit, hemoglobin, clotting time), total protein, albumin, glucose, urea, creatinine, transaminases, electrolytes, calcium, magnesium, fibrinogen and its breakdown products, prothrombin time and index, total urinalysis, daily proteinuria.

Delivery is carried out urgently. If the obstetric situation does not allow immediate birth through the vaginal birth canal, perform a caesarean section. Delivery immediately after the elimination of the seizure attack with the constant administration of magnesium sulfate and antihypertensive therapy. With continued seizures, urgent labor is carried out after the transfer of the patient to mechanical ventilation. Mechanical ventilation continues to stabilize the patient's condition after surgery. After delivery, treatment continues according to the postpartum condition. Magnesium sulfate therapy should be continued for at least 48 hours.

Observation of a woman who suffered preeclampsia / eclampsia after issuing from the maternity hospital. In an antenatal clinic with an outpatient care therapist, a woman who has had moderate to severe preeclampsia or eclampsia:
• nursing home,
• consultation of specialized professionals (if necessary)
• comprehensive examination 6 weeks after delivery
Women who need treatment with antihypertensive drugs after discharge from the maternity hospital undergo weekly examination with mandatory laboratory monitoring of the level of proteinuria and the concentration of creatinine in the blood plasma.
If arterial hypertension persists for 3 weeks after delivery, the woman is hospitalized in a hospital. The duration of outpatient treatment after moderate to severe preeclampsia or eclampsia is 1 year.
The volume and timing of the survey:
• general urine test - 1, 3, 6, 9 and 12 months after birth;
• complete blood count - after 1 and 3 months;
• ophthalmoscopy - 1, 3 and 12 months;
• ECG - after 1 month, then - to appoint a therapist;
It is recommended for women who have undergone preeclampsia, daily monitoring of blood pressure for a year after childbirth. Women who have had gestational hypertension or preeclampsia are at increased risk of developing hypertension in the future; death from stroke, death from all cardiovascular causes..
Therefore, such postpartum should be carried out under the supervision of a doctor and regularly undergo screening (determination of cholesterol and glucose annually).
A psychologist is of great importance for a woman who has undergone eclampsia (as well as for her man), since severe complications of pregnancy often lead to post-traumatic stress disorder.
Prevention of preeclampsia and eclampsia.
Effective prevention Preeclampsia, which have proven efficacy, there is the use antiagrigant therapy and calcium intake.

Annals of Internal Medicine | CLINICAL GUIDELINE

Low-Dose Aspirin Use for the Prevention of Morbidity and Mortality From Preeclampsia: U.S. Preventive Services Task Force Recommendation Statement

Michael L. LeFevre, MD, MSPH, on behalf of the U.S. Preventive Services Task Force*

Description: Update of the 1996 U.S. Preventive Services Task Force (USPSTF) recommendation on aspirin prophylaxis in pregnancy.

Methods: The USPSTF reviewed the evidence on the effectiveness of low-dose aspirin in preventing preeclampsia in women at increased risk and in decreasing adverse maternal and perinatal health outcomes, and assessed the maternal and fetal harms of low-dose aspirin during pregnancy.

Population: This recommendation applies to asymptomatic pregnant women who are at increased risk for preeclampsia and who have no prior adverse effects with or contraindications to low-dose aspirin.

Recommendation: The USPSTF recommends the use of low-dose aspirin (81 mg/d) as preventive medication after 12 weeks of gestation in women who are at high risk for preeclampsia. (B recommendation)

Ann Intern Med. 2014;161:819-826. doi:10.7326/M14-1884 www.annals.org
For author affiliation, see end of text.
* For a list of USPSTF members, see the **Appendix** (available at www.annals.org).
This article was published online first at www.annals.org on 9 September 2014.

Michael L. LeFevre, MD,MSPH.-2014

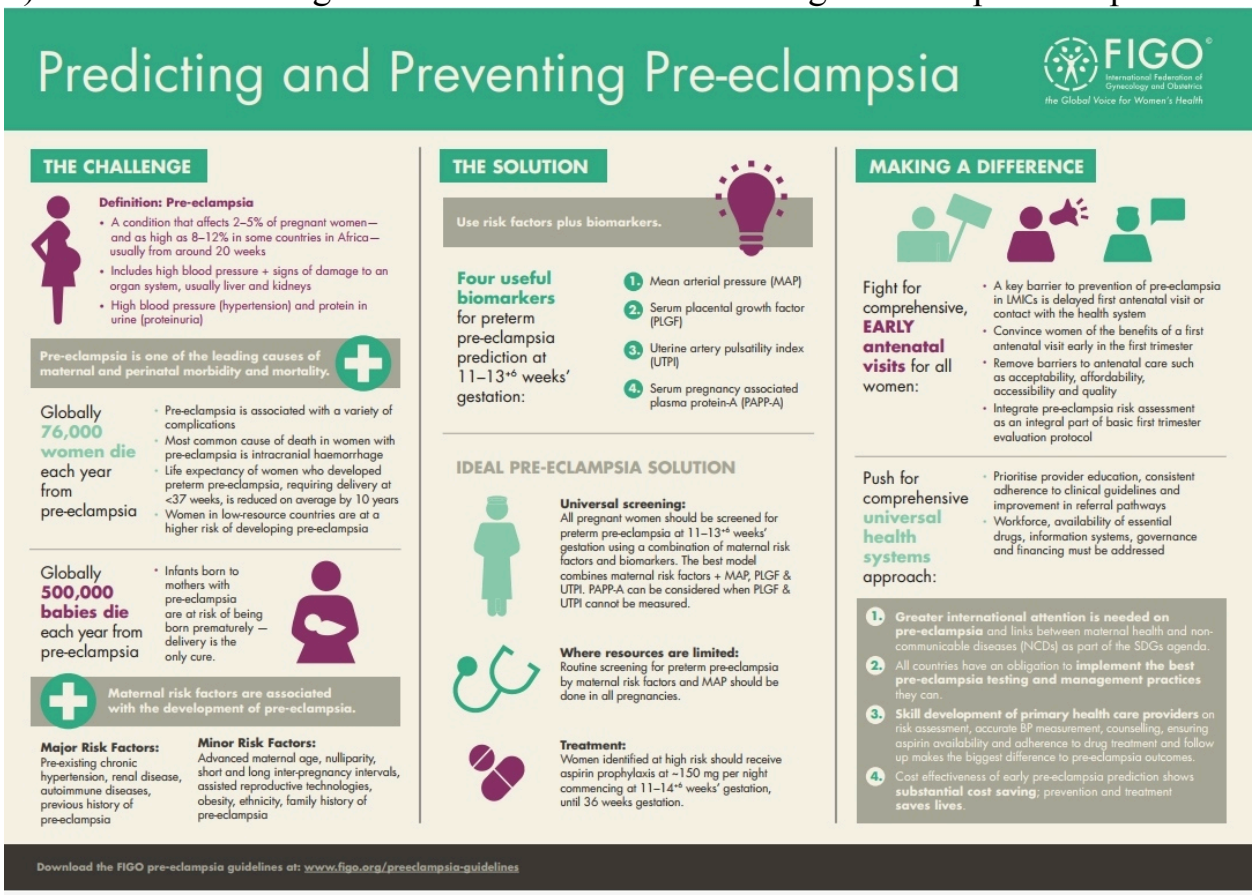
The American Congress of Obstetricians and Gynecologists recommends initiating use of low-dose aspirin (60 to 80 mg/d) during the late first trimester to prevent preeclampsia in women with a medical history of early-onset preeclampsia and preterm delivery (<34 weeks) or history of preeclampsia in more than 1 previous pregnancy

The World Health Organization recommends the use of low-dose aspirin (75 mg/d) starting as early as 12 to 20 weeks of gestation for high-risk women (i.e., those with a history of preeclampsia, diabetes, chronic hypertension, renal or autoimmune disease, or multifetal pregnancies). It states that there is limited evidence regarding the benefits of low-dose aspirin in other subgroups of high-risk women.

The National Institute for Health and Care Excellence recommends that women at high risk for preeclampsia (i.e., those with a history of hypertension in a previous pregnancy, chronic kidney disease, autoimmune disease, type 1 or 2 diabetes, or chronic hypertension) take 75 mg/d of aspirin from 12 weeks until delivery. It recommends the same for women with more than 1 moderate-risk factor (first pregnancy, age ≥40 years, pregnancy interval >10 years, body mass index ≥35 kg/m2, family history of preeclampsia, or multifetal pregnancies)

The American Heart Association and the American Stroke Association recommend that women with chronic primary or secondary hypertension or previous pregnancy-related hypertension take low-dose aspirin from 12 weeks until delivery

The American Academy of Family Physicians recommends low-dose aspirin (81 mg/d) after 12 weeks of gestation in women who are at high risk for preeclampsia



Drugs recommended for treatment Preeclampsia

Table 3 Listed drugs approved for treatment Preeclampsia.

Drug	Dosage	Comments
Labetalol	200–2,400 mg/d orally in two to three divided doses. Commonly initiated at 100–200 mg twice daily	Potential bronchoconstrictive effects. Avoid in women with asthma, preexisting myocardial disease, decompensated cardiac function, and heart block and bradycardia.
Nifedipine	30–120 mg/d orally of an extended-release preparation. Commonly initiated at 30–60 mg once daily (extended-release)	Do not use sublingual form. Immediate-release formulation should generally be reserved for control of severe, acutely elevated blood pressures in hospitalized patients. Should be avoided in tachycardia.
Methyldopa	500–3,000 mg/d orally in two to four divided doses. Commonly initiated at 250 mg twice or three times daily	Safety data up to 7 years of age in offspring. May not be as effective as other medications, especially in control of severe hypertension. Use limited by side effect profile (sedation, depression, dizziness).
Hydrochlorothiazide	12.5–50 mg daily	Second-line or third-line agent

Drug	Dose	Comments	Onset of Action
Labetalol	10–20 mg IV, then 20–80 mg every 10–30 minutes to a maximum cumulative dosage of 300 mg; or constant infusion 1–2 mg/min IV	Tachycardia is less common and fewer adverse effects. Avoid in women with asthma, preexisting myocardial disease, decompensated cardiac function, and heart block and bradycardia.	1–2 minutes
Hydralazine	5 mg IV or IM, then 5–10 mg IV every 20–40 minutes to a maximum cumulative dosage of 20 mg; or constant infusion of 0.5–10 mg/hr	Higher or frequent dosage associated with maternal hypotension, headaches, and abnormal fetal heart rate tracings; may be more common than other agents.	10–20 minutes
Nifedipine (immediate release)	10–20 mg orally, repeat in 20 minutes if needed; then 10–20 mg every 2–6 hours; maximum daily dose is 180 mg	May observe reflex tachycardia and headaches	5–10 minutes

International Nonproprietary Name	Trade names
1	2
Acetylsalicylic acid	Aspirin, Aspekard, anopirin, atsesal, Terapin, upsarin etc.
Calcium	Calcium phosphate, calcium gluconate, calcium carbonate, calcium lactate, calcium lactogluconate, calcium glycerophosphate, calcium acetate
Metildofa	Dopegit, aldomet, alfadopa, dopanol
Clonidine	Gemiton, clonidine, katapresan, hlofazolin

Pindolol	Whisky
Oxprenolol	Trazikor
Atenolol	Atenobene, atenova, tenolol, unilok, atenosan, blokatenol, atkardil etc.
Metoprolol	Vazokardin, korvitol, lopresor, metoprolol
Labetalol	Lacardia
Nifedipine	Adalat, corinfar, anifed, kordinin, nicardia, nifebene, nifedikor, Nifecard, farmadinin, fenigidin etc.
Verapamil	Izoptin, finoptinum, lecoptin
Hydralazine (digidralazin)	Apresin
Sodium nitroprusside	Nanipruss
Hydrochlorothiazide	Hypothiazid, gidrotiazid
Furosemide	Lasix, diufur, elsimid, frusemid, Fouronnes
Prazozina	Prazozinbene, polpresin, prazozina
Proroksan	Pyroxene
Preparations of iron II	Gino tardiferon, tardiferon, Sorbifer duruleks, aktiferin, gemofer prolongatum, ferro-gradumet, totem, heferol, ranferon 12 and others.
Dexamethasone	Deksazon, deksaven, fortekortin, dekadron, deksabene

International Nonproprietary Name	Trade names
1	2
Acetylsalicylic acid	Aspirin, Aspekard, anopirin, atsesal, Terapin, upsarin etc.
Calcium	Calcium phosphate, calcium gluconate, calcium carbonate, calcium lactate, calcium lactogluconate, calcium glycerophosphate, calcium acetate

Metildopha	Dopegit, aldomet, alfadopa, dopanol
Clonidine	Gemiton, clonidine, katapresan, hlofazolin
Pindolol	Whisky
Oxprenolol	Trazikor
Atenolol	Atenobene, atenova, tenolol, unilok, atenosan, blokatenol, atkardil etc.
Metoprolol	Vazokardin, korvitol, lopresor, metoprolol
Labetalol	Lacardia
Nifedipine	Adalat, corinfar, anifed, kordinin, nicardia, nifebene, nifedikor, Nifecard, farmadinin, fenigidin etc.
Verapamil	Izoptin, finoptinum, lecoptin
Hydralazine (digidralazin)	Apresin
Sodium nitroprusside	Nanipruss
Hydrochlorothiazide	Hypothiazid, gidrotiazid
Furosemide	Lasix, diufur, elsimid, frusemid, Fouronnes
Prazozina	Prazozinbene, polpresin, prazozina
Proroksan	Pyroxene
Preparations of iron II	Gino tardiferon, tardiferon, Sorbifer duruleks, aktiferin, gemofer prolongatum, ferro-gradumet, totem, heferol, ranferon 12 and others.
Dexamethasone	Deksazon, deksaven, fortekortin, dekadron, deksabene

MATERIALS FOR ACTIVATION OF STUDENTS DURING THE LECTURE: QUESTIONS, SITUATIONAL TASKS, ETC.

QUESTIONS:

- What is the definition of early preeclampsia?
- What is the classification of early preeclampsia?
- What modern views on etiology and pathogenesis of early preeclampsia

- Which clinic vomiting of pregnant?
- What are the methods of examination in early gestosis?
- What are the principles and methods of treatment of vomiting of varying degrees of severity?
- What is the differential diagnosis of different forms of early preeclampsia with other extragenital disease?
- The classification preeclampsia?
- What are the risk factors on the occurrence preeclampsia?
- What are methods of preeclampsia diagnostics?
- Methods of preeclampsia severity evaluation?
- Clinical features and diagnosis of eclampsia?
- Emergency help at attack of eclampsia?
- Obstetrical tactics and treatment of eclampsia?
- Prevention of preeclampsia?

TEST TASKS

Direction: For each of the multiple-choice questions select the lettered answer that is the one best response in each case.

1. A 25 y.o. pregnant woman in her 34th week was taken to the maternity house in grave condition. She complains of headache, visual impairment, nausea. Objectively: solid edema, AP170/130 mm Hg. Suddenly there appeared fibrillary tremor of face muscles, tonic and clonic convulsions, breathing came to a stop. After 1,5 minute the breathing recovered, there appeared some bloody spume from her mouth. In urine: protein - 3,5 g/L. What is the most probable diagnosis?

A. Eclampsia
B. Epilepsy
C. Cerebral hemorrhage
D. Cerebral edema
E. Stomach ulcer

2. A 28 year old parturient complains about headache, vision impairment, psychic inhibition. Objectively: AP200/110 mm Hg, evident edema of legs and anterior abdominal wall. Fetus head is in the area of small pelvis. Fetal heartbeats is clear, rhythmic, 190/min. Internal investigation revealed complete cervical dilatation, fetus head was in the area of small pelvis. What tactics of labor management should be chosen?

A. Forceps operation
B. Cesarean
C. Embryotomy
D. Conservative labor management with episiotomy
E. Stimulation of labor activity

3. A 28-years-old woman complains of nausea and vomiting about 10 times per day. She has been found to have body weight loss and xerodermia. The pulse is 100 bpm. Body temperature is 37, 2oC. Diuresis is low. USI shows 5-6 weeks of pregnancy. What is the most likely diagnosis?

A. Moderate vomiting of pregnancy

B. Mild vomiting of pregnancy
C. I degree preeclampsia
D. Premature abortion
E. Food poisoning
4. A primagravida with pregnancy of 37-38 weeks complains of headache, nausea, pain in epigastrium. Objective: the skin is cyanotic. Face is hydropic, there is short fibrillar twitching of blepharos, muscles of the face and the inferior extremities. The look is fixed. AP200/110 mm Hg; sphygmus of 92 bpm, intense. Respiration rate is 32/min. Heart activity is rhythmical. Appreciable edemata of the inferior extremities are present. Urine is cloudy. What medication should be administered?
A. Droperidolum of 0,25\% - 2,0 ml
B. Dibazolum of 1\% - 6,0 ml
C. Papaverine hydrochloride of 2\% - 4,0 ml
D. Hexenalum of 1\% - 2,0 ml
E. Pentaminum of 5\% - 4,0 m
5. A woman at 30 weeks pregnant has had an attack of eclampsia at home. On admission to the maternity ward AP- 150/100 mm Hg. Predicted fetal weight is 1500 g. There is face and shin pastosity. Urine potein is 0, 66o/oo. Parturient canal is not ready for delivery. An intensive complex therapy has been started. What is the correct tactics of this case management?
A. Delivery by cesarean section
B. Continue therapy and prolong pregnancy for 1-2 weeks
C. Continue therapy and prolong pregnancy for 3-4 weeks
D. Labor induction by intravenous oxytocin or prostaglandins
E. Treat preeclampsia and achieve the delivery by way of conservative management
6. An onset of severe preeclampsia at 16 weeks gestation might be caused by:
A. Hydatidiform mole
B. Anencephaly
C. Twin gestation
D. Maternal renal disease
E. Interventricular defect of the fetus
7. A 25 y.o. pregnant woman in her 34th week was taken to the maternity house in grave condition. She complains of headache, visual impairment, nausea. Objectively: solid edema, BP-170/130 mm Hg. Suddenly there appeared fibrillary tremor of face muscles, tonic and clonic convulsions, breathing came to a stop. After 1,5 minute the breathing recovered, there appeared some bloody spume from her mouth. In urine: protein - 3,5 g/L. What is the most probable diagnosis?
A. Eclampsia
B. Epilepsy
C. Cerebral hemorrhage
D. Cerebral edema
E. Stomach ulcer

8. A 28-years-old woman complains of nausea and vomiting about 10 times per day. She has been found to have body weight loss and xerodermia. The pulse is 100

bpm. Body temperature is 37, 2oC. Diuresis is low. USI shows 5-6 weeks of pregnancy. What is the most likely diagnosis?
A. Moderate vomiting of pregnancy
B. Mild vomiting of pregnancy
C. I degree preeclampsia
D. Premature abortion
E. Food poisoning
9. A woman at 30 weeks pregnant has had an attack of eclampsia at home. On admission to the maternity ward AP- 150/100 mm Hg. Predicted fetal weight is 1500 g. There is face and shin pastosity. Urine protein is 0, 66 g|l. Parturient canal is not ready for delivery. An intensive complex therapy has been started. What is the correct tactics of this case management?
A. Delivery by cesarean section
B. Continue therapy and prolong pregnancy for 1-2 weeks
C. Continue therapy and prolong pregnancy for 3-4 weeks
D. Labor induction by intravenous oxytocin or prostaglandins
E. Treat preeclampsia and achieve the delivery by way of conservative management
10. A 19-year-old primigravida woman with a body weight of 54,5 kg gave birth at 38 weeks gestation to a full-term live girl after a normal vaginal delivery. The girl's weight was 2180,0 g, body length - 48 cm. It is known from history that the woman has been a smoker for 8 years, and kept smoking during pregnancy. Pregnancy was complicated by moderate vomiting of pregnancy from 9 to 12 weeks pregnant, edema of pregnancy from 32 to 38 weeks. What is the most likely cause of low birth weight?
A. Fetoplacental insufficiency
B. Low weight of the woman
C. Woman's age
D. First trimester preeclampsia
E. Third trimester preeclampsia
11. A primagravida with pregnancy of 37-38 weeks complains of headache, nausea, pain in epigastrium. Objectively: the skin is cyanotic. Face is hydropic, there is short fibrillar twitching of blepharons, muscles of the face and the inferior extremities. The stare is fixed. BP - 200/110 mm Hg. Respiration rate is 32/min. Heart activity is rhythmical. Appreciable edemas of the inferior extremities are present. Urine is cloudy. What medication should be administered?
A. Droperidolum of 0,25% - 2,0 ml
B. Dibazolum (Bendazole hydrochloride) of 1% - 6,0 ml
C. Papaverine hydrochloride of 2% - 4,0 ml
D. Hexenalum of 1% - 2,0 ml
E. Pentaminum of 5% - 4,0 ml
12. A multigravida on the 38th week of her pregnancy complains of increased BP up to 140/90 mm Hg, edema of the shins for 2 weeks. In the last month she gained 3.5 kg of weight. Urine analysis: protein - 0.033 g/L. Make the diagnosis:
A. Mild preeclampsia
B. Moderate preeclampsia
C. Pregnancy hypertension

D. Severe preeclampsia
E. Pregnancy edema
13. A 35-year-old pregnant woman with degree 1 essential hypertension, developed edemas and headache at the 33 week of her pregnancy. Objectively her general condition is satisfactory, blood pressure - 160/100 mm Mg, normal uterine tone. Fetal heart rate is 140/min., rhythmic. She was diagnosed with daily proteinuria - 4 g/L, daily diuresis – 1100 ml. Creatinine - 120 mcmol/L, urea - 7 mmol/L, platelets - 101 * 10 3/l.. What complication of pregnancy occurred?
A. Mild preeclampsia
B. Hypertensive crisis
C. Moderate preeclampsia
D. Renal failure
E. Severe preeclampsia
Answer key

1	A	8	A
2	A	9	A
3	A	10	A
4	A	11	A
5	A	12	A
6	D	13	C
7	A		

EQUIPMENT AND EDUCATIONAL AND METHODOLOGICAL SUPPORT OF THE LECTURE:

- Obstetric models and obstetric instruments (pelvimeter, obstetric stethoscope, centimeter tape).
- Professional algorithms, structural-logical schemes, tables, videos.
- Results of laboratory and instrumental researches, situational tasks, patients, medical histories.
- Multimedia equipment (computer, projector, screen), TV.

RECOMMENDED LITERATURE

Basic:

1. Gladchuk I.Z. Obstetrics: student`s book / Gladchuk I.Z., Ancheva I.A. . – Vinnitsia: Nova Knyha, 2021. – 288 p.
2. Obstetrics and Gynecology: in 2 volumes. Volume 1. Obstetrics: textbook / V.I. Gryshchenko, M.O. Shcherbina, B.M. Ventskivskyi et al. (2nd edition). – «Medicina», 2018. – 392 p.
3. Hiralal Konar DC Dutta's Textbook of Obstetrics (9th Ed.) / Hiralal Konar (Ed.). – Jp Medical Ltd, 2018. – 700 p.

4. F. Gary Cunningham Williams Obstetrics (26th Edition) / F. Gary Cunningham, Kenneth Leveno, Jodi Dashe, Barbara Hoffman, Catherine Spong, Brian Casey. – McGraw Hill / Medical, 2022. – 1328 p.
5. Jeremy Oats, Suzanne Abraham Llewellyn-Jones Fundamentals of Obstetrics and Gynaecology (10th Ed) / Jeremy Oats, Suzanne Abraham. – Elsevier, 2016. – 384 p.

Additional:

1. The PROMPT-CIPP Editorial Team. (2019). PROMPT-CIPP Course Participant's Handbook: Care of the Critically Ill Pregnant or Postpartum Woman (Critical Car Prompt Practical Obstetric Multi-professional Training). – Cambridge University Press; 1st edition, 2019. – 136 p.
2. L. A. Magee The FIGO Textbook of Pregnancy Hypertension. An evidence-based guide to monitoring, prevention and management. / L. A. Magee, P. Dadelszen, W. Stones, M. Mathai (Eds). – The Global Library of Women's Medicine, 2016. – 456 p.
3. Edwin Chandraharan Handbook of CTG Interpretation: From Patterns to Physiology / Edwin Chandraharan. – Cambridge University Press; 1st edition, 2017. – 256 p.
4. Louise C. Kenny, Jenny E. Myers Obstetrics by Ten Teachers (20th ed) / Louise C. Kenny, Jenny E. Myers. – CRC Press, 2017. – 342 p.
5. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 4. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2017. – 419 p.
6. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 5. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2019. – 403 p.
7. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 6. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2022. – 309 p.
8. Mark Landon Obstetrics: Normal and Problem Pregnancies, 8th Edition / Mark Landon, Henry Galan, Eric Jauniaux, Deborah Driscoll, Vincenzo Berghella, William Grobman, et al. – Elsevier, 2021. – 1280 pp.
9. Mark B. Landon Gabbe's Obstetrics Essentials: Normal & Problem Pregnancies, 1st Edition / Mark B. Landon, Deborah A. Driscoll, Eric R. M. Jauniaux, Henry L. Galan, William A. Grobman, Vincenzo Berghella. – Elsevier, 2019. – 496 pp.
10. Ian M. Symonds, Sabaratnam Arulkumaran Essential Obstetrics and Gynaecology, 6th Edition / Ian M. Symonds, Sabaratnam Arulkumaran. – Elsevier, 2020. – 480 pp.
11. Myra J. Wick Mayo Clinic Guide to a Healthy Pregnancy, 2nd Edition / Myra J. Wick. – Mayo Clinic Press, 2018. – 520 p.

INTERNET SOURCES:

- https://www.cochrane.org/
- https://www.ebcog.org/
- https://www.acog.org/
- https://www.uptodate.com
- https://online.lexi.com/
- https://www.ncbi.nlm.nih.gov/
- https://pubmed.ncbi.nlm.nih.gov/
- https://www.thelancet.com/
- https://www.rcog.org.uk/
- https://www.npwh.org/