CURRENT ISSUES of Perinatal Medicine

Pregnancy and delivery with extragenital diseases

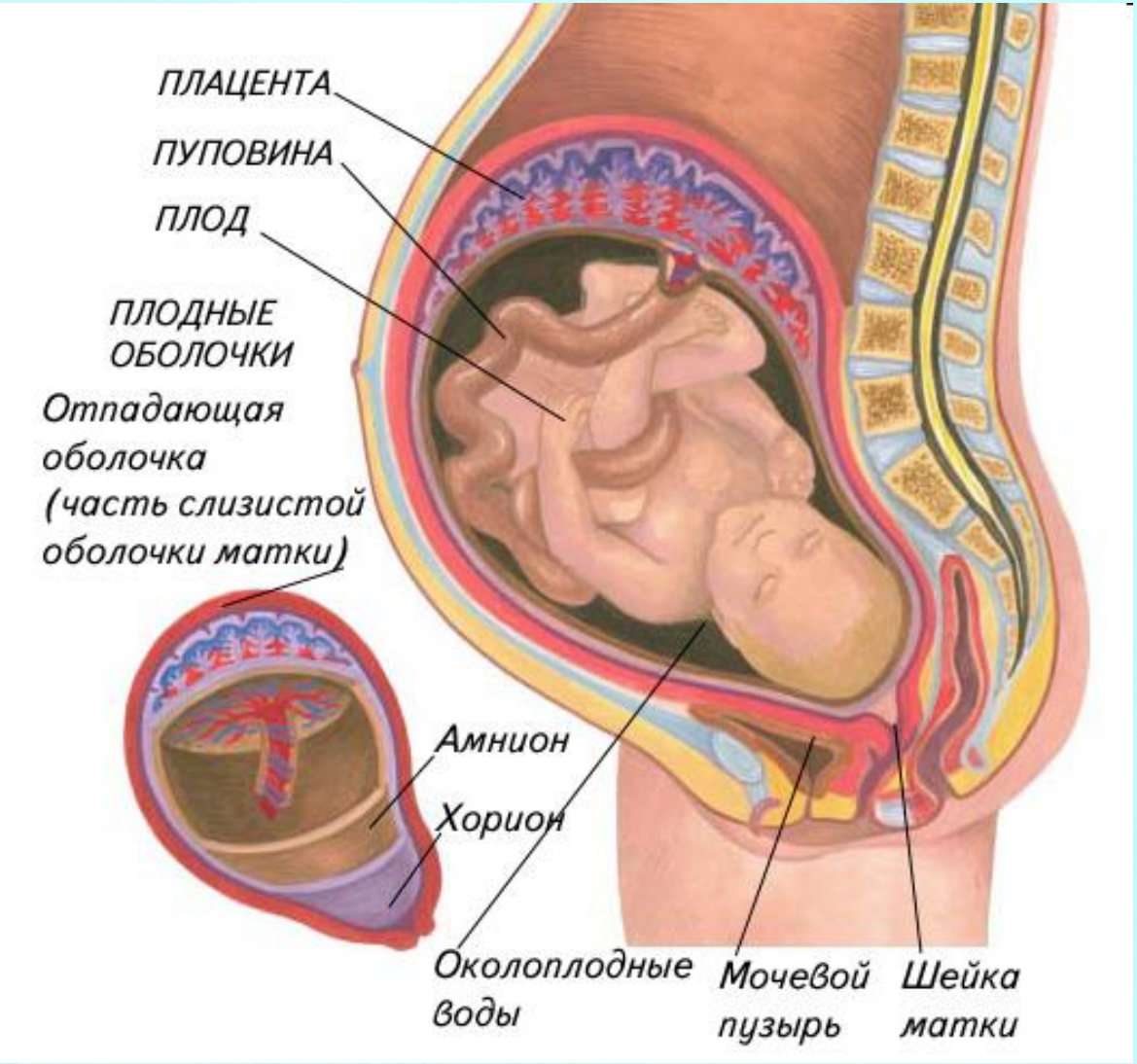
Basics of Perinatal Medicine

- **Perinatology** (Gr. Peri - around + natus - born + logos - teaching science) - Science, located at the junction of pediatrics, obstetrics and perinatal studies.
- **Perinatal period** - the period from the 22nd week of pregnancy (antenatal), including the period of delivery (intrapartum), and ends after 168 hours (7 days) after birth (postnatal).

The objectives of Perinatal Medicine are:

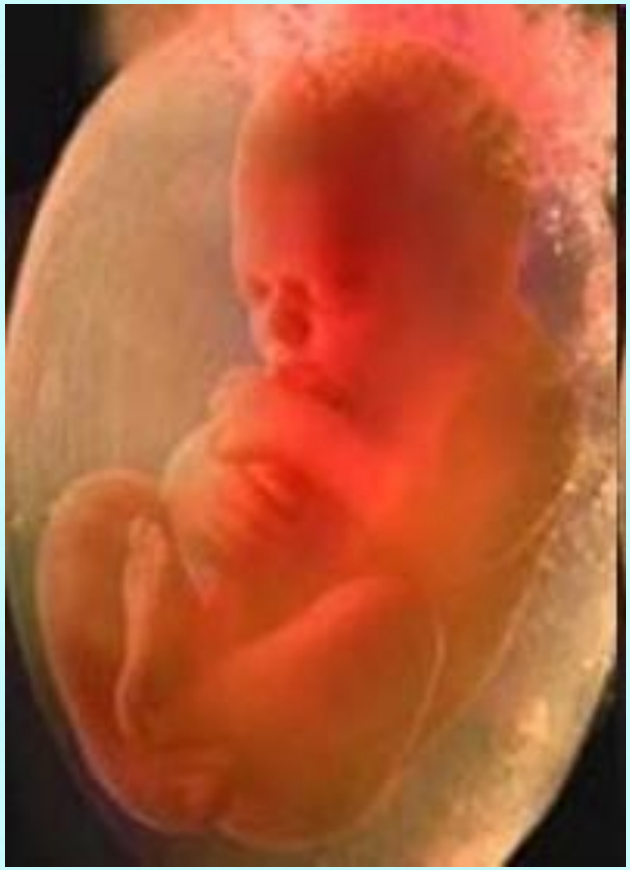
- study the features development;
- study of the pathogenesis and diagnosis of disorders and diseases of the fetus and the newborn;
- provision of the fetus and newborn modern versatile medical care before, during delivery and after birth;
- reduction of perinatal mortality.

The structure of the ovum in the 2nd half of pregnancy

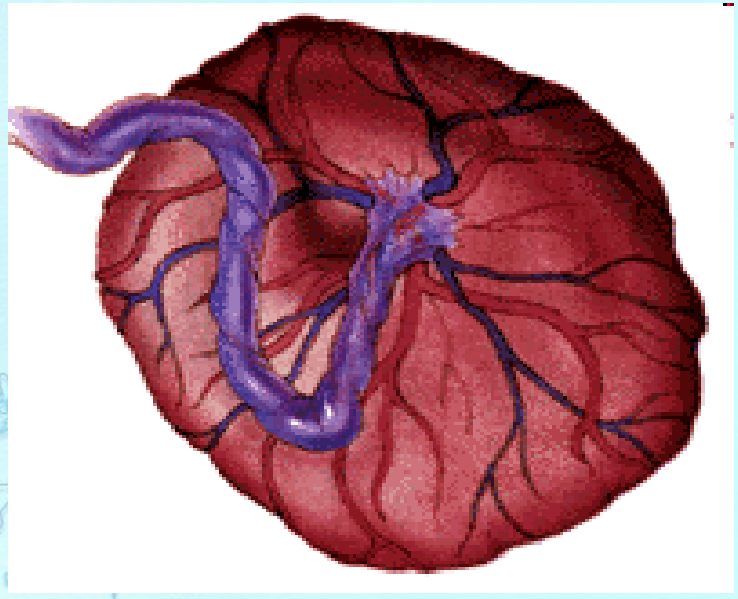


Amniotic fluid secreted by the amniotic epithelium. Normally, at the end of pregnancy its volume reaches 0.5-1.5 liters.

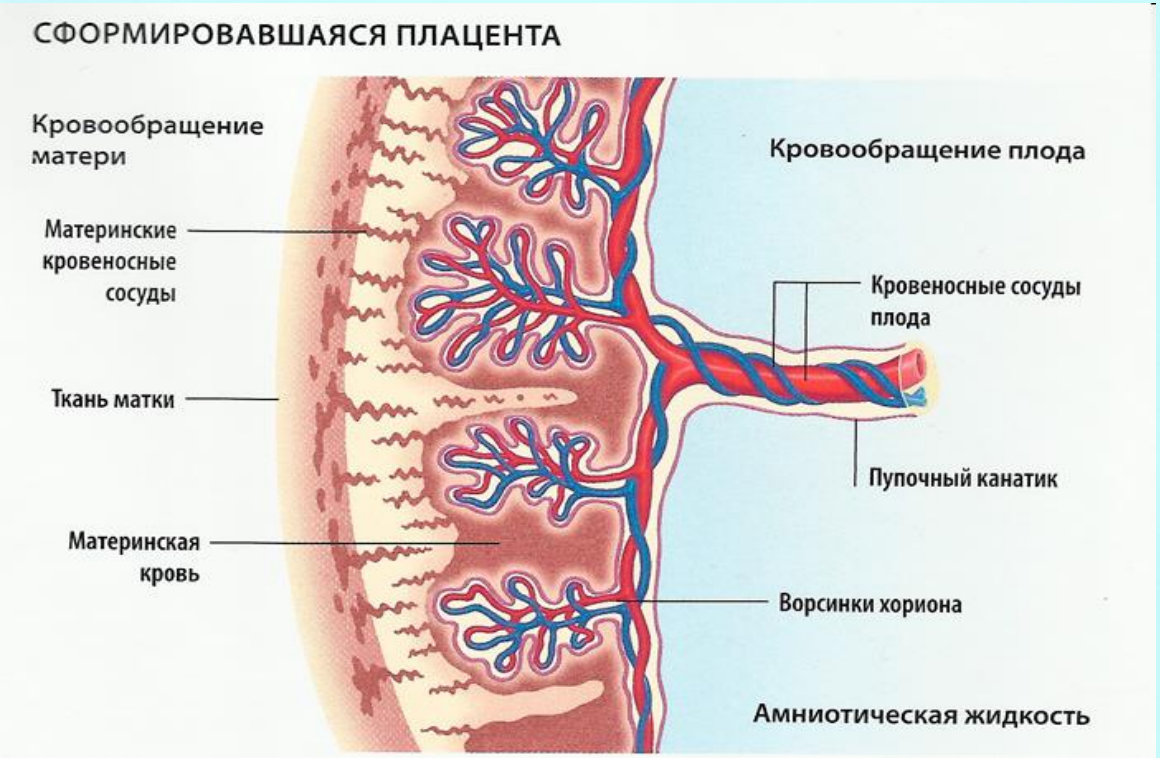
- **Amniotic fluid** are of great physiological importance:
  1) create conditions for the free development of the fetus and its movements;
  2) protect the fetus from adverse external influences;
  3) involved in the metabolism of the fetus;
  4) prevent compression of the umbilical cord;
  5) facilitate the normal course of childbirth



Placenta - provisory organ formed during pregnancy and provides a link with the mother and the fetus.



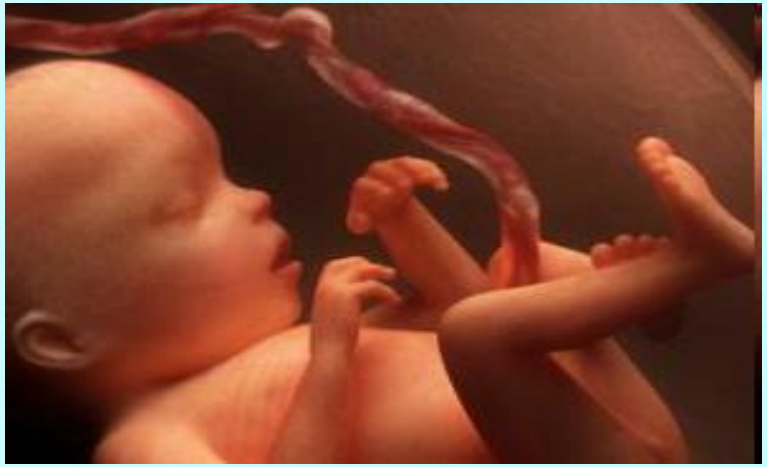
- **In the formation of the chorion, and later placenta, there are three periods:**
  1) previlli (7-8 days of development);
  2) during the creation of the villi (up to 50 days);
  3) during the creation of cotyledons (50-90 days).

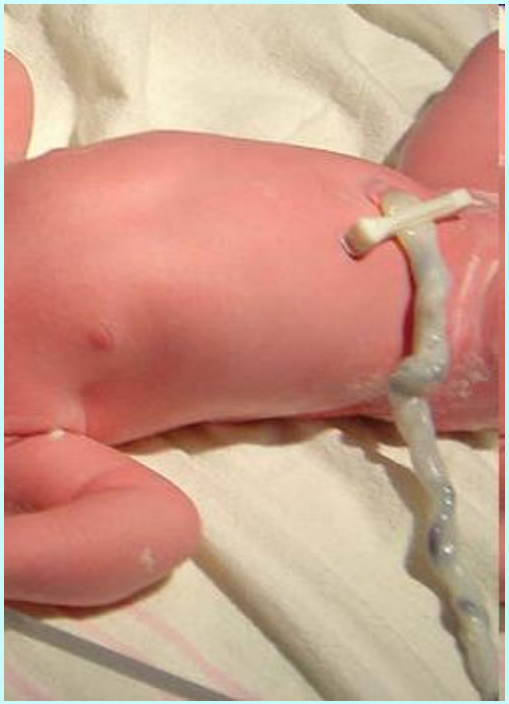


- The placenta provides the exchange of substances between the pregnant and the fetus, performs trophic, endocrine, excretory, protective function, and the function of gas exchange,has antigenic and immunogenic properties.
- Placenta is not only integrates, but also shares the genetically heterogeneous organisms of mother and fetus, preventing an immunological conflict.

The umbilical cord

- **The umbilical cord** is formed from the allantois, which involves vessels from the embryo to the chorion. The structure consists of the remains of the yolk sac.
- **Umbilical cord** - a lace-likeformation, in which there are two arteries and one vein, carrying blood from the fetus to the placenta, and vice versa





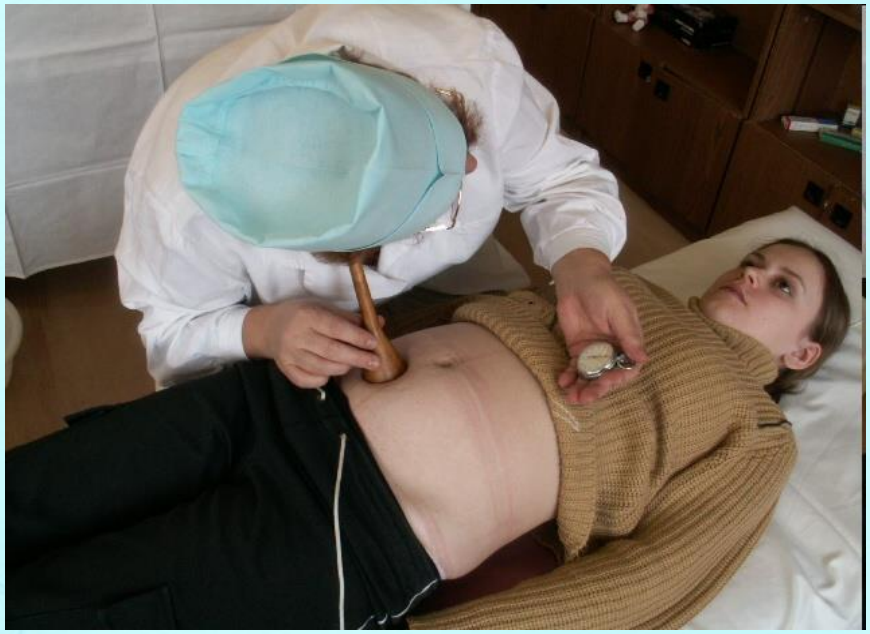
Methods for fetal assessment

- **non-invasive:**
- biochemical screening (definition of PAPP-A, hCG, AFP)
- ultrasound;
- biophysical profile of the fetus;
- Doppler study of FPC;
- cardiotocography.

- **invasive:**
- amnioscopy;
- amniocentesis;
- chorionic villus sampling;
- cordocentesis.

Auscultation

- Listening with a special obstetric stethoscope :
- fetal heart;
- noise of umbilical cord and placental blood vessels;
- aortic tones synchronous with the pulse of the pregnant woman;
- uterine noise;
- fetal movements.

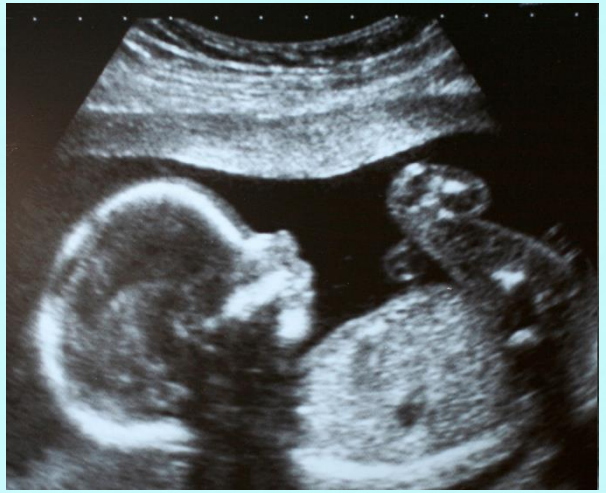


Biochemical screening

- based on the determination in maternal serum metabolic products of the fetus to assess the functional status of fetoplacental complex and forecasting of pregnancy;
- This aspect has the highest information content to determine the level of AFP (alpha-fetoprotein, synthesized by the liver of the fetus), hCG and early marker of chromosomal aberrations - PAPP-A

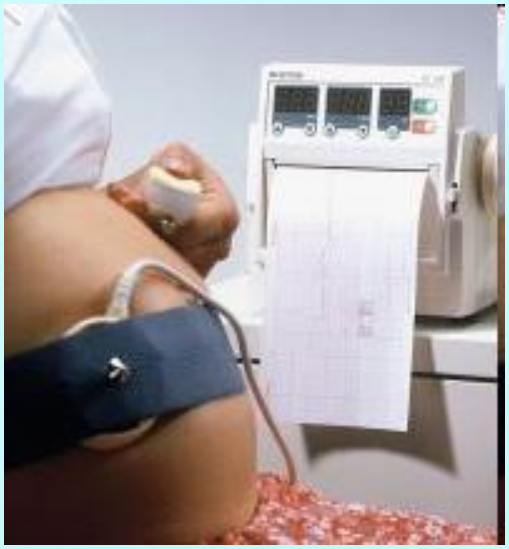
Ultrasonography

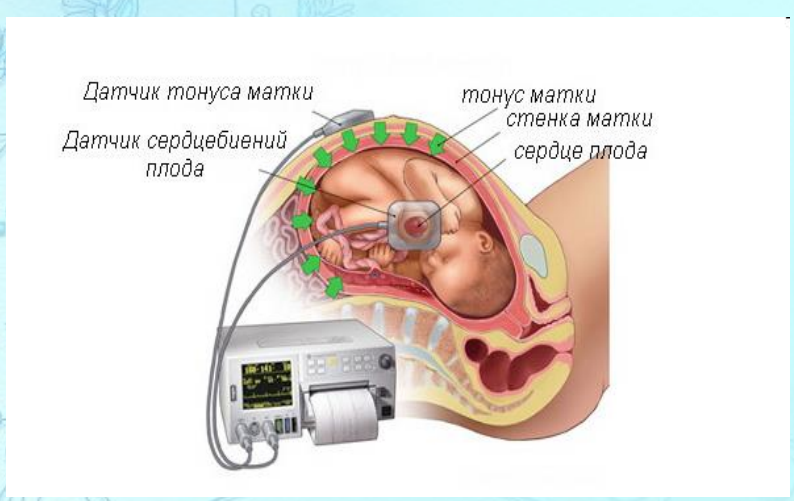
- I trimester (9-13 weeks). - provides for the implementation of ultrasound screening studies to identify malformations and chromosomal abnormalities;
- in the II trimester (16-21 weeks). - carried out in order to detect congenital malformations of the fetus;
- in the III trimester (30-33 weeks.) – carried out to assess the dynamics of the fetoplacental system, the diagnosis of malformations with late onset, IUGR.

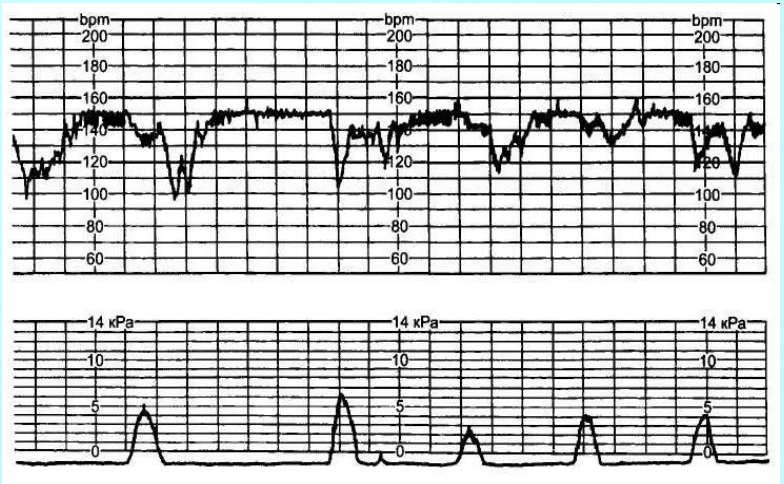


Cardiotocography

- Method by continuous simultaneous registration of fetal heart rate and uterine tone with a graphic of signals to the calibration tape;
- It based on the analysis of changes in heart rate at rest and during movement, under the conditions of the uterine activity and the impact of environmental factors..

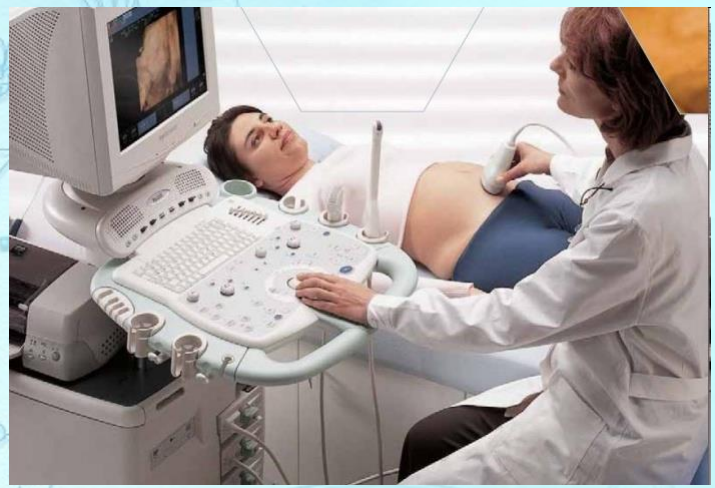






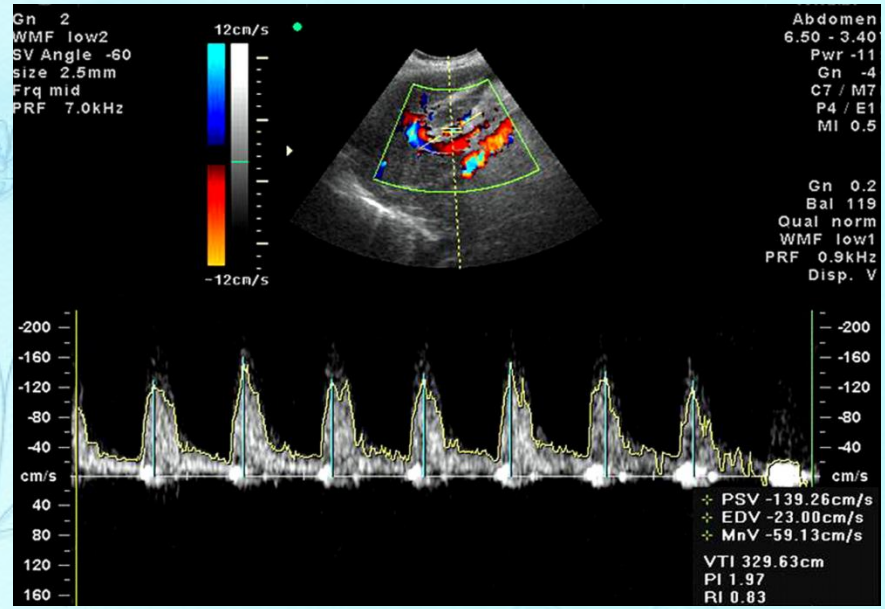
Fetal Biophysical Profile

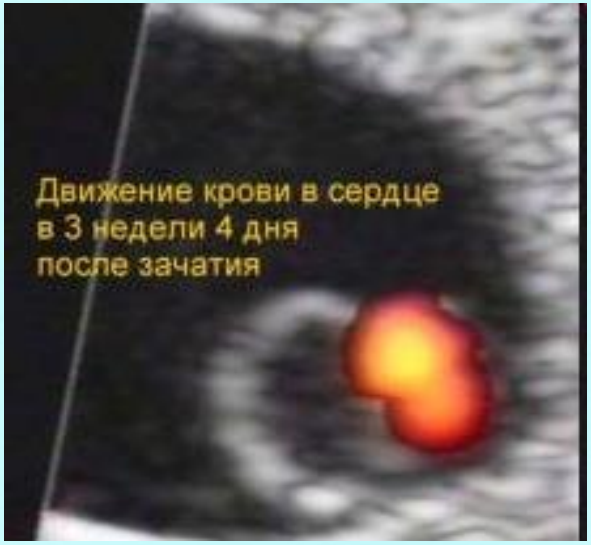
- method is based on the definition of manifestation of various forms of fetal movement, myocardial reflex, as well as the volume of amniotic fluid and ultrasound features of the structure of the placenta.



Doppler study of the FPC

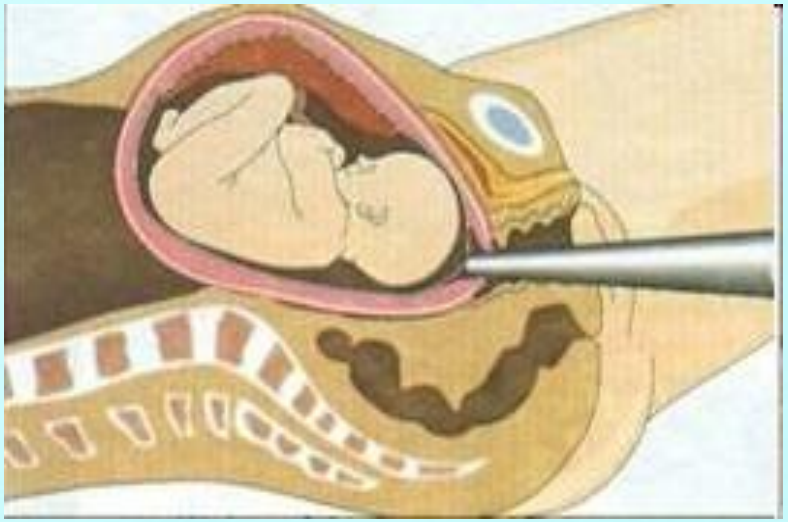
- method of measuring the velocity of blood flow in the mother-placenta-fetus that allows blood to determine the nature of violations of the mother and fetus, as well as his critical condition.





Amnioscopy

- **invasive study in which we use amnioscop introduced into the cervical canal, studying the amount and condition of the amniotic fluid.**



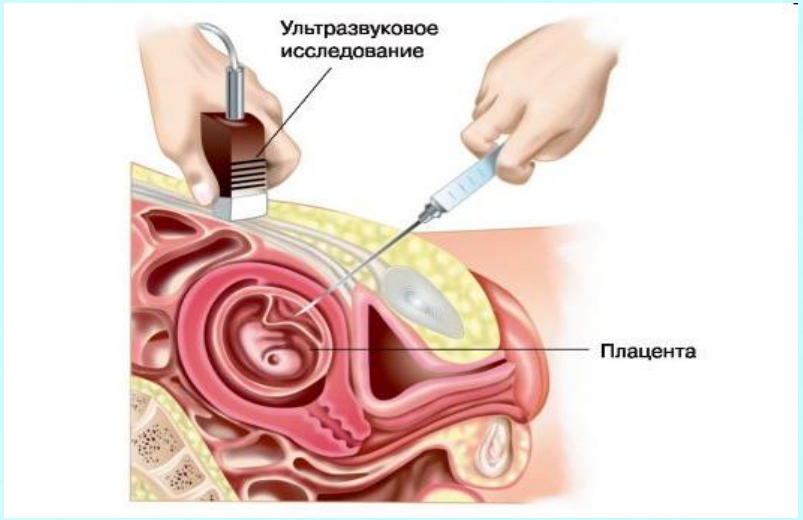
Amniocentesis

- carried out starting from the 20th week of pregnancy; the resulting material is subjected to a broad spectrum of cytogenetic, biochemical and DNA studies;
- indications- ante, intra and postnatal fetal death, birth of children with hemolytic disease, a wide range of pathologies in which early delivery is necessary.

Амниоцентез

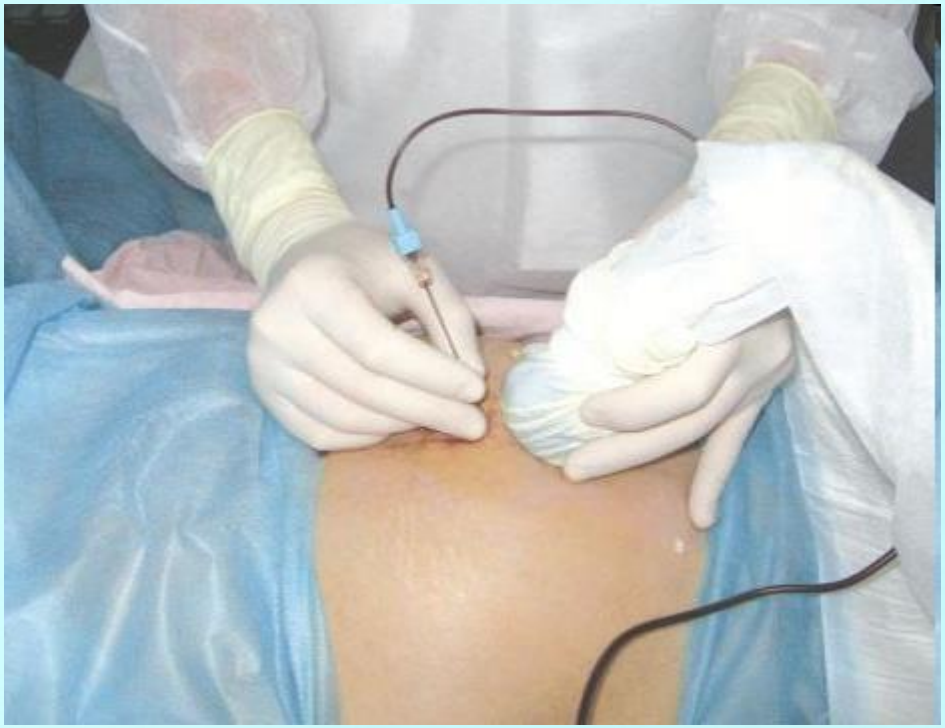
chorionic villus sampling

- the main method of invasive prenatal diagnosis in the I trimester of pregnancy;
- performed at10 weeks of gestation using transabdominal or transcervical access;
  indications:
- age of parents over 35 years old;
- positive results of biochemical screening;
- the presence of echographic sings of chromosomal aberrations;
- the presence of monogenic diseases in the family.



Cordocentesis

- It allows you to get through the puncture of umbilical cord blood for the study of the fetus;
- carried out since the 18th week of pregnancy in the operating room under ultrasound guidance;
- the resulting blood subjected to cytogenetic and molecular studies to rule out chromosomal abnormalities and diseases of the fetus, blood group and Rh, the level of Hb, Ht and CBS blood.



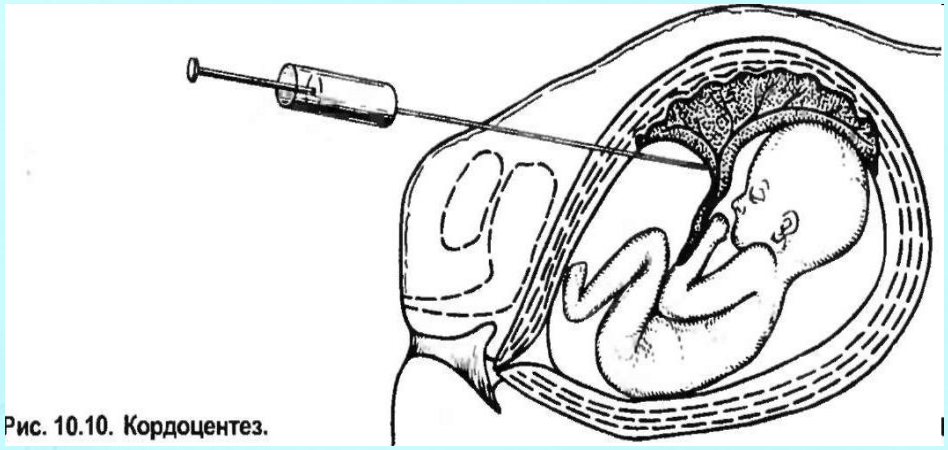


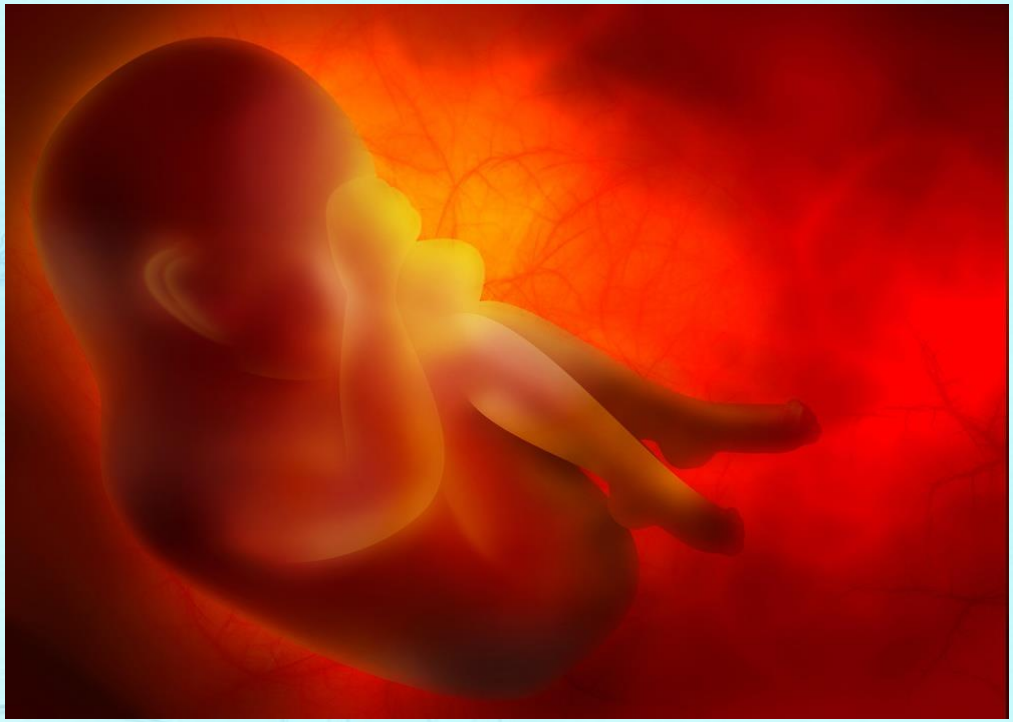
Рис. 10.10. Кордоцентез.

Medical and genetic counseling

- **Indications for medical and genetic counseling:**
- congenital malformations or hereditary diseases of the spouses or close relatives;
- the birth of children with malformations or hereditary diseases;
- born in a family of the mentally retarded;
- marriage between close relatives;
- infertility or recurrent miscarriage;
- amenorrhea;
- perinatal mortality;
- teratogenic and mutagenic influence factors on the parents;
- complicated pregnancy.

Malformations of the ovum

- The abnormalities or congenital malformations are persistent morphological changes in organs or the whole organism.

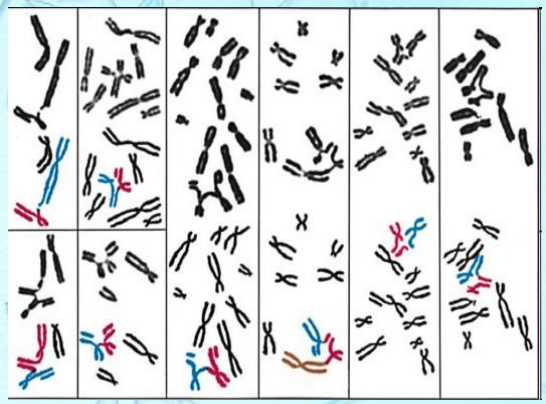


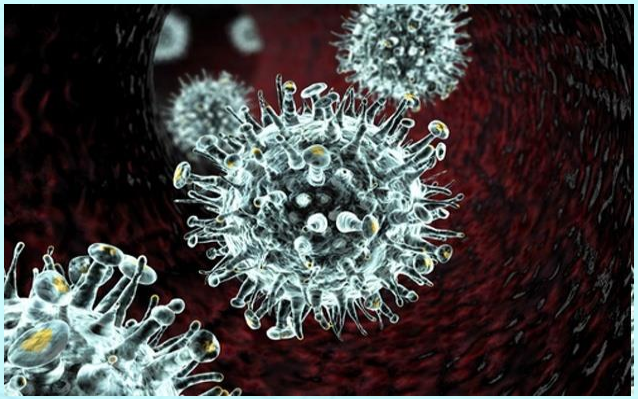
By etiological basis distinguish 3 groups of defects:

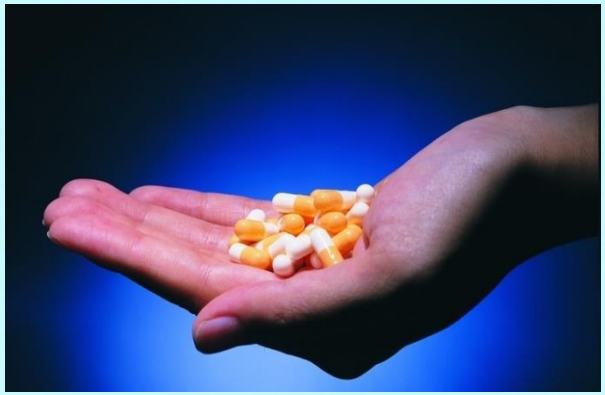
1. inherited (genetic and chromosomal);
2. exogenous (due to the influence of teratogenic factors on the embryo and fetus);
3. multifactorial (overall impact of genetic and exogenous factors).

Causes of fetal malformations:

a) endogenous (gene mutations, chromosomal aberrations, endocrine disease, the age of the parents);
b) exogenous (physical factors - radiation, mechanical, chemical - medication, household chemicals, hypoxia, malnutrition, biological - viruses, bacteria, isoimmunization);
c) multifactorial.







Fetal abnormalities may occur in different periods of ontogeny.

- **Gametopathias and blastopathias** due to changes in the genetic apparatus, and may occur in the process of maturation of sex cells during fertilization or in the early stages of cleavage of a fertilized egg (first 15 days). Most of the pregnancies terminated in the 3-4 weeks after the injury or death of the embryo;

- **Embriopaty** arise in the period from the 16th day to the 10th week after conception (the period of organogenesis). Pregnancy often ends in miscarriage, birth of a child with injuries or stillbirth;
- **Fetopathy** - diseases or functional disorders that occur in the fetus under the influence of exogenous factors in the period from 11 weeks of gestation until birth.

Birth defects include developmental disorders:

- agenesis - a complete lack of organ;
- aplasia - the lack of organ with the presence of its vascular pedicle;
- Hypoplasia - underdevelopment of the organ;
- hypotrophy- reduction of fetal weight;
- hypertrophy - an increase in mass of an organ;
- macrosomia - increasing the length and weight of the fetus;
- heterotopia - the presence of cells or tissue in the body of another body where they should not to be;
- ectopia – displacement of the organ
- atresia - lack of a channel or hole;
- stenosis - narrowing channel or opening;
- non-separation (merger) of organs - Siamese twins (Pagi), undivided limbs or its parts there is aschistodactylia;
- dyschronia - a violation of the pace of development.

Classification of fetal congenital malformations

- **A. Congenital malformations of organs and systems**
- 1. Defects of the central nervous system and sense organs;
  2. Malformations of the face and neck;
  3. Malformations of the CVS ;
- 4. Defects of the respiratory s-m;
  5. Malformations of the digestive tr.;
  6. Defects of the musculoskeletal system;
  7. Defects of the urinary tract;
  8. Defects genitals;
  9. Defects endocrine glands;
  10. Defects of the skin and its appendages;
  11. Malformation of placenta
  12. Other flaws

- **B. Multiple congenital malformations**

1. Chromosomal syndromes;
2. Gene syndromes;
3. Defects caused by exogenous factors;
4. Syndromes of unknown etiology;
5. Multiple unspecified defects.

There are also:

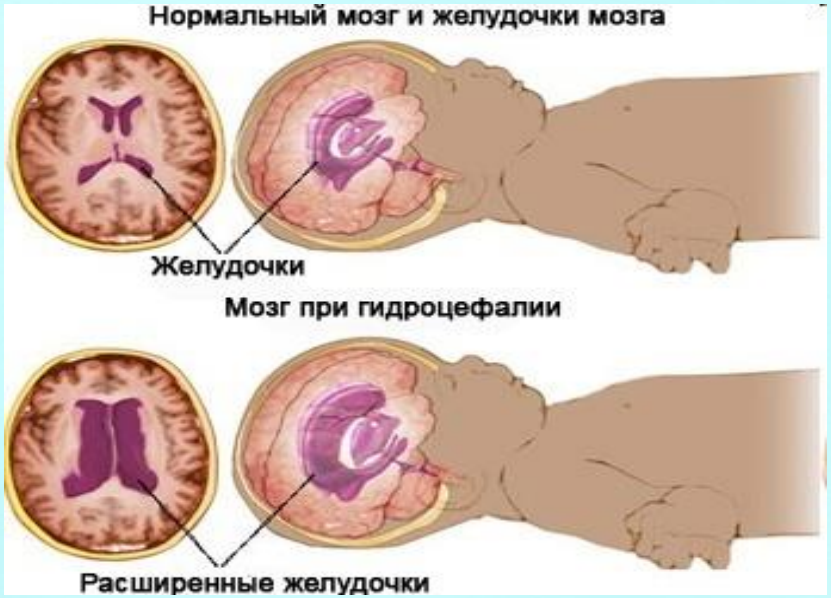
isolated (localized in one organ);

system (within one organ systems);

multiple (in the bodies of two or more systems) defects.

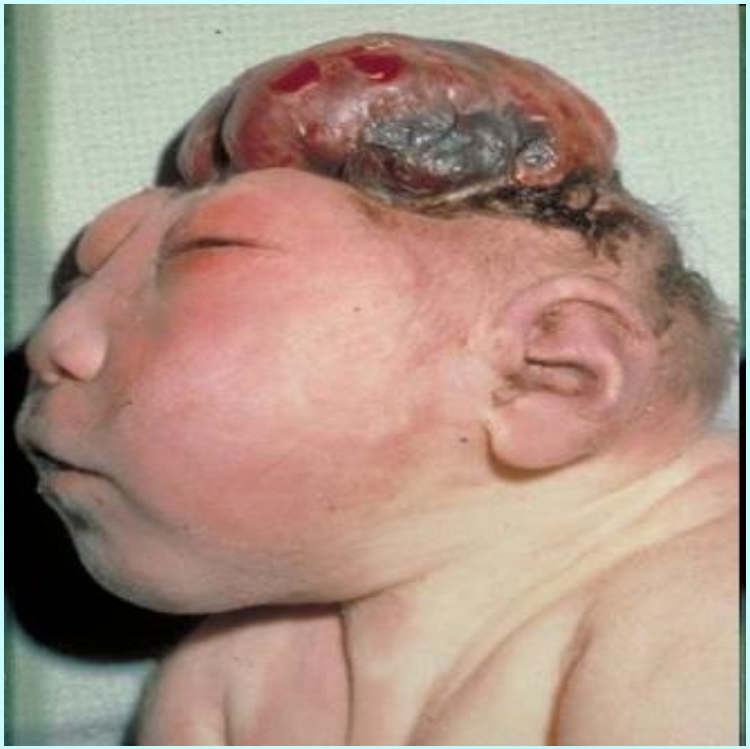
Hydrocephalus

- arises due to obstruction at one site of the circulation of cerebrospinal fluid;
  mainly represented by aqueduct stenosis, open hydrocephalus (enlargement of the ventricles of the brain and subarachnoid brain systems as a result of obstruction of the outventricle tract of outflow of cerebrospinal fluid); Dandy-Walker syndrome (a combination of hydrocephalus, posterior fossa cyst, cerebellar vermis defect, because of which the cyst is connected to the emptiness of the IV ventricle).



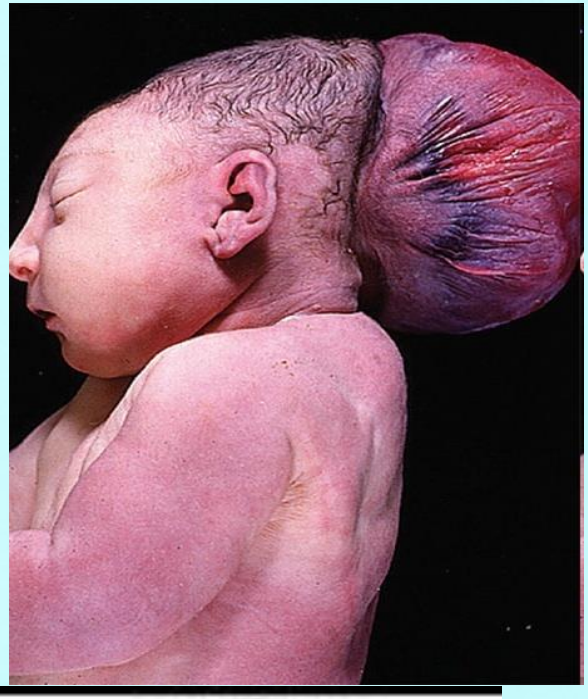
Anencephaly

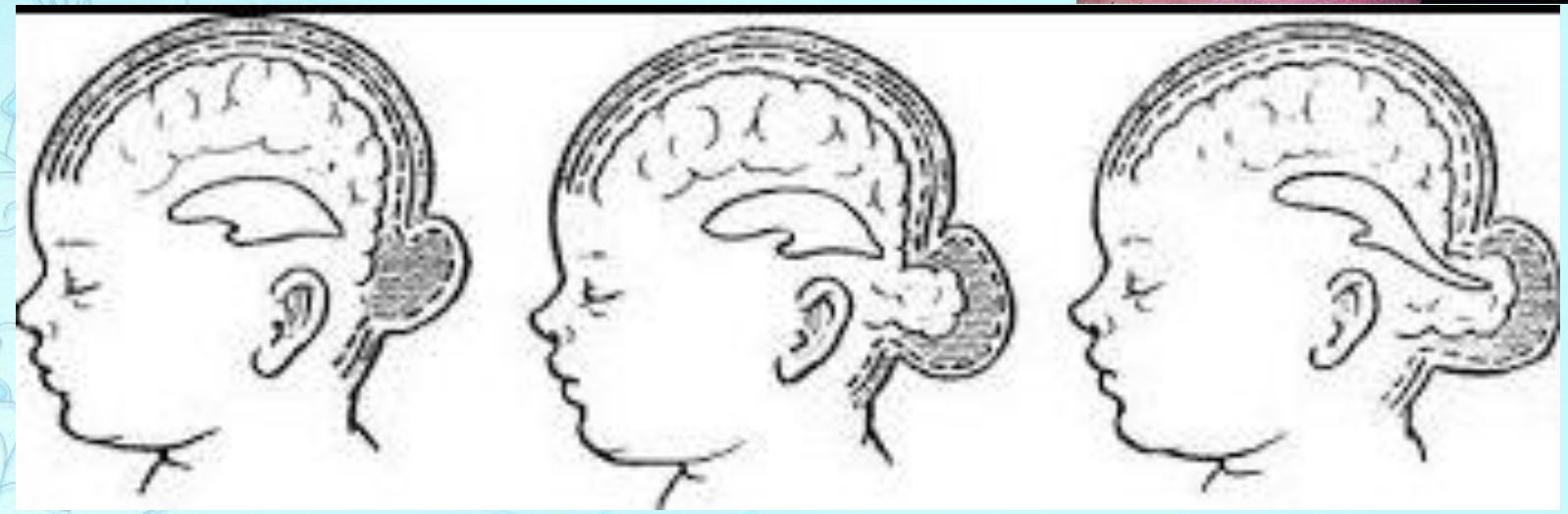
- the absence of the cerebral hemispheres, and most of the cranial vault; while there is a defect of the frontal lobe above the supraorbital region , the parietal and occipital bones are missing.



Cephalocele (splitting of the skull)

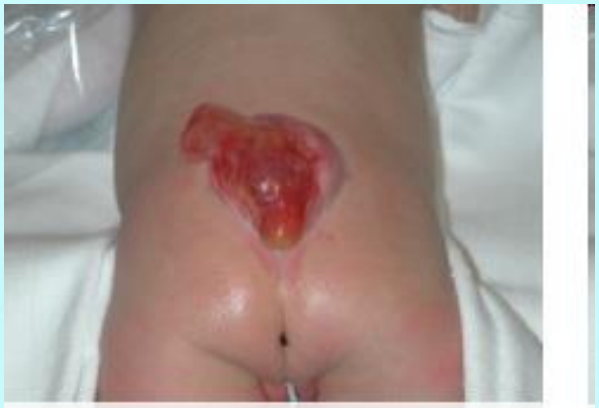
- protrusion of the contents of the skull through the bone defect; distinguished:
- cranial cephalocele (protrusion through a defect only meningeal membranes);
- encephalocele (when in the hernial sac is a brain tissue).





Spina bifida ((lumbar herniation)**)**

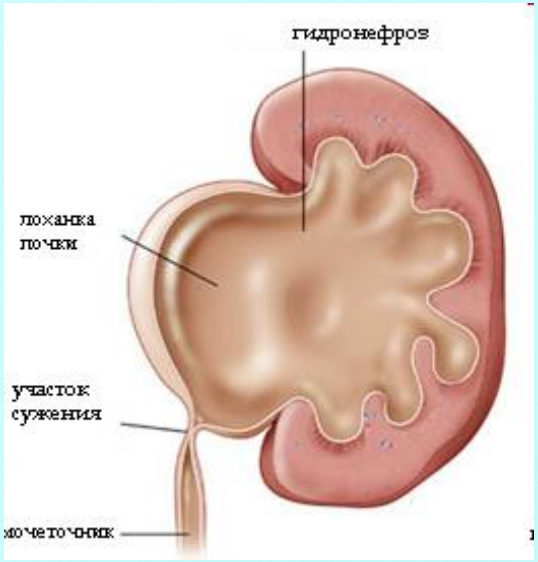
- **Midline defect of the dorsal vertebral arches, which is accompanied by “denudation” of the contents of the spinal canal;**
- **distinguish the cystic form with the formation of the hernia sac, which contains a meninx and / or the substance of the brain, and hidden form, which is not accompanied by the formation of herniation;**
  often associated with hydrocephalus, congenital heart disease and urinary tract.

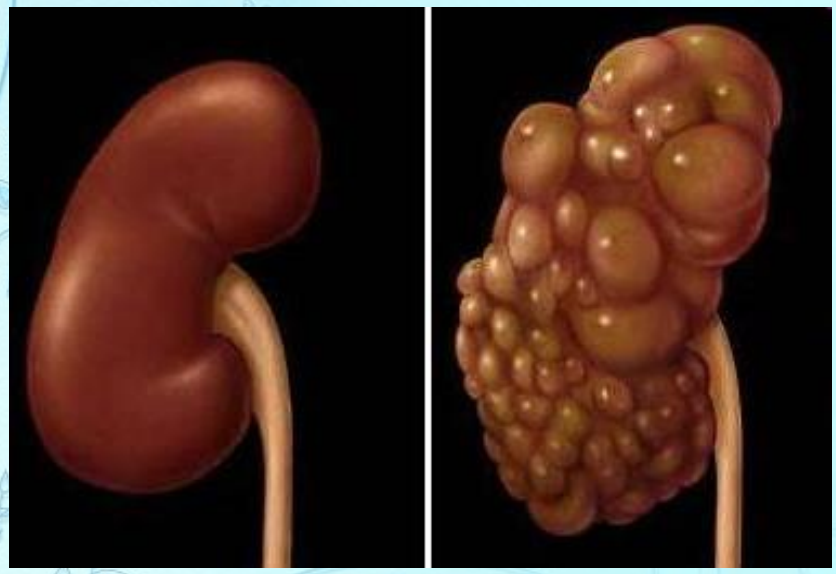


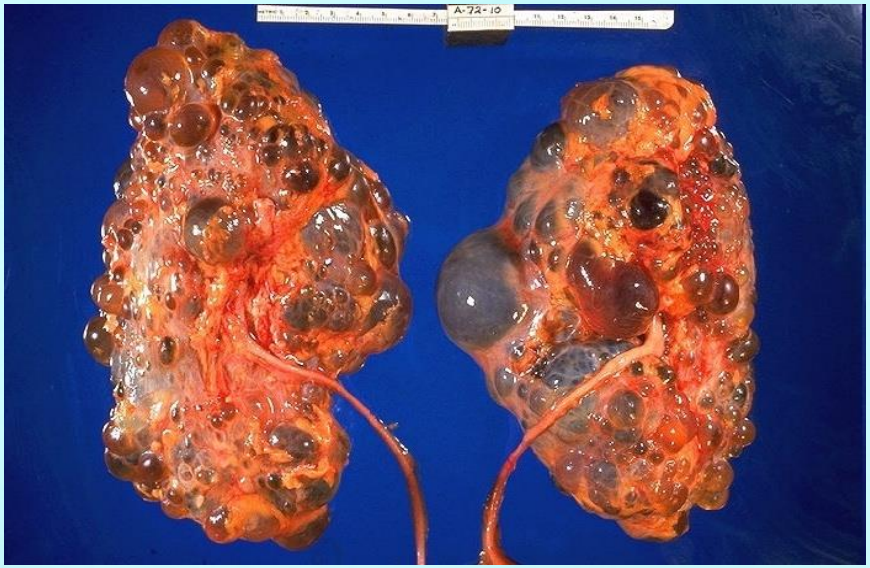
Spina bifida

Malformations of the urogenital system

- infantile type of polycystic kidney disease;
- congenital hydronephrosis.

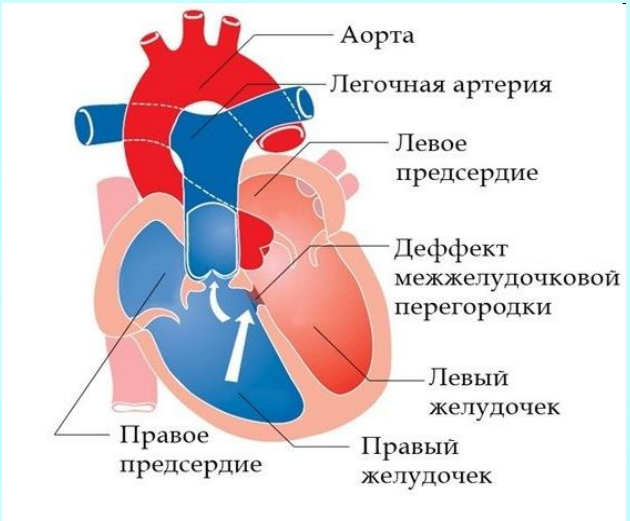


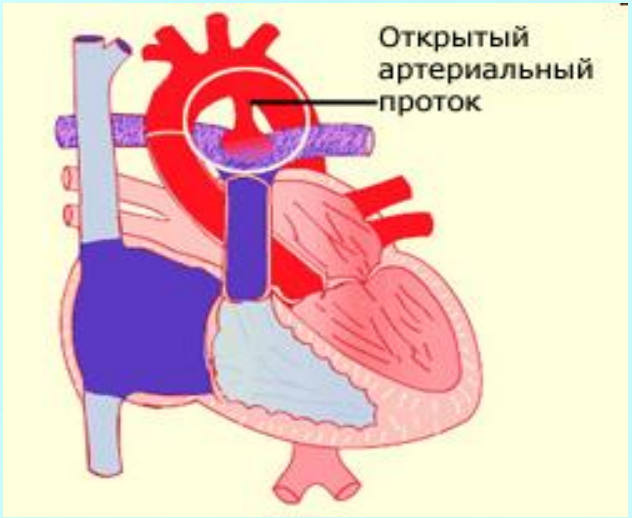




Congenital heart defects

- 90% of the CHD are the result of multifactor damage (genetic predisposition and environmental factors);
  The most common:
  - Defects in the atrial and ventricular walls;
  - Patent ductus arteriosus;
  - Pulmonary stenosis;
  - Hypoplastic left heart syndrome;
  - A single ventricle and others.

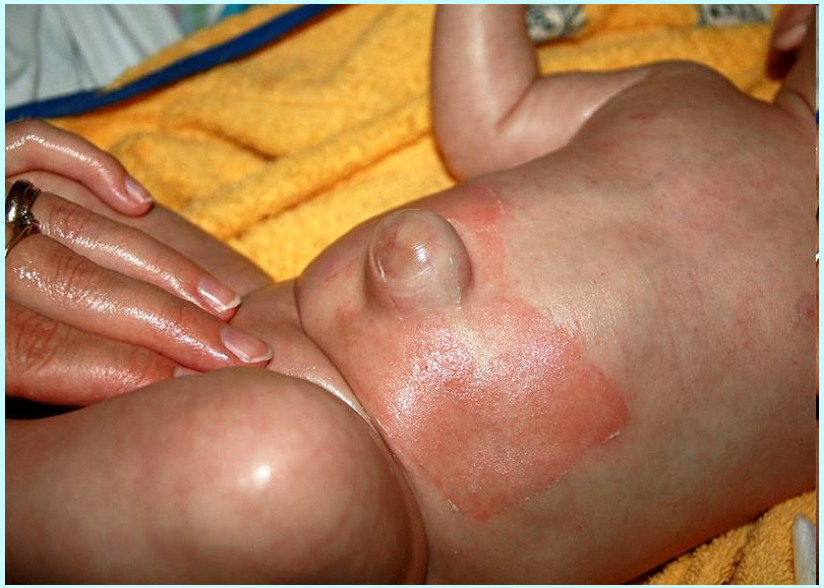




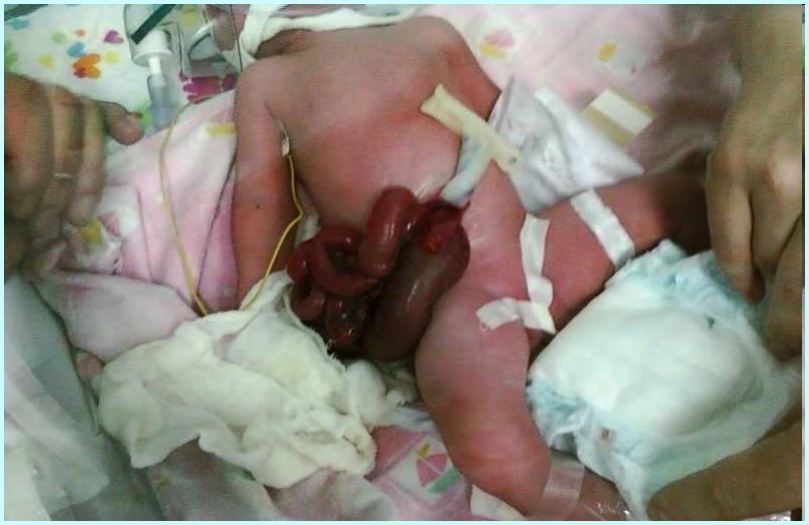
Malformations of the gastrointestinal tract

- Diaphragmatic hernia is a displacement of the abdominal organs into the chest cavity through a defect in the diaphragm.

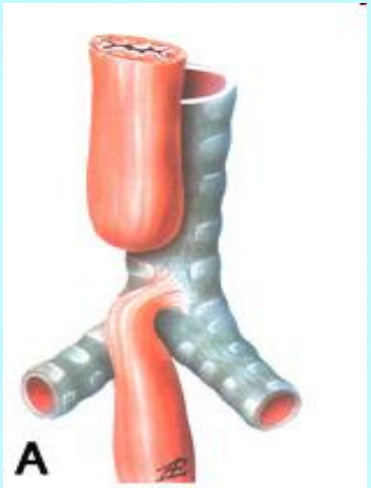
- Omphalocele (umbilical hernia) - abdominal wall defect in the umbilical ring, which yields a hernial sac with intra-abdominal contents covered with amnioperitoneal membrane.



- Gastroschisis - abdominal wall defect in the umbilical region with eventeration of bowel loops, covered with inflammatory exudate.

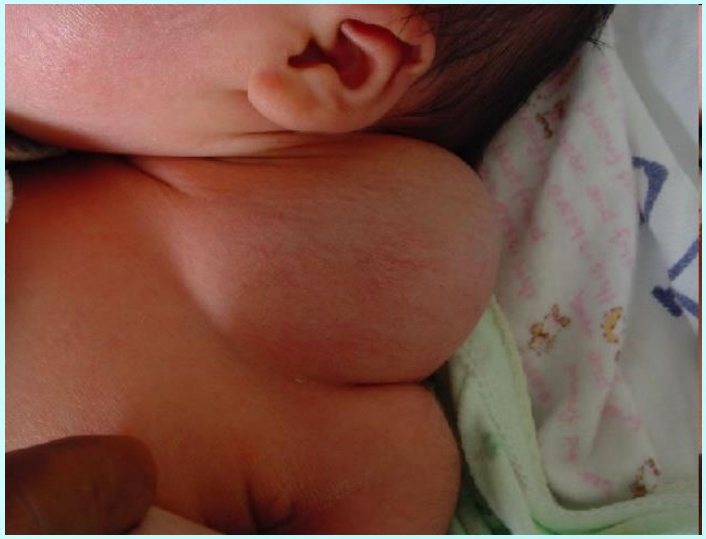


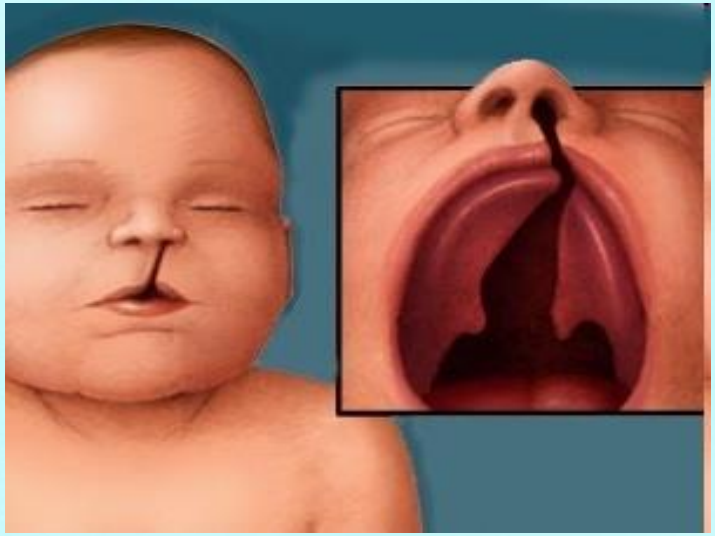
- Atresia of the esophagus (tracheoesophageal fistula with or without), the lack of a segment of the esophagus, which is accompanied by the formation of a fistula between it and the respiratory tract.



Anomalies of structures of face and neck of the fetus

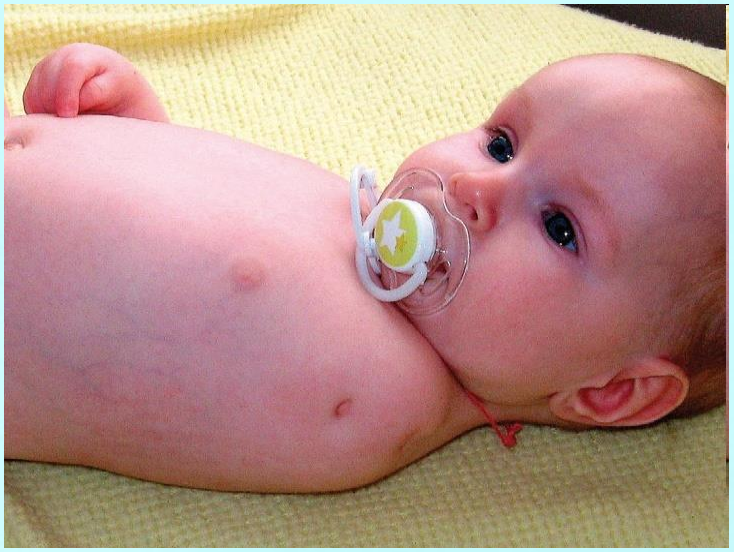
- splitting of the upper lip and palate;
- cystic hygroma (lymphangioma) of the neck.

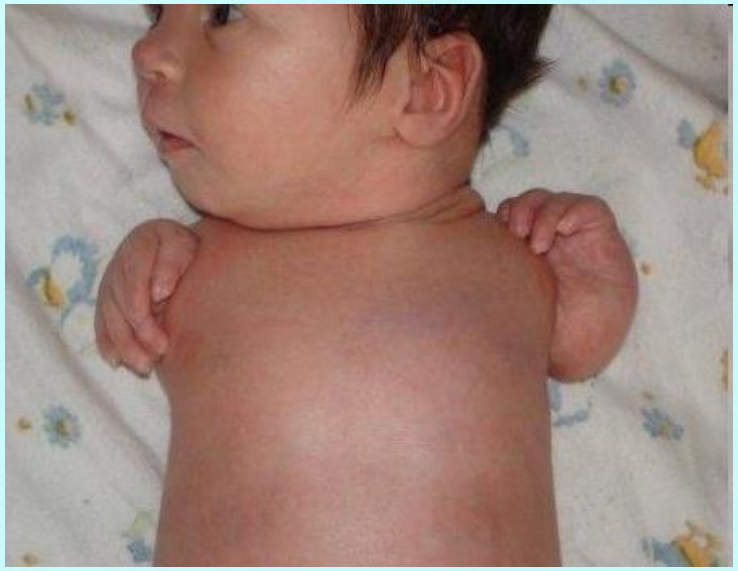




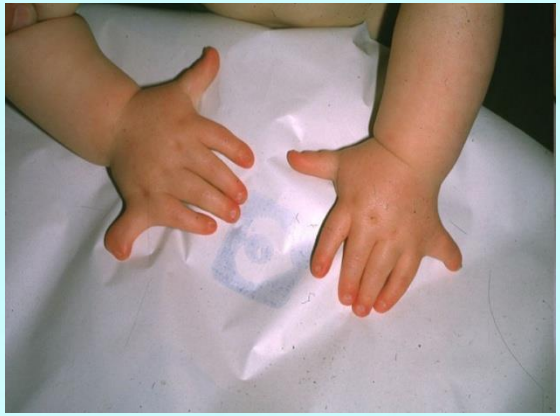
Malformations of the skeletal system

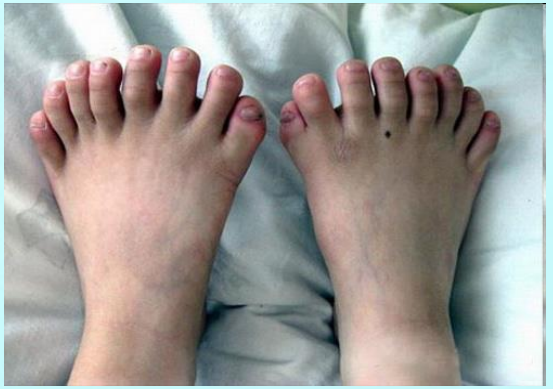
- Amelia (aplasia of the limbs);
- phocomelia (hypoplasia of the proximal extremities, with hands and feets are connected directly to the body);
- aplasia of one of the bones of the lower leg or forearm;

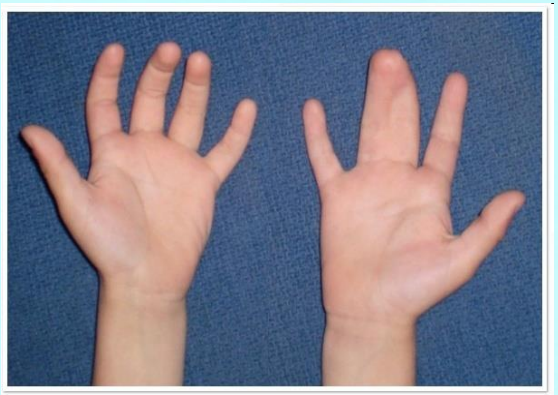




- polydactyly (increasing the number of fingers on the limbs);
- syndactyly (decrease in the number of fingers as a result of fusion of soft tissue or bone tissue adjacent fingers);
- abnormal stop installation;
- osteochondrodysplasias (characterized by abnormal growth and development of cartilage and / or bone).

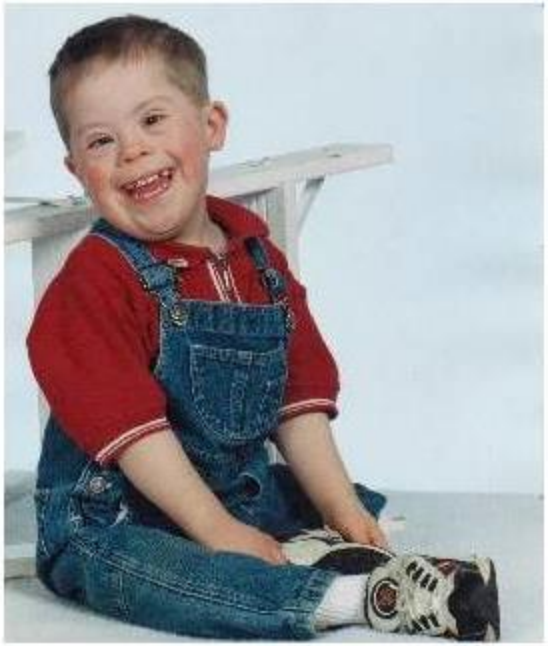




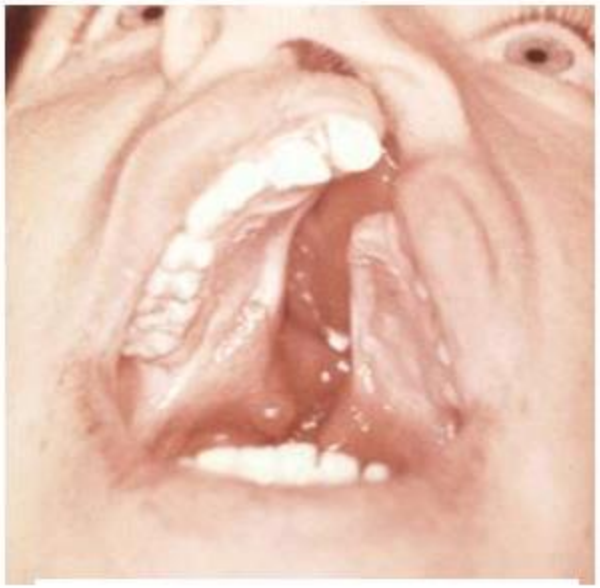


Хромосомные болезни

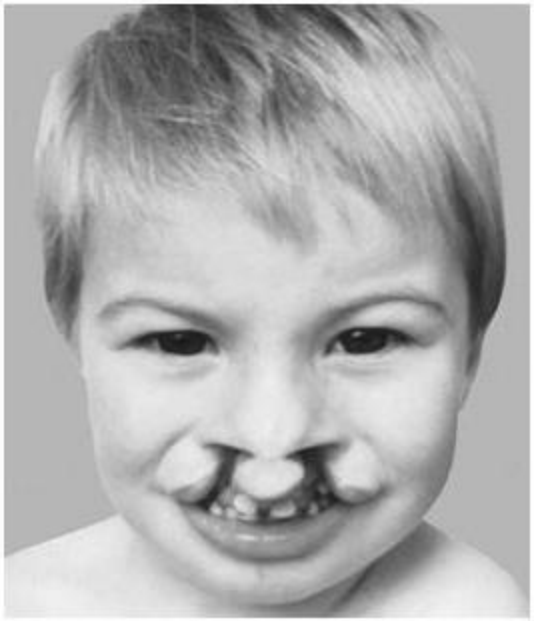
(аномалии аутосом)



Синдром Дауна
(трисомия по 21 паре)



Синдром Патау
(трисомия по 13 паре)



Синдром Эдвардса
(трисомия по 18 паре)

Sex chromosome abnormalities

- Turner Syndrome

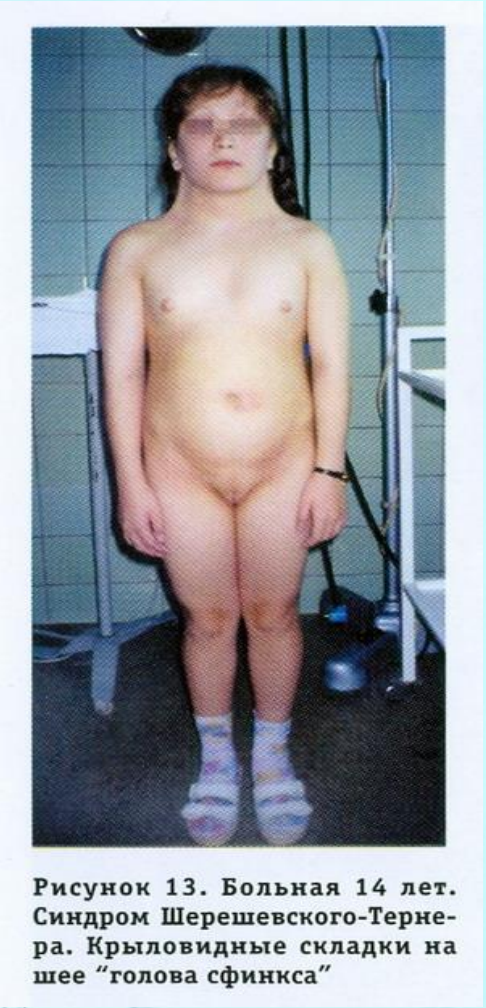


Рисунок 13. Больная 14 лет. Синдром Шерешевского-Тернера. Крыловидные складки на шее “голова сфинкса”

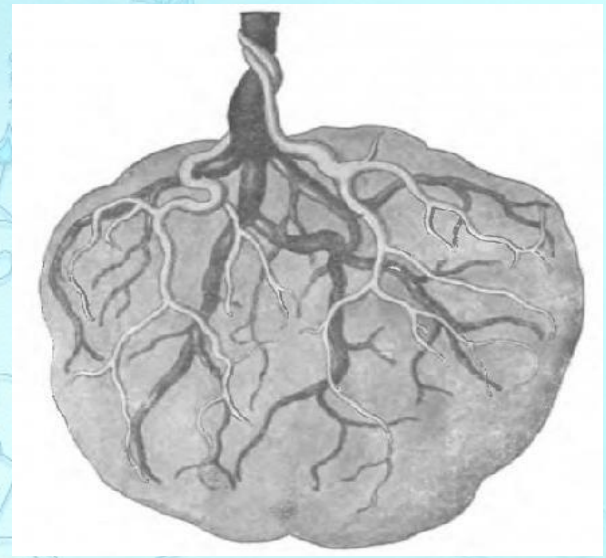
- Klinefelter's syndrome

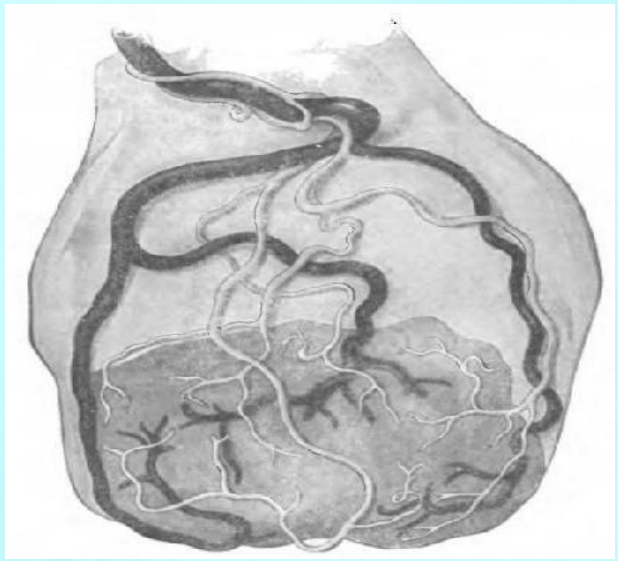
Hereditary diseases

- genetically caused diseases, inherited in an autosomal dominant or autosomal recessive manner, as well as gender-related;
  These include:
  - **Cystic fibrosis** - a disease that is inherited in an autosomal recessive manner; caused by a mutation of a gene located on the long arm of chromosome 7;
  - **Hemoglobinopathies** (sickle cell anemia and thalassemia) - are inherited in an autosomal recessive manner.

Abnormalities of the umbilical cord

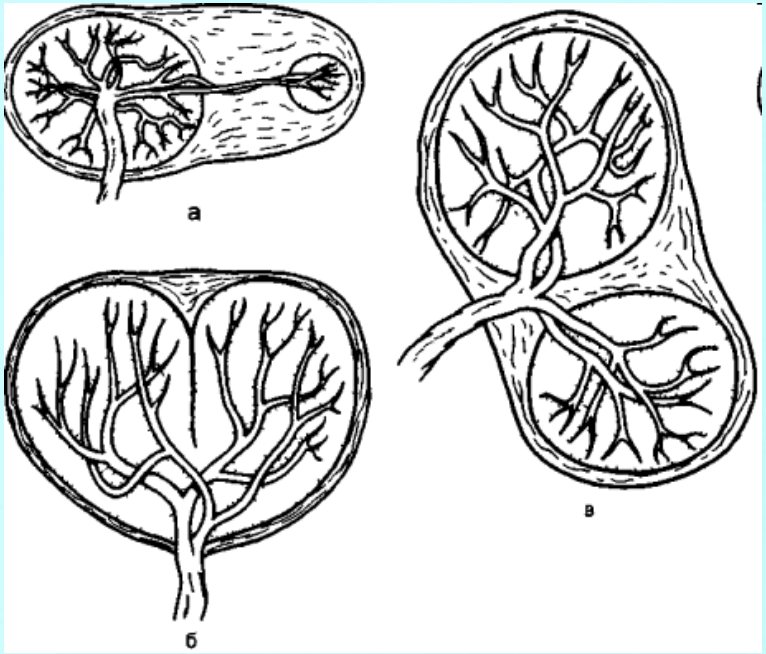
- Improper development of the blood vessels (single umbilical artery, the third umbilical artery, aneurysms, abnormal anastomoses, arterial sites, and others.);
- Changing the length of the cord (excessively long, short);
- The formation of true and false knots of the umbilical cord;
- Abnormal attachment of the umbilical cord (the boundary and shell).





Abnormalities of the placenta

- The increase in weight of the placenta (in syphilis, immunological conflict and others.);
- Violations of the form (as a result of degenerative changes in the endometrium);
- Additional lobes of the placenta;
- Placenta of two parts (placenta bipartiata);
- Graduate from the placenta (placenta fenestrata);
- Bean-shaped, horseshoe-shaped, belt-like placenta.



- a- the placenta with extra lobe;
  b - the two parts of the placenta;
  in - doubling placenta..

Oligogydtamnios

- condition in which the amount of amniotic fluid is less than 0.5 liters;
- caused by the reduction of the secretory function of the amniotic epithelium, fetal renal agenesis, polycystic kidney disease, fetal growth retardation;
- when oligohydramnios is frequently observed miscarriage, pain during fetal movements, prolonged labor, the slow opening of the cervix, sometimes - premature detachment of the placenta;
- from the fetus may limit its mobility, developmental delay, curvature of the spine, the seam between the skin of the fetus and the amnion.

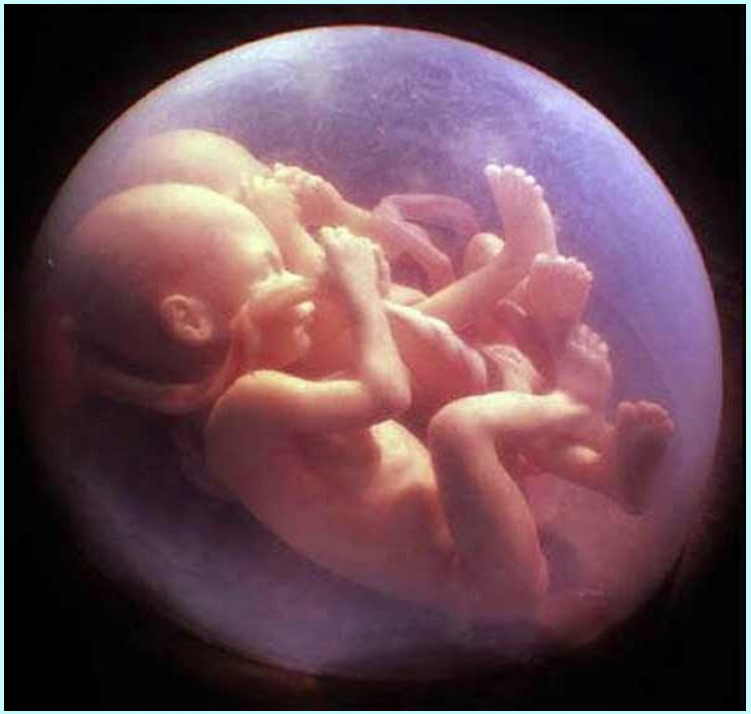
Polyhydramnios

- a condition characterized by excessive accumulation of amniotic fluid - more than 1.5 liters;
  etiological factors are:
- from the mother's side: viral infections, diabetes mellitus;
- from the placenta and amnion: an excessive production or slow absorption of amniotic fluid amniotic epithelium horionangioma, arteriovenous fistula;
- from the fetus: multiple pregnancy, fetal malformations.

- **complications of pregnancy** in polyhydramnios are:
- malposition;
- shortness of breath of the pregnant woman due to the high standing of the diaphragm;
- premature birth.
- **complications in childbirth:**
- uterine inertia due to distension of the uterus;
- premature rupture of the sac, which may be accompanied by dropping out of the umbilical cord loops and small parts of the fetus;
- premature detachment of the placenta;
- hypotonic bleeding in the early postpartum period.

Multiple pregnancy

- pregnancy which develops in two or more fetus.

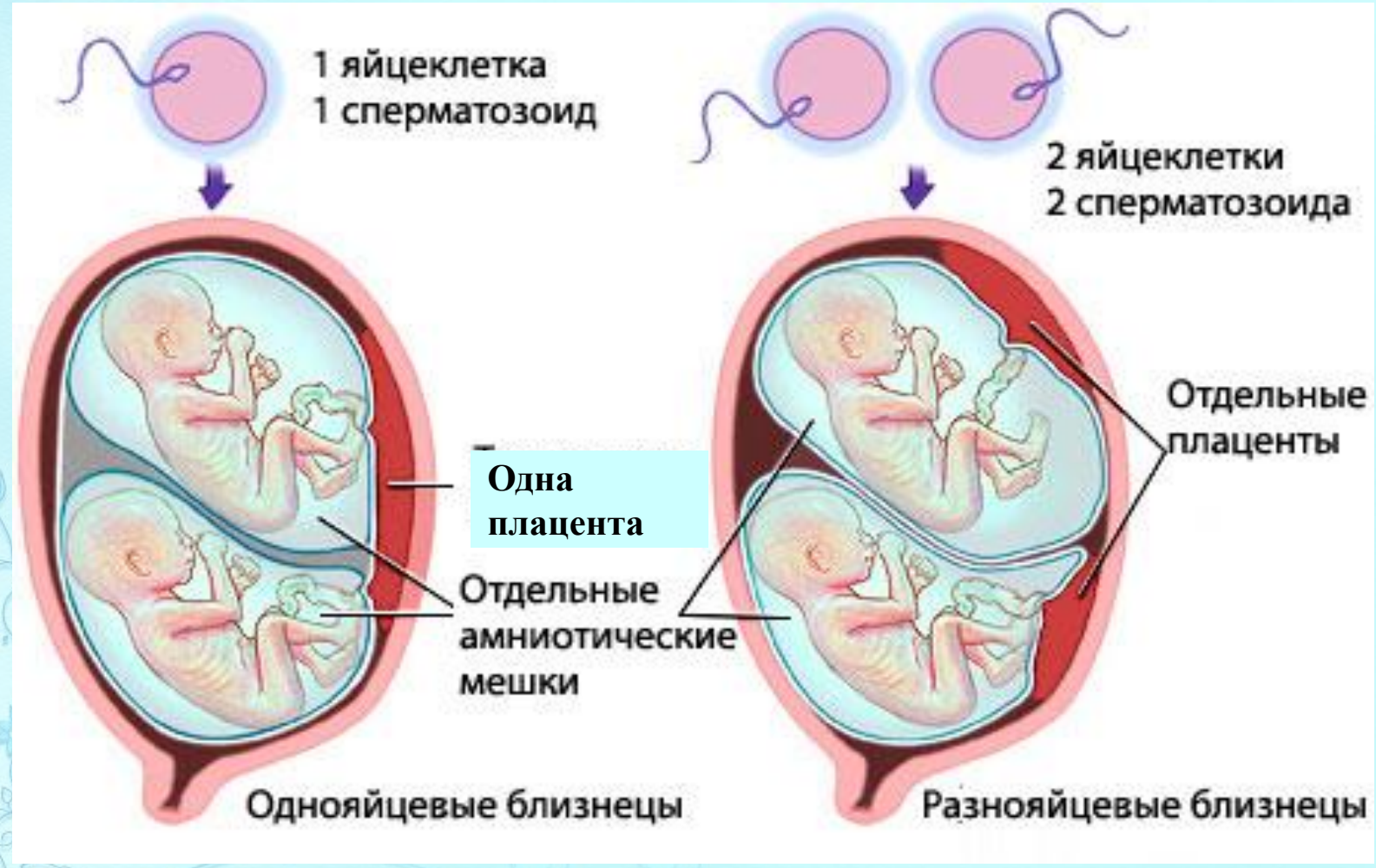


Factors that contribute to multiple pregnancy:

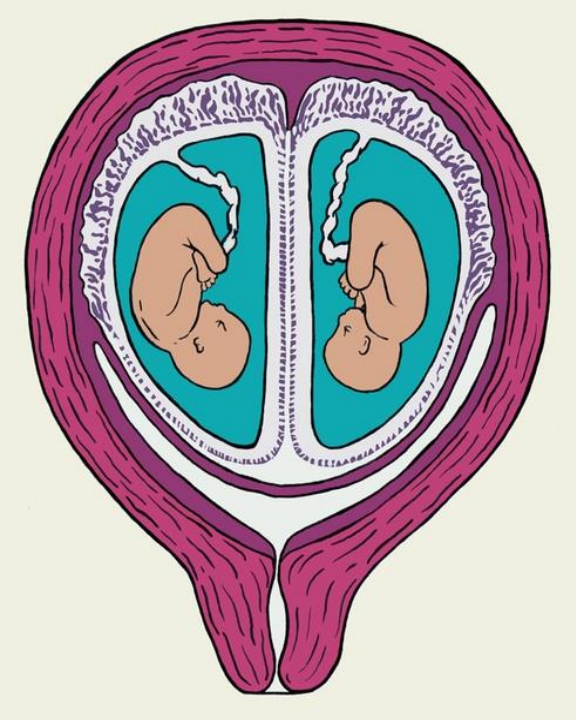
- maternal age older than 30-35 years;
- hereditary factor (maternal);
- malformations of the uterus;
- pregnancy immediately after discontinuation of oral contraceptives;
- the use of assisted reproductive technologies (IVF).

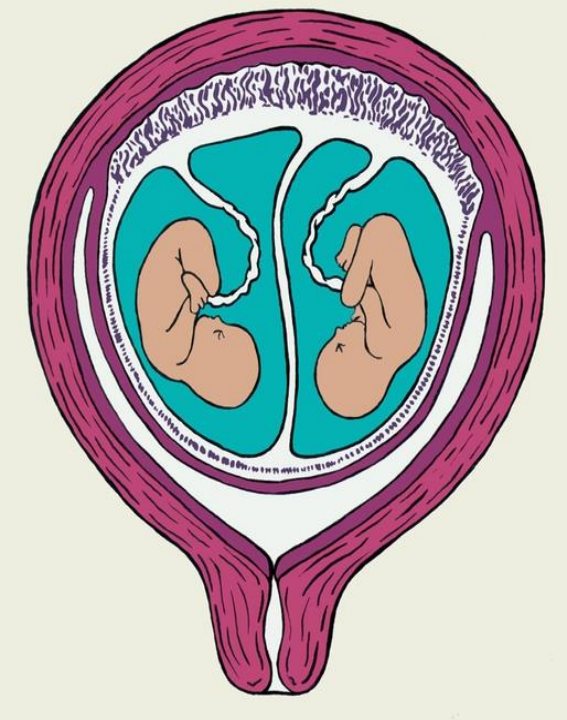
Classification

- monozygotic (identical) twins;
- bizigotic (fraternal) twins.



Placentation types in multiple pregnancies

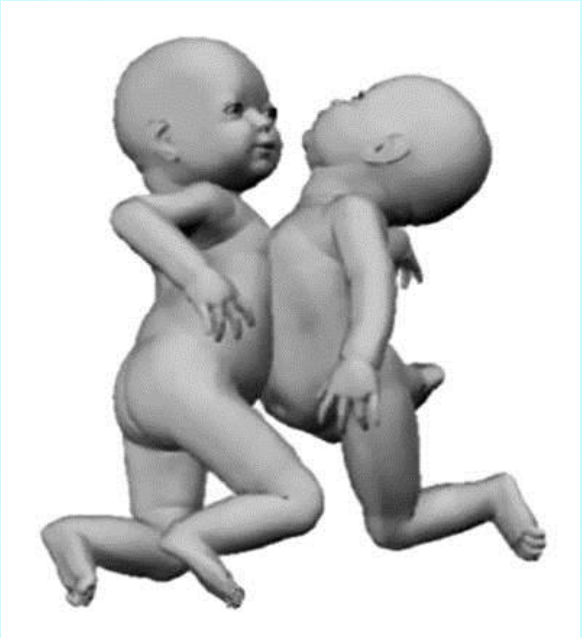




- bihorionic, biamniotic;
- monochorionic, biamniotic;
  monochorionic, monoamniotic.

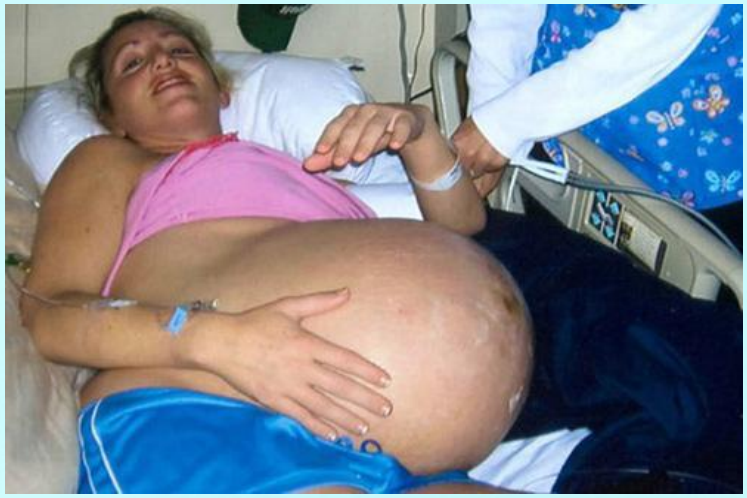
- monozygotic twins - have the same sex, same blood group, the same color of eyes, hair, skin pattern fingertips, the same disease at the same time.

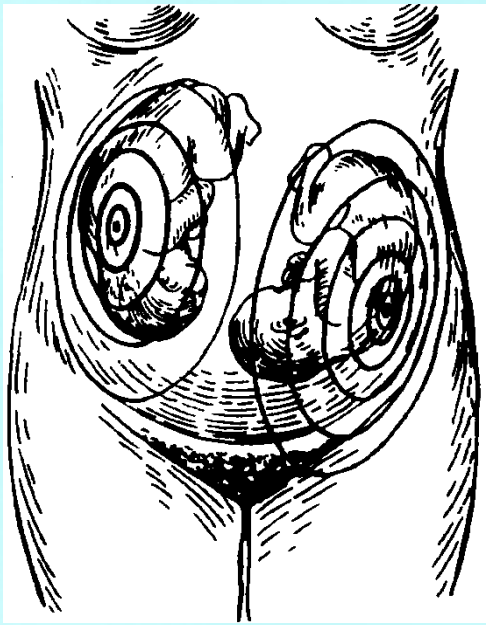
- When **monoamniotic monochorionic** twins should be aware of the possibility of the twin seam. The prognosis depends on the location and area of the seam (janiceps, toragopagi, iskhiopagi et al.)



Diagnosis of multiple pregnancy

- medical history (hormonal contraception, IVF);
- uterine gestational size exceeds the norm;
- external obstetric examination (palpable more than two major parts of the fetus and a lot of small);
- auscultation of fetal heart tones in two places at the same time a silent area between the points of listening;
- US.



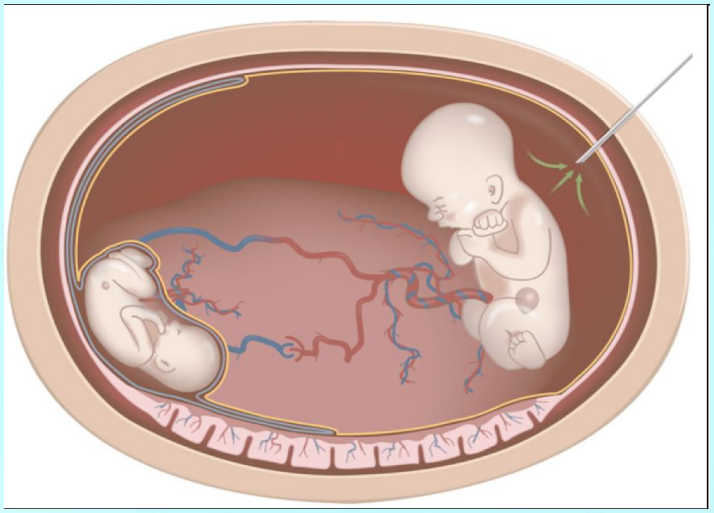


Peculiarities of multiple pregnancy:

- miscarriage (spontaneous abortion and premature birth); anemia;
- gestosis (increased blood pressure, edema, proteinuria associated with pregnancy);
- Placenta praevia and premature detachment of the placenta);
- placental insufficiency;
- intrauterine growth retardation;
- syndrome feto-fetal transfusion;
- fetal abnormalities.

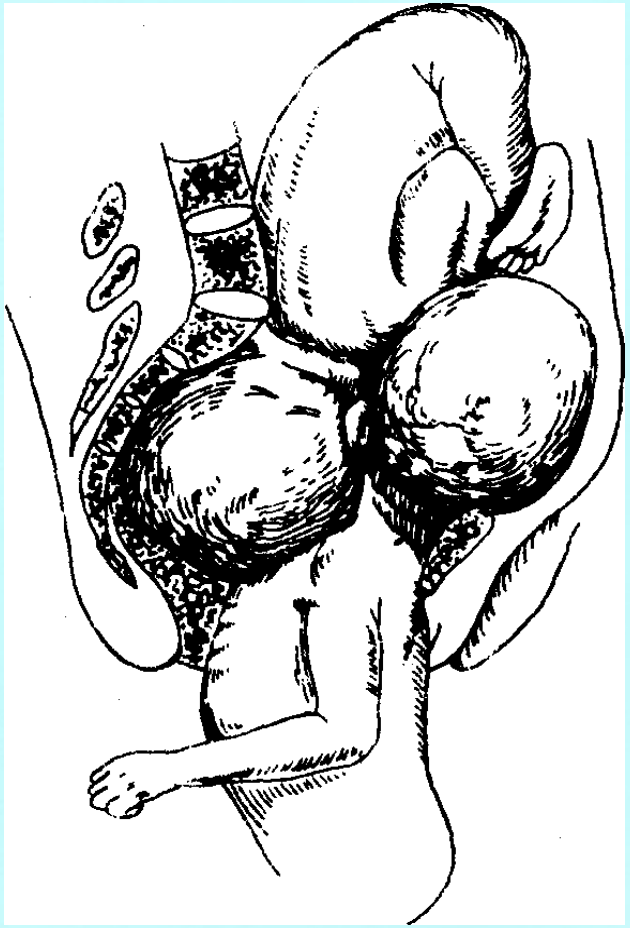
Syndrome of feto-fetal transfusion

- common in monochorionic twins;
- characterized by the formation of anastomoses in the placenta, through which the blood is able to flow from one fetus to another, causing the imbalance in its volume;depending on the direction of blood flow one of the fetus becomes a "donor", the second - "recipient";
- the outflow of blood from the "donor" reduces its overall volume of circulating, leading to tissue hypoxia, intrauterine growth retardation, decreased urine production, due to renal disease and as a consequence - water shortages impede the normal maturation of the lung tissue. The volume of blood "recipient" sharply increases, which increases the burden on his heart and kidneys, resulting in heart failure and polyhydramnios.



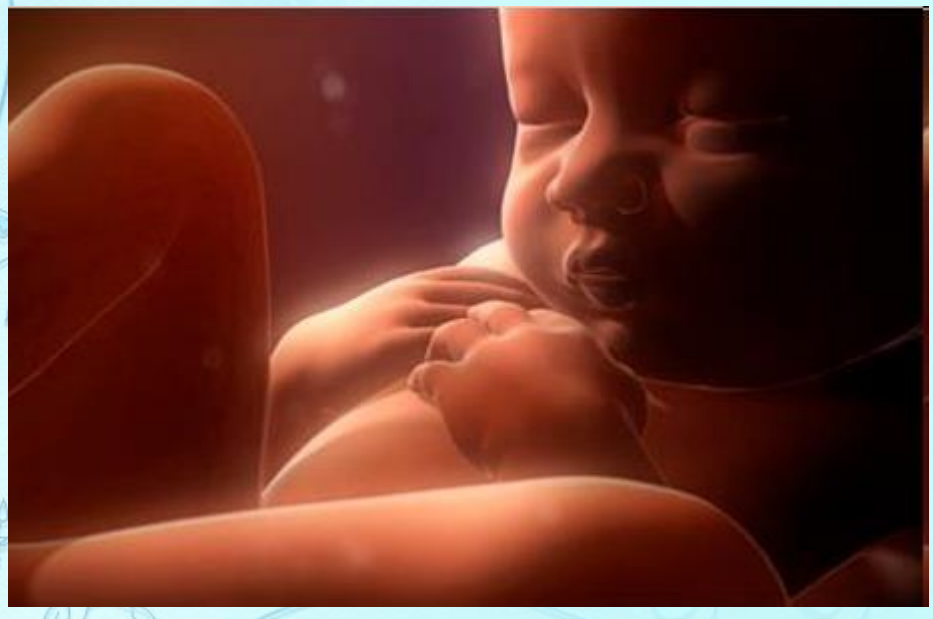
Complications of labor in multiple pregnancies

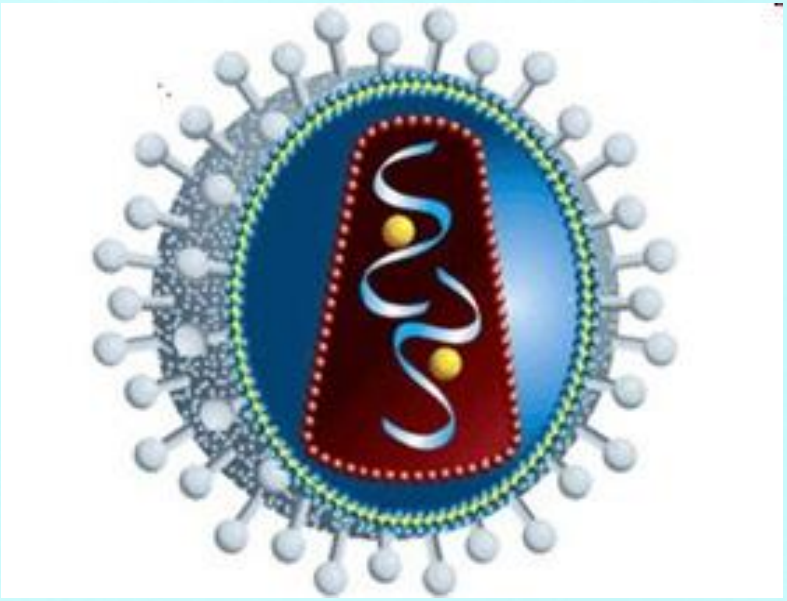
- primary and secondary uterine inertia;
- malposition;
- premature rupture of membranes;
- prolapse of the umbilical cord loops and small parts of the fetus;
- premature detachment of the placenta;
- fetal collision.



Perinatal infection

- This disease of the newborn or fetus as a result of hematogenous (transplacental) amnial, ascending or descending infections in the late fetal period (after 22 weeks of gestation) and clinically manifested during the early neonatal period.

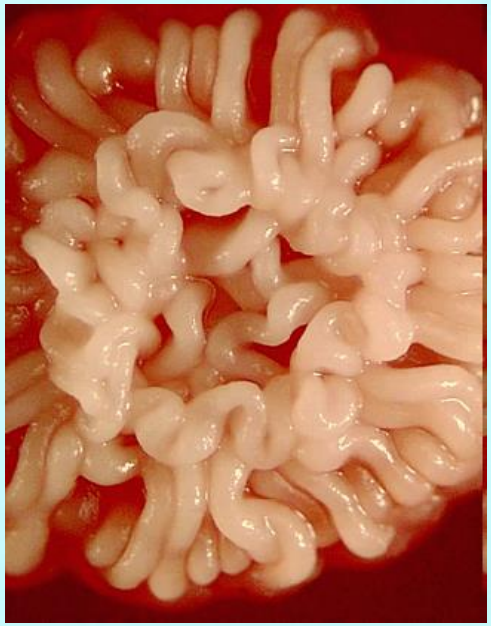


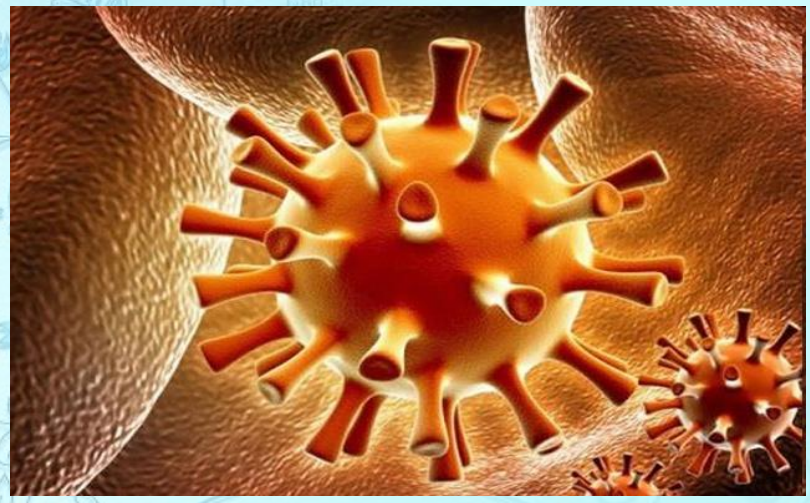


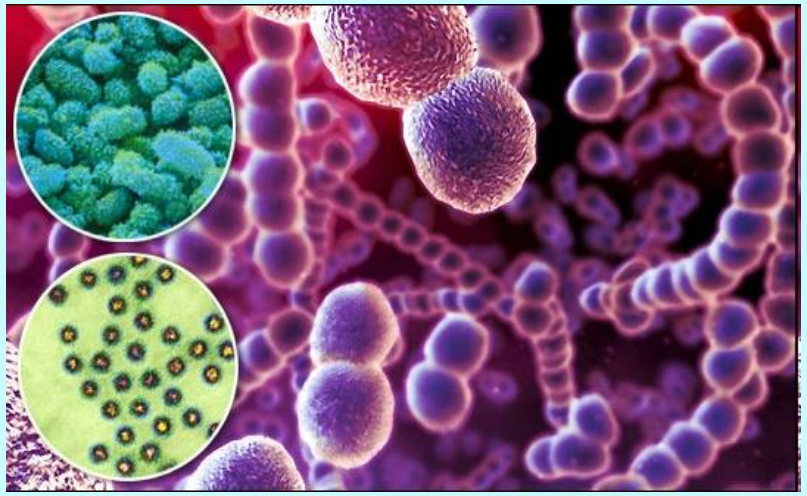
- distinguish between:
  intrauterine infectionating - this pathogen invasion of the fetus does not always lead to the development of pathological changes;
  intrauterine infection - a disease of the fetus, which arose pathogen infestation or infection of the newborn. accompanied by the formation of fetal congenital malformations or specific symptom (IUGR, hydrocephalus, cerebral calcification, hepatosplenomegaly, severe jaundice.

Etiology

- List of pathogens is quite large and includes dozens of all species of organism - from viruses to fungi and protozoa;
  in the structure of deaths due to antenatal intrauterine infection of 27.2% of cases occur in viral infection, 26.3 - a mixed and 17.5% - bacterial.







- in 1971, it has been allocated a group of infections that, despite the marked differences in the structure and biological properties of pathogens with similar clinical symptoms and cause persistent fetal structural defects of various organs and systems, the most serious of which are CNS. To indicate the group was offered the abbreviation TORCH.
  T - toxoplasmosis;
  O (others) - other infections (hepatitis B and C, syphilis, chlamydia, mycoplasmosis, gonococcal infection, listeriosis, recently in the list including HIV infection, varicella, enterovirus infection);
  R - measles (rubeola);
  C - cytomegalovirus;
  H - the herpes virus.

Despite a wide range of microorganisms, all fetal infectious processes have common characteristics:

- latent or erased course for that much difficult to diagnose, especially in the intracellular localization of the pathogen (chlamydia, mycoplasma, viruses, etc.) and it does not allow a timely start causal treatment;
- activation of latent persistent infection is possible for any violation of homeostasis in pregnancy (anemia, vitamin deficiencies, physical or emotional load, stress, decompensation extragenital diseases of non-infectious origin.

Common are adverse effects of the perinatal infections during pregnancy:

- intrauterine growth retardation;
  premature birth;
- congenital malformations;
- perinatal loss;
- acute and persistent infection in newborns;
- asymptomatic infection with late clinical manifestations;
- disabled since childhood.

Placental insufficiency

- a complex of disorders of the placenta (transport,nutrition, the endocrine, metabolic), due to morphological and functional changes in it and impaired uteroplacental circulation.

Risk factors for PI

- younger than 17 and older than 35 years;
- adverse social conditions (lack of food);
- toxic and radiological effects of the environment;
- bad habits (smoking, alcoholism, drug addiction);
- infections (TORCH-infection);
- extragenital diseases (neuroendocrine disorders, hypertension, kidney disease, and others.);
- gynecological diseases (tumors of the uterus, chronic inflammation of the endometrium);
- poor obstetric history;
- complications of pregnancy (early gestosis, the threat of termination of pregnancy, multiple pregnancy, pre-eclampsia, anemia, immunological conflict, etc.

Classification of placental insufficiency

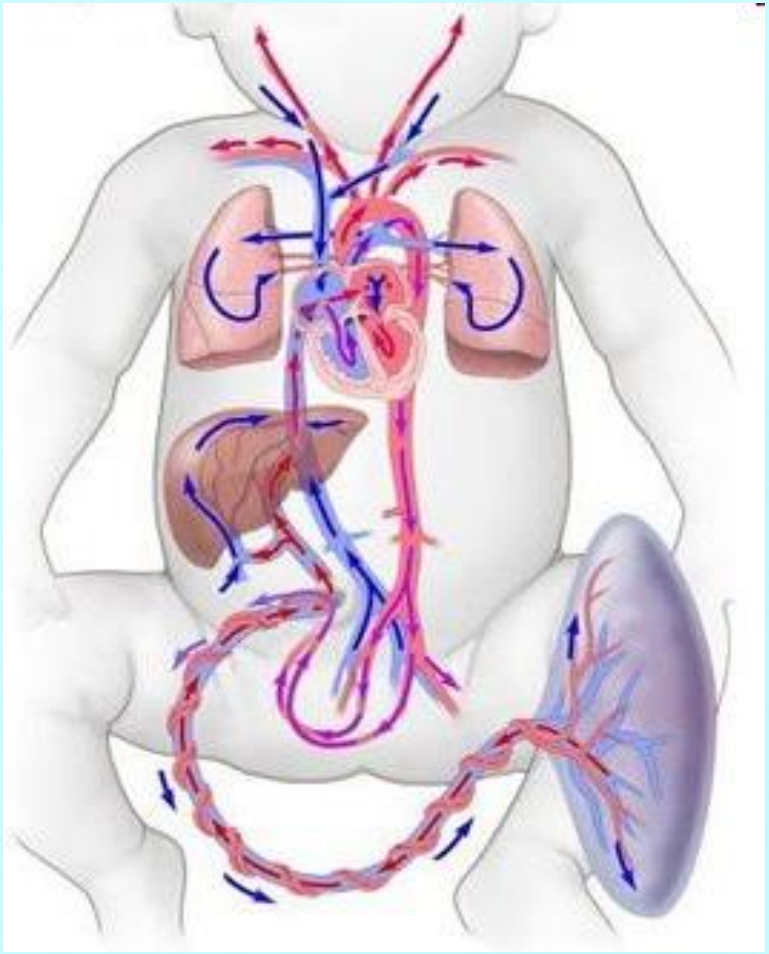
- 1. **Forms:**
  placental- membrane;
  parenchymal- cell;
  hemodynamic.
  2**. Depending on the time of occurrence**:
  primary;
  secondary.
  3. **The clinical course**:
  acute;
  chronic.
  4**. Stages of microhemocirculatory violations in the placenta**:
  compensated;
  subcompensated;
  decompensated.

The development of placental insufficiency leads to:

- fetal distress;
- intrauterine growth retardation;
- pathologic conditions and diseases of the newborn.

Fetal distress

- **This insufficient supply of oxygen to the tissues and organs of the fetus, or inadequate utilization of oxygen, leading to growth retardation, the defeat of his central nervous system, cardiac disorders until intrauterine death.**



Classification

- 1. **Depending on the prolongation**:
  sharp;
  chronic.
  2. **Depending on the intensity** of:
  functional;
  metabolic;
  destructive.
  3. **According to the mechanism of development**:
  hypoxic;
  circulatory;
  hematic;
  tissue.

Diagnostic

- in the initial stages pregnant marks the acceleration and intensification of fetal movement. With progressive long process the fetal movement weakened until their termination. Reducing the number of fetal movements to 3 or less for 1 in a hour indicates the intrauterine fetal distress and an indication for urgent further examination.
- Diagnosis distress based on the assessment of the functional state of the fetus using other methods (cardiotocography, ultrasound, Doppler blood flow in the mother-placenta-fetus, the definition of fetal biophysical profile, acid-base status of fetal cord blood obtained by cordocentesis).

The main areas of treatment of placental insufficiency and fetal distress are:

- antispasmodics and antiplatelet appointment;
- treatment of opportunistic diseases pregnant;
- phased dynamic monitoring of the fetus.

Indications for emergency cesarean delivery:

- critical changes in blood flow in the umbilical artery (zero, reversible);
- acute fetal distress (bradycardia and heart rate decelerations according to CTG) regardless of the type of blood flow in the arteries of the umbilical cord;
- abnormal BPP (4 points or less) in the absence of biological maturity of the cervix;
- presence of thick meconium into the amniotic fluid in conjunction with abnormal fetal heart rate.

The syndrome of intrauterine growth retardation

- This is slowing of growth and development of the fetus, which is manifested at fetus birth with low birth weight and morphological indicators of maturity relatively to gestational age.

Risk factors for IUGR:

- **medical**:
  chronic hypertension;
- diabetes;
- systemic connective tissue diseases;
- thrombophilia;
- kidney disease;
- preeclampsia;
- multiple pregnancy;
- blood loss during pregnancy;
- abnormalities of the umbilical cord and placenta location;

- ✓ perinatal infections;
- ✓ IUGR in history;
- ✓ chromosomal and genetic disorders;
- ✓ administration of drugs;

Socio-economic:

- ✓ malnutrition;
- ✓ smoking, alcohol, drugs;
- ✓ environmental pollution;
- ✓ occupational hazard.

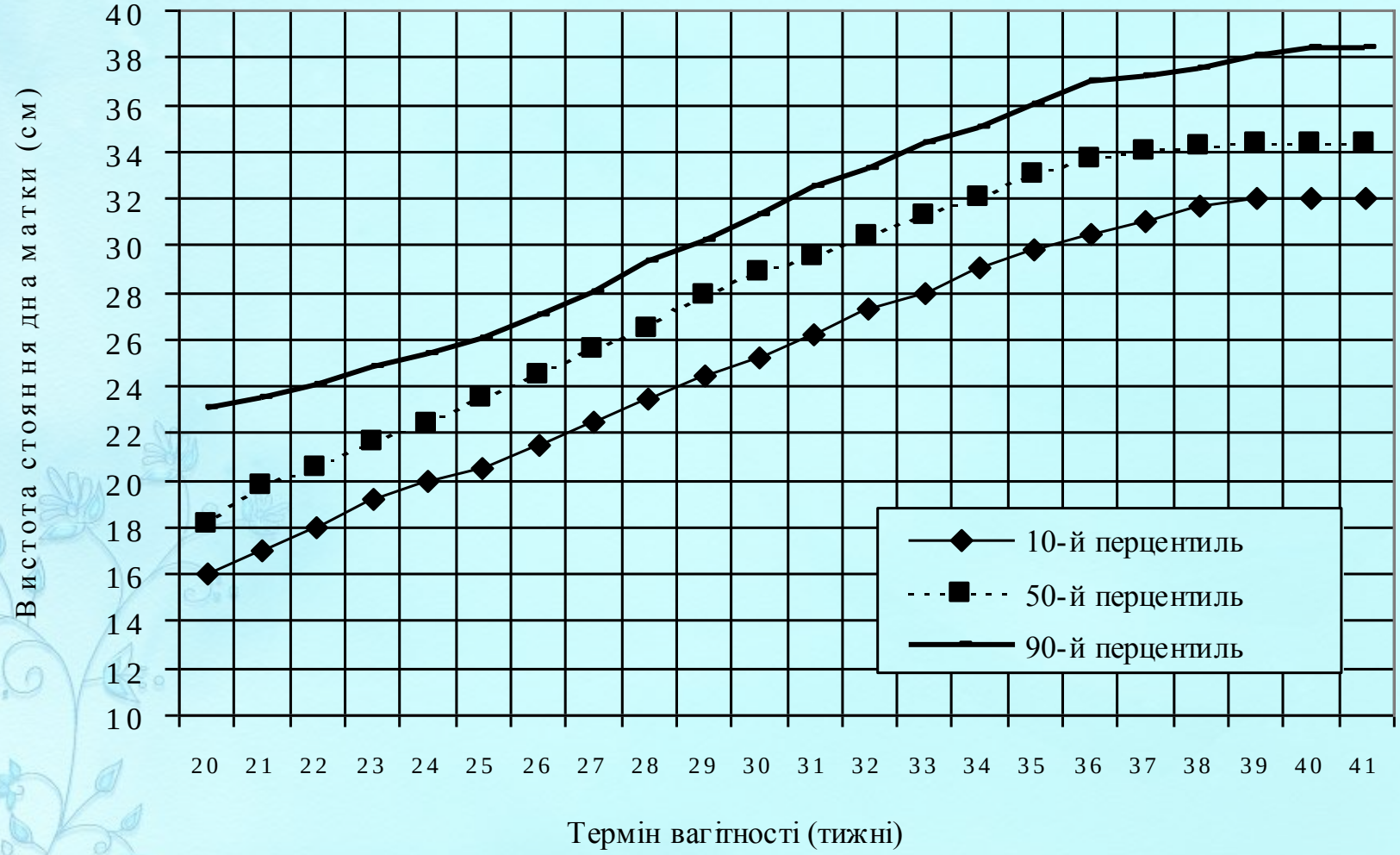
Classification of IUGR

- **symmetrical**- weight and length of the fetus reduced in proportion;
- **asymmetrical** - a reduction of fetal weight with normal index of the length the body.

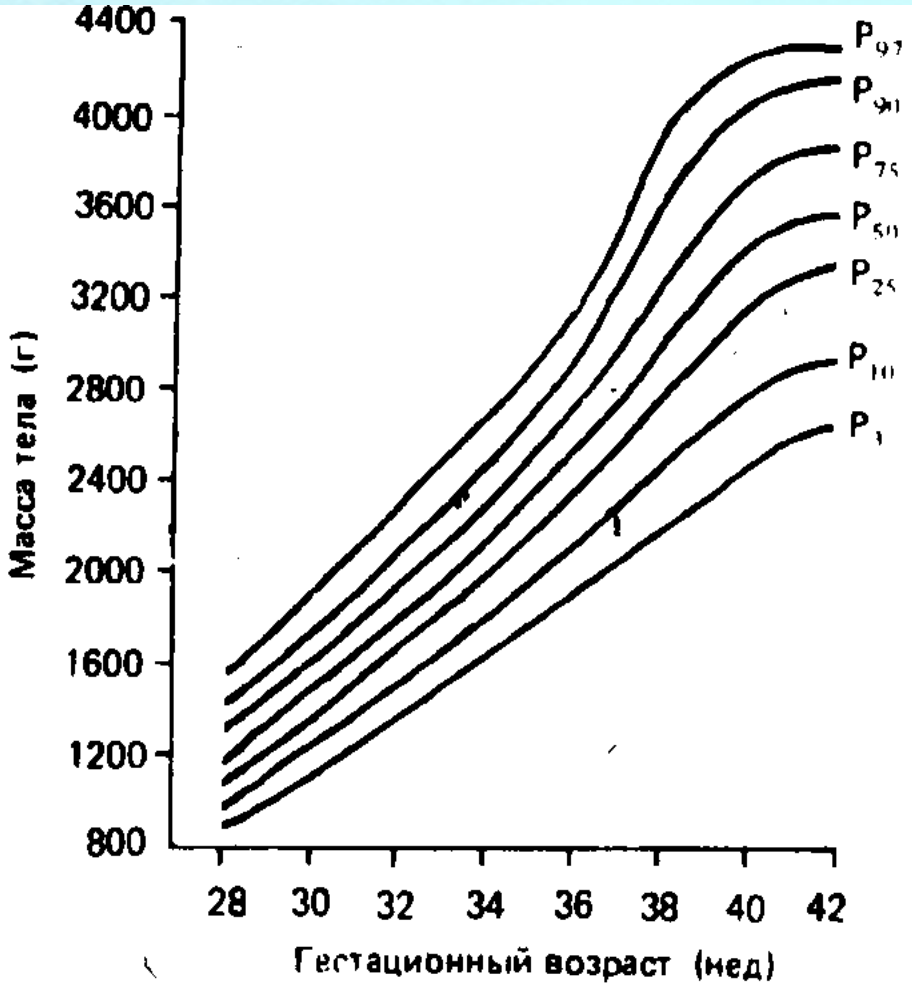
According to the US there are three degrees of severity of IUGR:

- **I degree** – the lag of the parameters of fetometry to 2 weeks of gestational age;
- **II degree** - lag of 3-4 weeks of gestational age;
- **III degree** – the lag of more than 4 weeks.

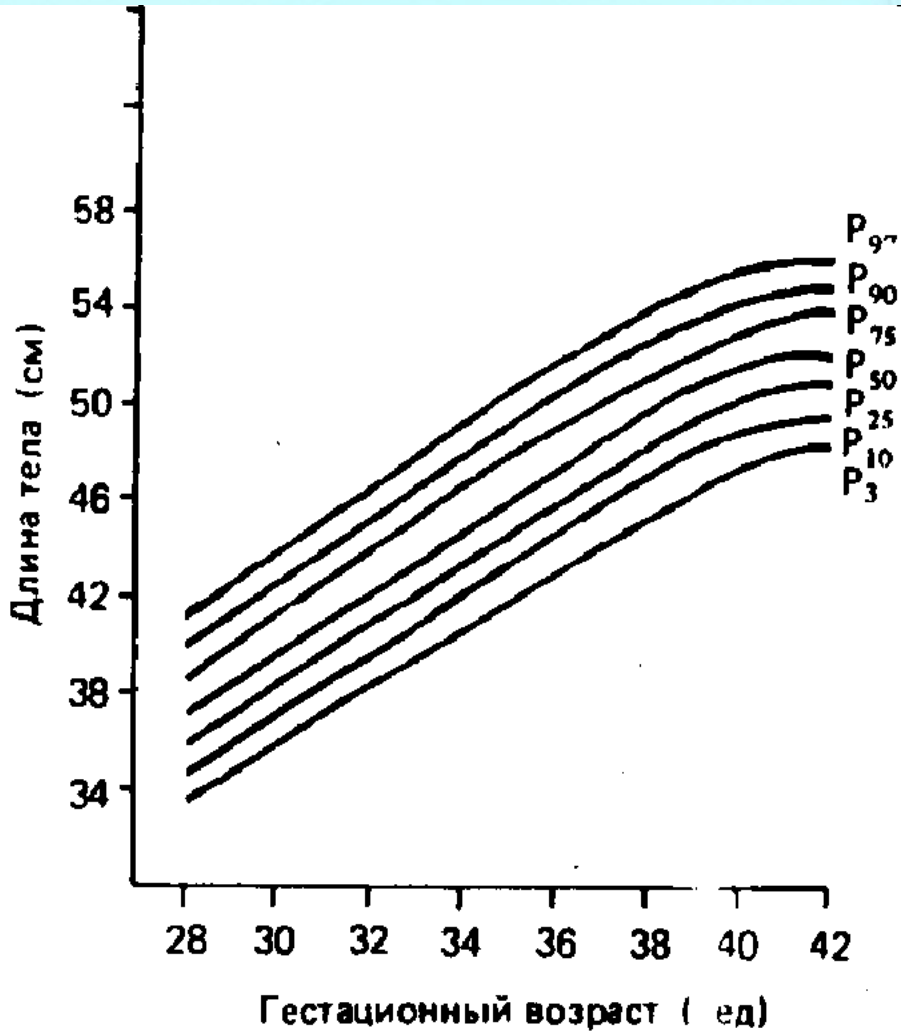
Gravidogramma



Percentiles of body length and weight of the fetus according to the gestational age



б) – длина тела;



а) – масса тела;

Transient state of the newborn

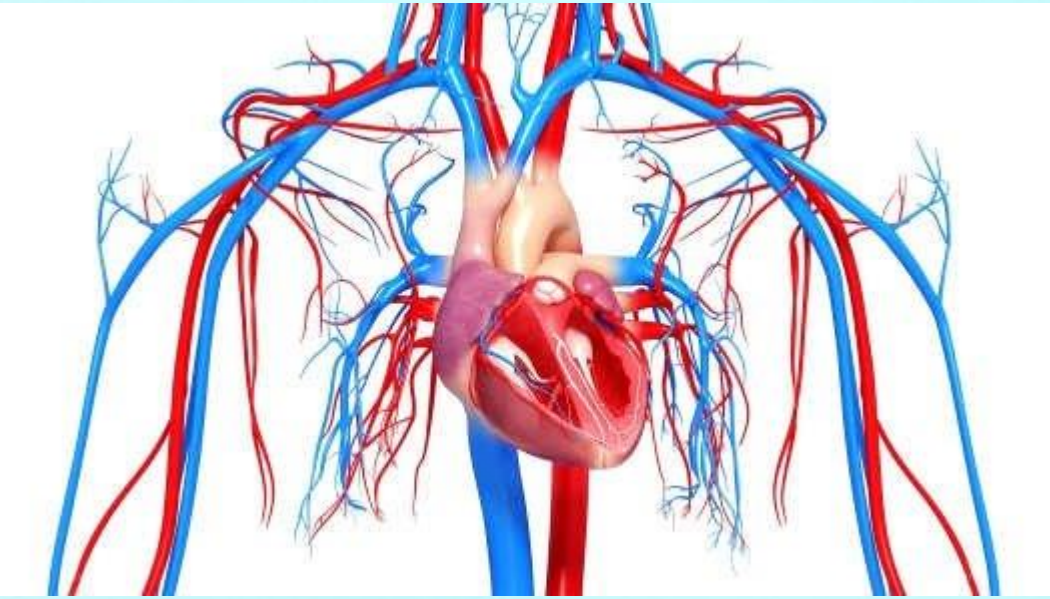
- transient hyperventilation;
- border states of the circulatory system (cessation of fetal functioning communications);
- Simple and toxic erythema;
- physiological skin peeling;
- generic tumor;
- physiological jaundice;
- Initial weight loss;
- hypo- and hyperthermia;
- genital crisis of newborn.

Pregnancy and delivery with extragenital diseases

- Modern research the health of pregnant women suggests that pathological pregnancy in 60-70% of cases is caused by the latent or chronic extragenital pathology.
- Extragenital and related gynecological diseases can affect the pregnancy, birth and perinatal morbidity.
- In turn, pregnancy and childbirth often exacerbate the course of the underlying disease, therefore medical supervision for pregnant with a particular disease should be carried out carefully.

Diseases of the cardiovascular system

- Occupy the1st place in the structure of extragenital pathology.



Most often in pregnant women note the following diseases of the cardiovascular system:

- rheumatic fever and rheumatic acquired heart disease;
- congenital heart disease;
- the operated heart;
- arterial hypertension;
- hypotension;
- diseases of veins with thrombotic complications.

Rheumatism

- a systemic disease of the connective tissue with the defeat of the cardiovascular system caused by beta-hemolytic streptococcus c. A;
- It occurs predominantly in young women;
- distinguish between an inactive phase, active and 3 degrees of activity of the process (I - low, II - average, III – high.

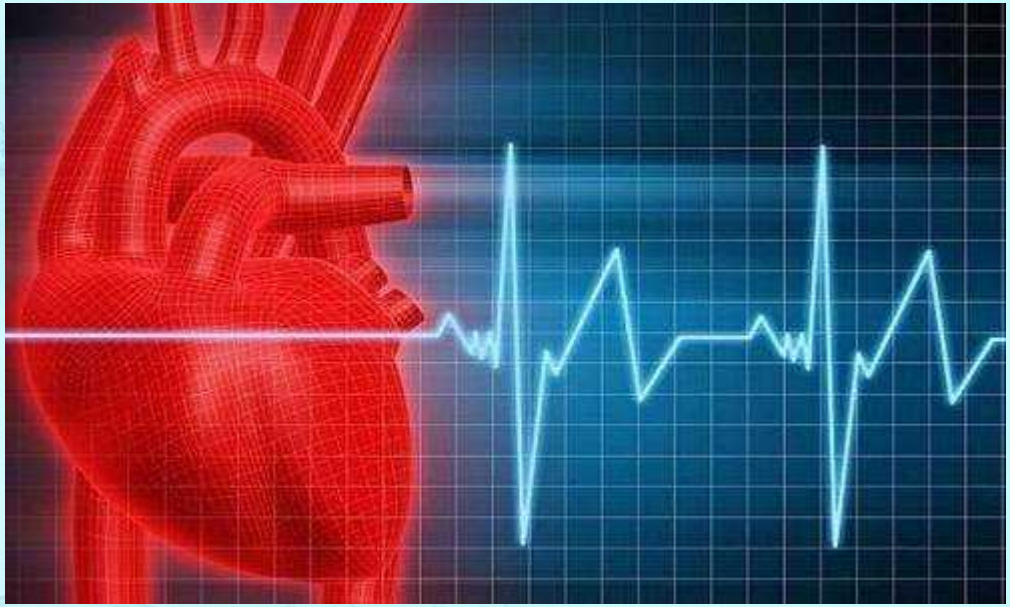
- during pregnancy rheumatism diagnosis is difficult, as typical clinical signs and laboratory data - low-grade fever, shortness of breath, fatigue, tachycardia, leukocytosis and increased of ESR may be accompanied by physiological during pregnancy;

- in the diagnosis of relevant data history (a history of rheumatic fever), the factors contributing to relapse (supercooling, upper respiratory tract infection, etc.), ECG signs (sinus tachy or bradycardia, AV block, atrial fibrillation, coronary flow disturbances).

- **critical periods of exacerbation: 1-4 week of pregnancy, the period between the 20 th and 32 nd week and the postpartum period;**
- **obstetrical tactic: continuously recurrent and subacute rheumatism II-III degree of activity at any stage of pregnancy, an active process in the I trimester of pregnancy, the period after the activation of rheumatism to 1 year are indications for termination of pregnancy;**
- **rheumatism of the I degree at the insistence of pregnant women can be maintained;**
- **in critical exacerbation during pregnancy should be hospitalization for appropriate treatment;**
- **delivery is early, followed the course of preventive treatment.**

Acquired heart valvular disease

- in predicting the outcome of pregnancy and childbirth are important activity of rheumatic process, form and stage of development of defect, compensation or decompensation of blood circulation, the degree of pulmonary hypertension, cardiac arrhythmias, joining obstetric pathology.



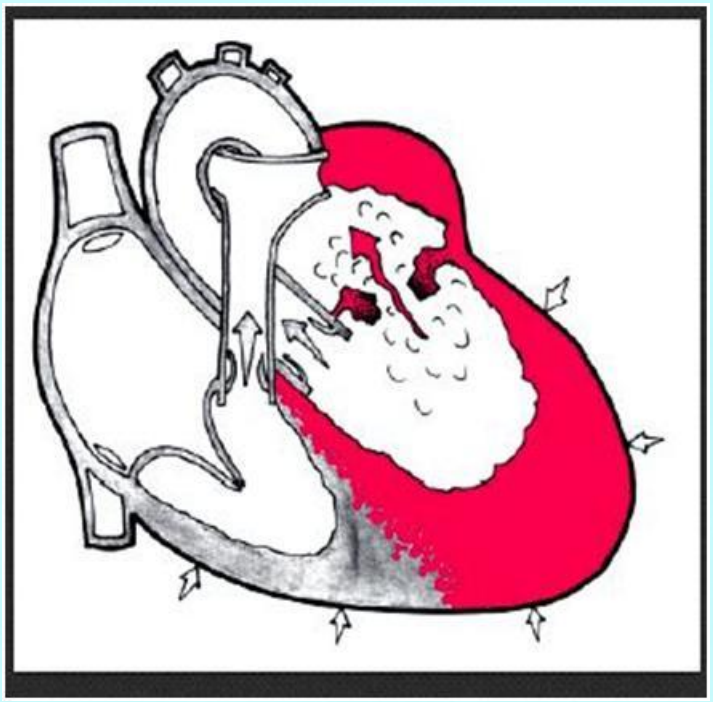
Mitral stenosis

- **clinical manifestations: heart failure, tachycardia, tachypnea, wheezing congestion in the lungs, liver enlargement, the risk of pulmonary edema;**
- **tactics of pregnancy depends on the degree of narrowing of the atrioventricular orifice.**

- mitral stenosis of the I degree -pregnancy can be saved if there are no signs of acute rheumatic process, heart failure and arrhythmias;
- in patients with mitral stenosis of the II-III degree - pregnancy should be interrupted in early pregnancy, and to recommend further mitral commissurotomy.

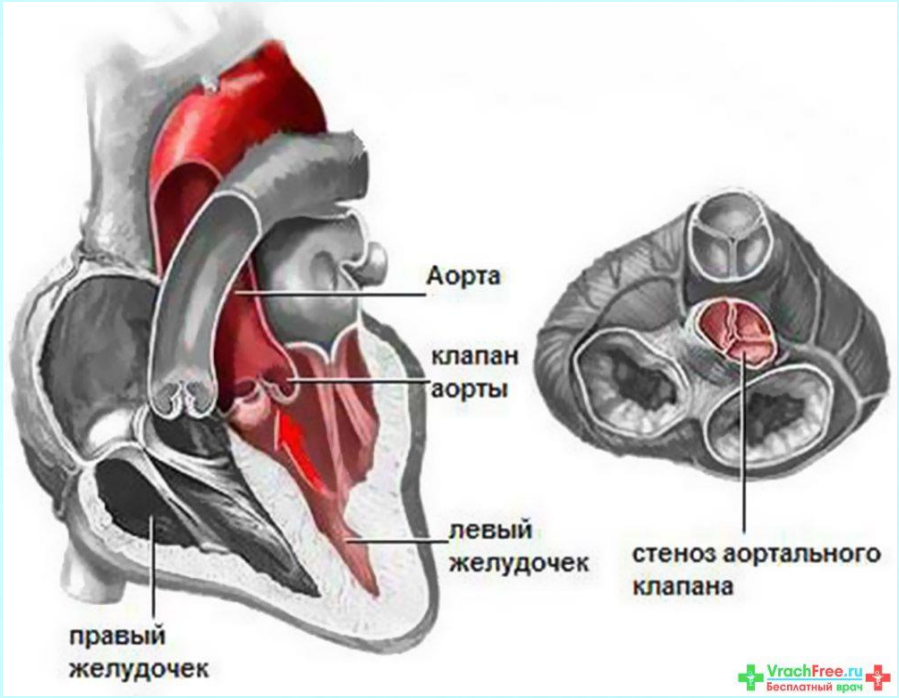
Insufficiency of the mitral valve

- pregnancy and childbirth occur without any complications;
- at excessively severe of mitral insufficiency with significant regurgitation of blood and a sharp increase of the left ventricle during pregnancy can be severe complicated; these patients in the early stages have increasing signs of left ventricular failure, which often joins preeclampsia. Keeping pregnancy in these conditions impractical.



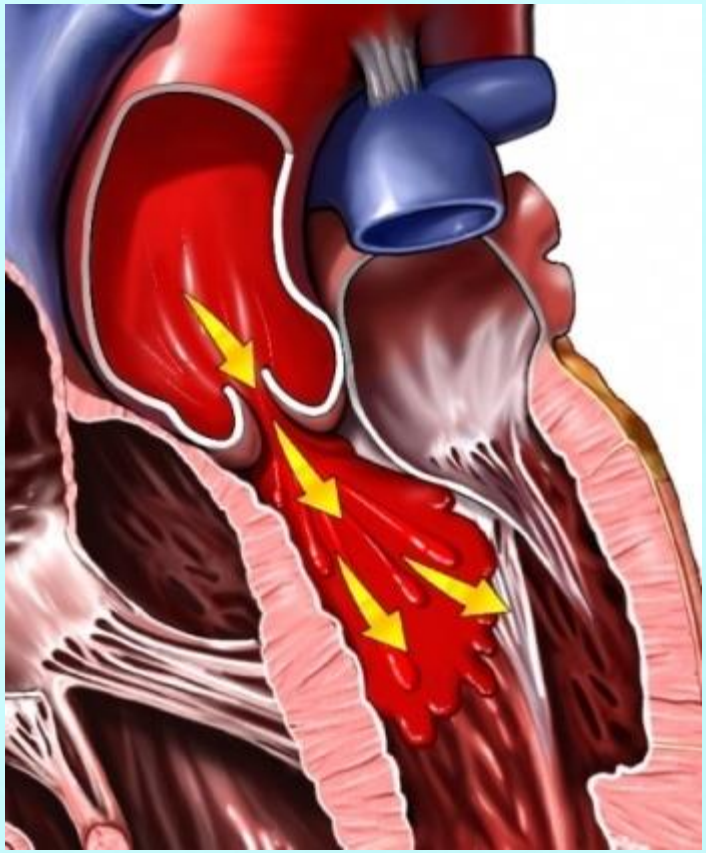
Aortic stenosis

- Pregnancy and childbirth are possible only in the absence of overt signs of left ventricular hypertrophy and signs of circulatory failure;
- in severe cases of aortic stenosis, the question of the possibility of pregnancy is achieved after surgical correction of the defect.



Aortic valve insufficiency

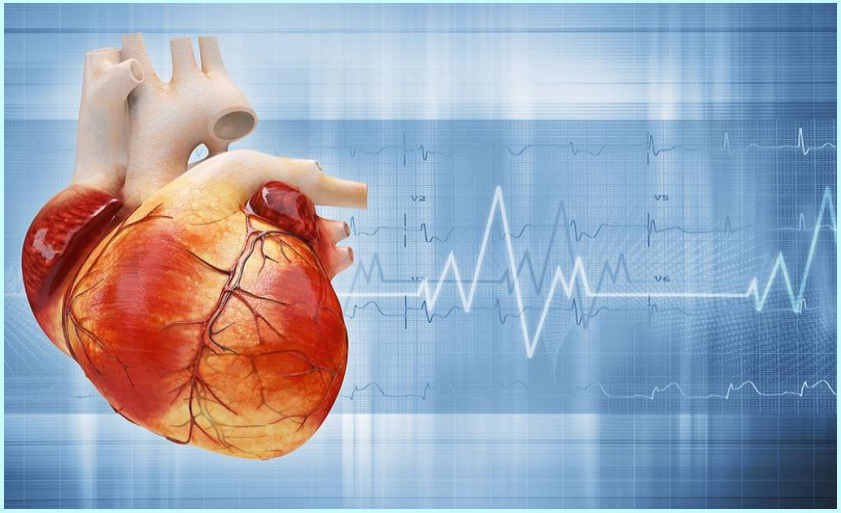
- Compensation of blood flow retained in aortic insufficiency prolonged time, however, due to changes in hemodynamics on the background of pregnancy and the frequent addition of pre-eclampsia ,the disease getting worse.



Congenital heart defects

- **there are 3 the most common group of defects:**
- **vices from left to right shunt ("white") - a defect atrial and ventricular septa, patent ductus arteriosus;**
- **vices with shunt from right to left, and arterial hypoxemia ("blue") - tetralogy of Fallot, transposition of the great vessels, hypoplastic left heart syndrome;**

✓ vices with obstacle to blood flow - pulmonary stenosis, aortic stenosis, coarctation of the aorta.



- **pregnancy is permissible when:**
- **the operated patent ductus arteriosus;**
- **isolated pulmonary artery stenosis with a slight contraction without significant load on the right heart;**
- **coarctation of I degree (with stabilization of blood pressure within 160/90);**
- **low located ventricular septal defect;**
- **insignificant isolated atrial septal defect.**

- **pregnancy is not allowed when:**
- **vices with transient cyanosis (highly localized ventricular septal defect);**
- **expressed stenosis of the pulmonary artery;**
- **prevalent atrial septal defect;**
- **coarctation of the aorta, degree II-III (BP over 160/90);**
- **defects of "blue" type.**

Management of Pregnancy and Childbirth

Hospitalization.

8-12 week of pregnancy - to decide on the continuation of the pregnancy;

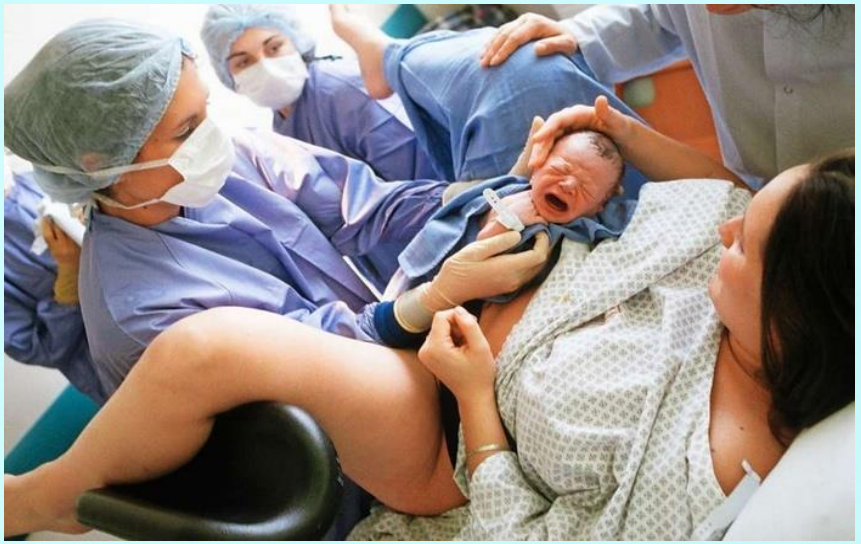
28-32 week of pregnancy - for cardiotonic and antirheumatic therapy;

2-3 weeks before giving birth - to prepare for childbirth.

Abortion - decompensated diseases with symptoms of right heart failure prevalence, the active phase of rheumatic disease, atrial fibrillation with thrombotic symptoms of pulmonary hypertension, with signs of left ventricular failure.

Mode of delivery

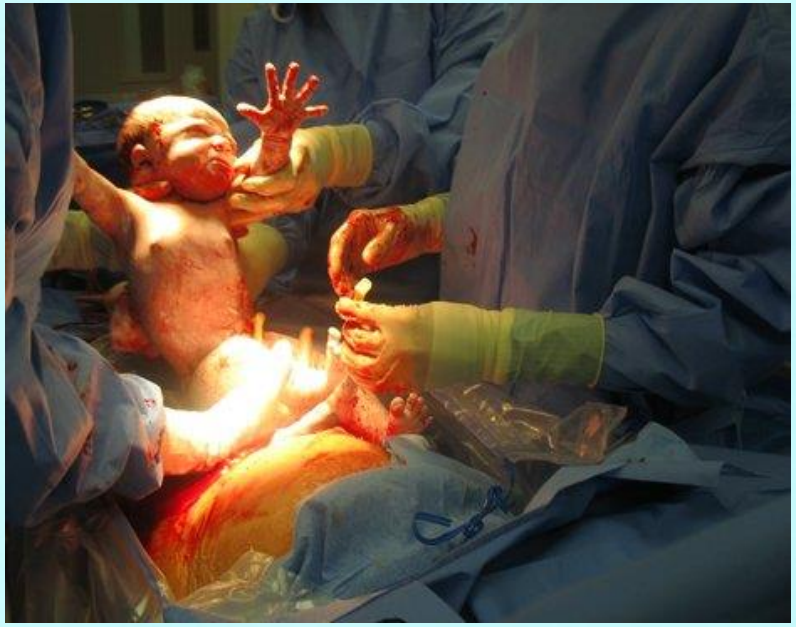
- ✓ **Vaginal birth carried out in the absence of heart failure or the minimum of its manifestations - against a background of constant oxygenation, in the half-sitting position of women in labor in the presence of the therapist, under control of cardiomonitoring;**



- ✓ exception of attempts in the II stage of labor by the forceps used in case of deterioration of hemodynamic parameters in childbirth;

Cesarean section is performed:

- ✓ According to obstetric indications, as this method of delivery is not considered optimal for heart diseases, because during the operation creates a large hemodynamic load on the heart in comparison with that at birth vaginally;
- ✓ circulatory failure IIB-III degree, which originated before birth (bacterial endocarditis, acute heart failure and high pulmonary hypertension)

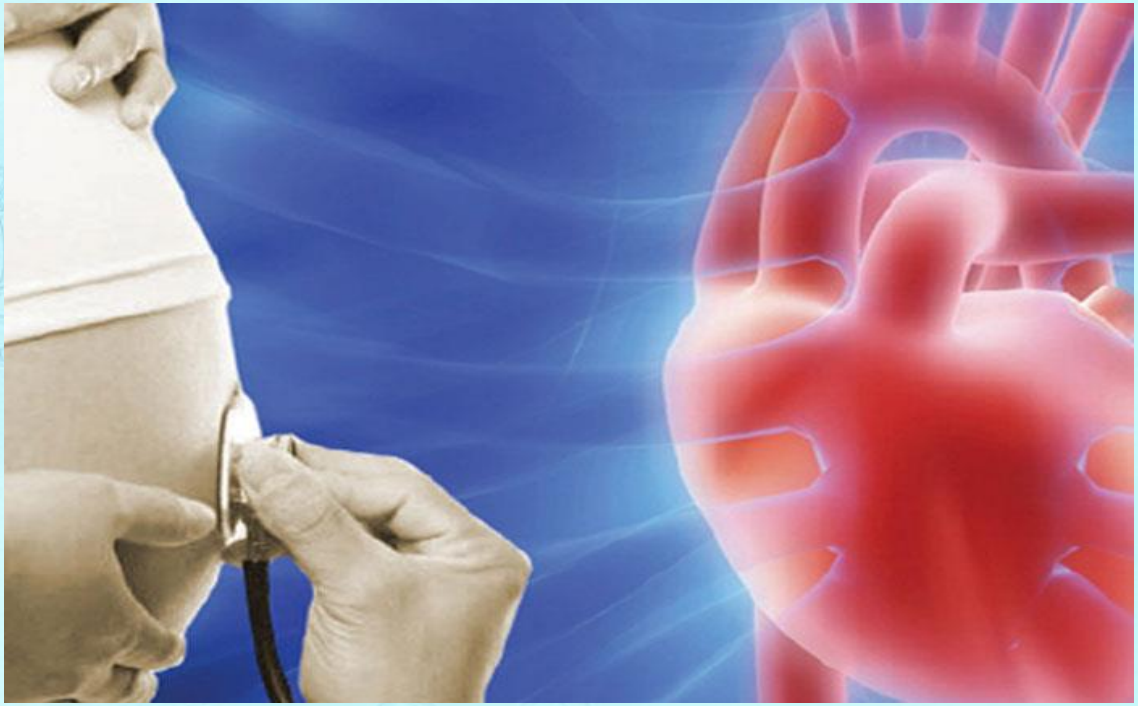


- puerperal with heart defects require careful observation and treatment; the most dangerous first hours after the birth, which are characterized by abrupt hemodynamic impairment;;

- regardless of the mode of delivery distinguish two critical periods:
- from the first hours to 3-5 days, when the increasing signs of heart failure (requires strict bed rest);
- until the end of the 1st week after birth, when the probability of acute rheumatic fever increases.

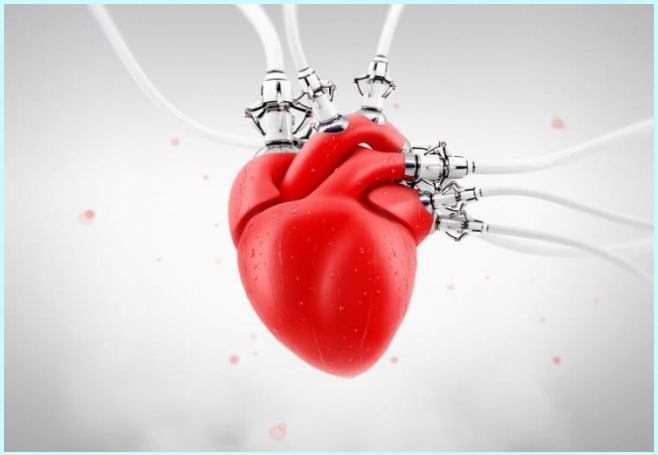
Pregnancy and the operated heart

- prognosis of pregnancy and childbirth in women who have undergone heart surgery depends on the type of operation, its effectiveness, the period of the postoperative period.



- after mitral commissurotomy pregnancy is permissible only in the case of the effect of the operation and not earlier than after 6-12 months; the most favorable period is 2 years - 5 years after surgery.
- after replacing a valve prosthesis modern design with anti-thrombotic coating or biological graft, pregnancy may be 1 year after surgical correction, when the body adapts to the new conditions and hemodynamic restored his ability to work;

- multivalve prosthetics and pregnancy is unacceptable even if we get a positive result.



Arterial hypertension

- Hypertension develops in the most of women before pregnancy, but it may first appear during this period;
- Hypertension is characterized by increase of systolic blood pressure to 130 mmHg or more and / or diastolic 90 mmHg and more..

There are such hypertensive disorders in pregnant women :

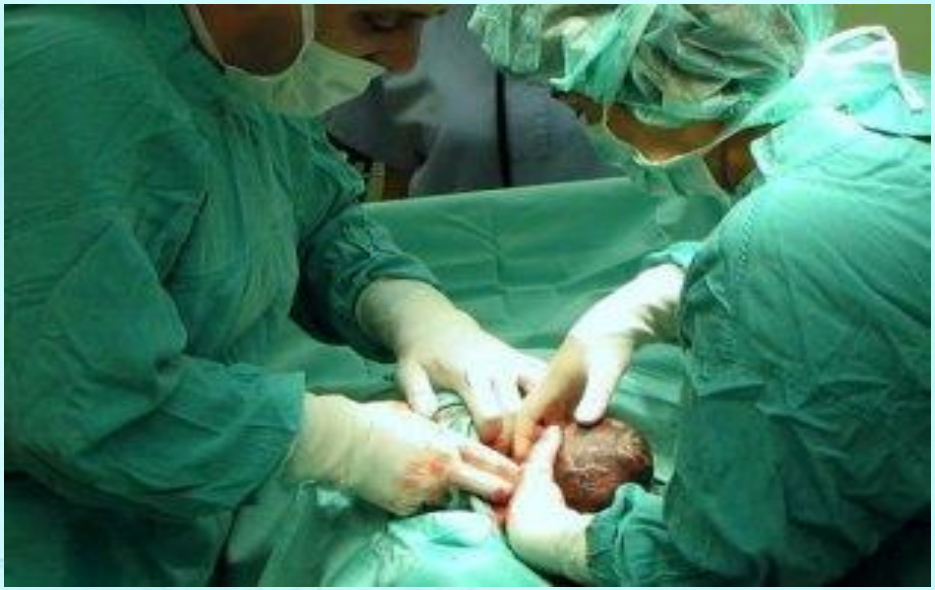
- chronic hypertension;
- hypertension, diagnosed before pregnancy or to identify up to 20 weeks of gestation;
- Gestational hypertension, which occurs after the 20th week of pregnancy and is not accompanied by proteinuria until delivery.

Diagnosis of chronic hypertension during pregnancy is carried out on the basis of:

- history data on the increase in blood pressure during pregnancy;
- Obtaining of the increased rates of blood pressure at the same time in pregnancy up to 20 weeks.

- pregnant women with chronic hypertension are risk group with respect to the development of obstetric complications;
- the question of the continuation of the pregnancy or stop of the gestation is achieved in conjunction with a physician taking into account the survey data and information about the previous course of the underlying disease;
- contraindications for pregnancy are: severe hypertension III degree (AD 180/110), due to severe hypertensive heart disease (myocardial infarction, heart failure), brain (previous stroke, TIA, hypertensive encephalopathy), retina (exudates and hemorrhage, the optic nerve disc edema), kidney (renal failure), vascular (aortic aneurysm), malignant hypertension.

- indications for abortion in the later stages - for malignant hypertension, dissecting aortic aneurysm, acute disturbed of cerebral or coronary circulation, the early accession of preeclampsia, and cases which is not amenable to intensive care;
- method of abortion is a cesarean section.



- medical care to pregnant women with chronic hypertension is to prevent the occurrence of pre-eclampsia or combined pre-eclampsia, if possible-early diagnosis;

- such features indicate to joining of preeclampsia : the appearance of proteinuria, progression of hypertension and reduce the effectiveness of previous antihypertensive therapy, the occurrence of generalized edema, persistent headache, blurred vision, pain in the right upper quadrant and / or epigastric region, hyperreflexia and oliguria.

- joining preeclampsia significantly worsens the prognosis of pregnancy, increases the risk of maternal and perinatal complications of uncontrolled severe hypertension, hypertensive crisis;
- as it determines the occurrence or progression of changes in the ocular fundus, the cerebral circulation, the occurrence of coronary disease, heart failure, renal failure, IUGR fetus is a cause of preterm birth and is an indication for hospitalization in maternity hospitals institutions of the II and III level in pregnancy to 22 weeks.

Treatment and prevention

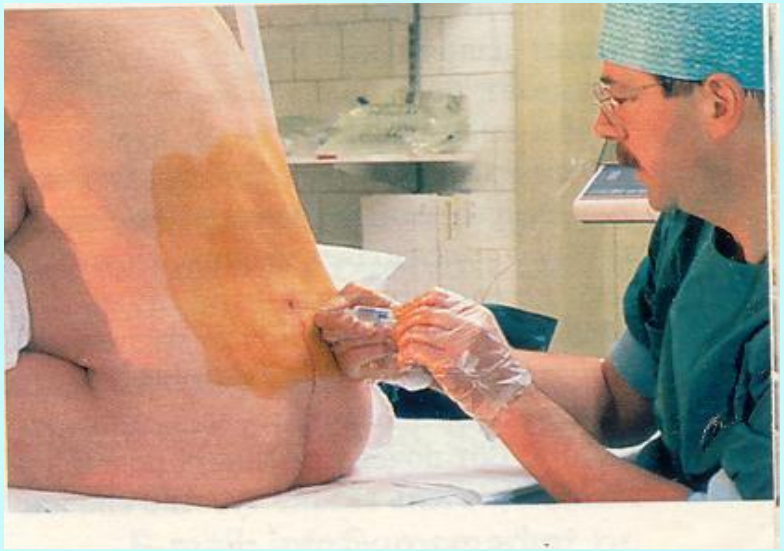
- pregnant women with mild to moderate primary hypertension who received pre-pregnancy continued antihypertensive therapy, drug treatment is canceled after the establishment of pregnancy; but (if needed), there is a possibility to return to the permanent antihypertensive drug therapy that can be applied during pregnancy;
- patients with severe hypertension, renovascular hypertension, Cushing's syndrome, periarteritis nodosa, systemic scleroderma, diabetes, severe organ damage still ongoing antihypertensive therapy during pregnancy

Medication:

- ✓ Methyldopa (dopegit);
- ✓ Nifedipine;
- ✓ Labetalol;
- ✓ Beta- adrenoblockaters;
- ✓ Sodium nitroprusside - to quickly lower blood pressure threatening cases and subject to the ineffectiveness of other drugs;
- ✓ Magnesium sulfate - in the development of pre-eclampsia or eclampsia;
- ✓ diuretics (especially thiazide) - a combination of hypertension with heart failure or kidney disease.
- ✓ Prevention of preeclampsia:
- ✓ Aspirin 60-100 mg / day, starting at 20 weeks of gestation.;
- ✓ calcium supplementation of 2 g / day, starting at 16 weeks of gestation.;
- ✓ including in seafood diet high in polyunsaturated fatty acids.

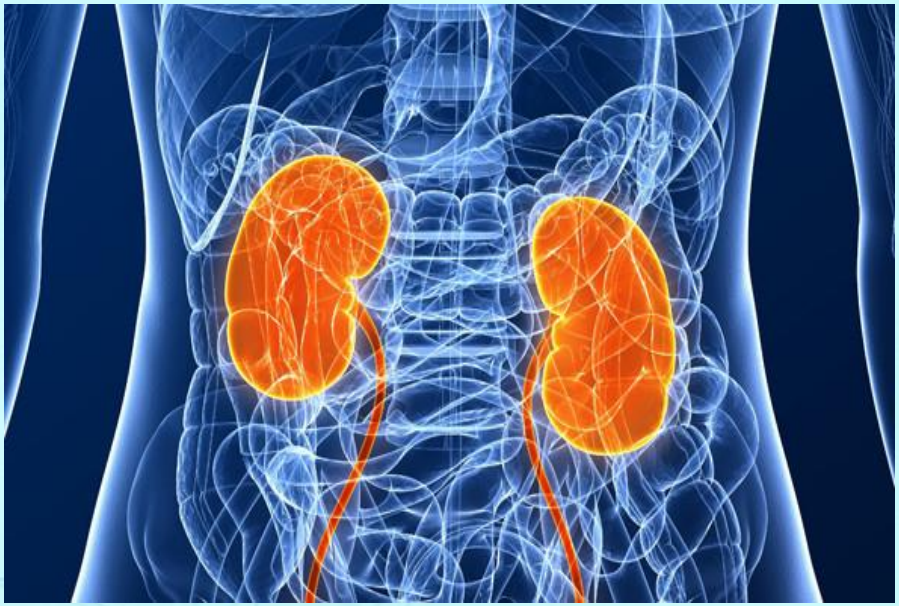
Management of Pregnancy and Childbirth

- prolong the pregnancy to physiological term;
- delivery is vaginal, if the pre-eclampsia and controlled hypertension had not develop;
- during childbirth is provided to monitor blood pressure and mothers heart activity, fetal monitoring;
- antihypertensive therapy should be initiated at rates of blood pressure 160/110 mm Hg .;
- appropriate using of epidural anesthesia in the I and II stage of labor , narcotic analgesics, sedatives; III stage of labor are active;
- Cesarean section is performed at uncontrolled severe hypertension, organ damage, severe fetus IUGR;
- in the case of accession of preeclampsia treatment selection and delivery depends on the severity of the disease.



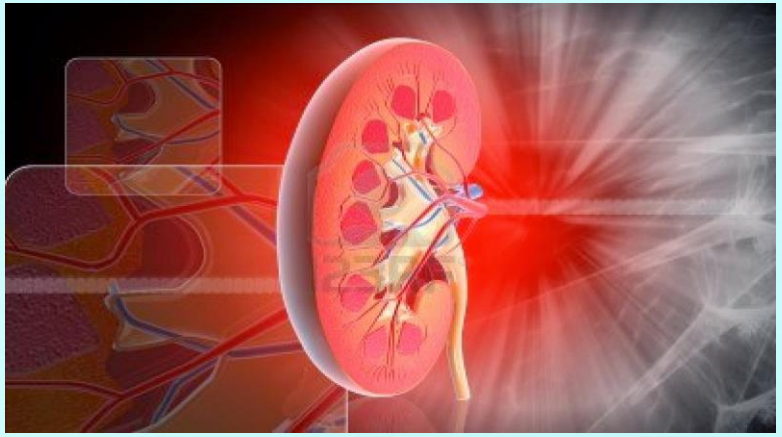
Diseases of the kidneys and urinary tract

- worsering duration of pregnancy, provoke the development of threatened abortion, premature birth, preeclampsia, fetus IUGR, disseminated intravascular coagulation and renal failure; postpartum period is complicated by the NHS;
- the most common diseases in pregnancy - pyelonephritis, glomerulonephritis, urolithiasis.



Pyelonephritis in pregnancy

- nonspecific infectious inflammatory process, which is accompanied by a lesion of interstitial kidney tissue, tubular apparatus, and the walls pyelocaliceal system;
- in pregnant process arises or escalates from 22 th to 28 th week and is localized mainly in the right kidney.



- **Clinical signs: fever to 38-40 C, chills, headache, pain in the lumbar region, positive Pasternatsky`s symptom;**
- **laboratory diagnostics:leukocytosis with neutrophilic shift to the left, moderate hypochromic anemia, accelerated ESR, pyuria, bacteriuria, proteinuria, microscopic hematuria, renal ultrasound,bac. culture of urine with a sensitivity of microflora to AB;**
- **the basic principle of treatment: AB-therapy, uroseptics ,on the background of recovery the urine passage from the kidney by catheterization of the ureters.**

Conducting of Pregnancy and Childbirth

There are 3 degrees of the risk of complications during pregnancy and childbirth:

Grade I - acute pyelonephritis, arising during pregnancy;

Grade II - chronic pyelonephritis;

Grade III - pyelonephritis in combination with hypertension or nitrogenemia, pyelonephritis only of one kidney.

at the risk of I and II degree of pregnancy can be prolonged; at the risk of III degree-pregnancy is counter

delivery is - mostly vaginally; Caesarean section (extraperitoneal) is performed for obstetric indications.

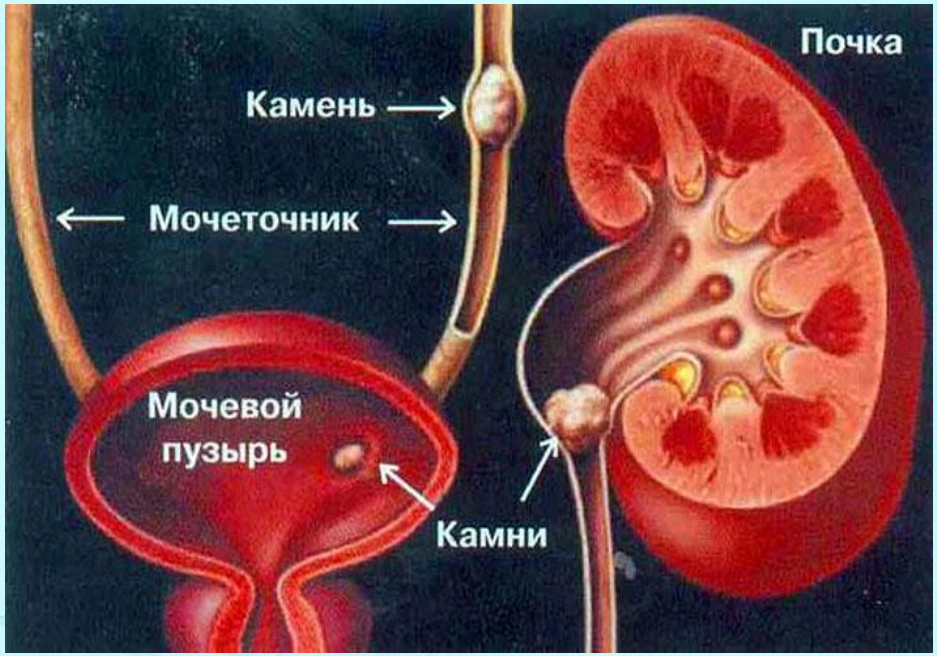
glomerulonephritis

- infectious and allergic disease, with lesions of the glomerular apparatus of the kidneys;
- agents are preferably haemolytic streptococcus of A group, viruses, including hepatitis B virus;
- complications of pregnancy are preeclampsia, a violation of utero-placental circulation, IUGR, premature detachment of normally situated placenta.

- in pregnant women are more likely to diagnose 4 forms of chronic glomerulonephritis - Nephrotic, hypertensive, mixed, latent;
- the most common latent form, is characterized by the appearance of edema, proteinuria of less than 3 g / day, erythrocyturia without hypertension, in which during pregnancy, childbirth and the postnatal period are most favorable;
- hypertensive form is characterized by the addition of hypertension, hematuria, cylindruria, changes in the ocular fundus;
- Maximum risk is noted in pregnant women with a mixed form of the disease (about. glomerulonephritis and any form of the disease, accompanied by nitrogenemia and renal failure.

Urolithiasis disease

- There are classical triad of symptoms: renal colic, hematuria, pyuria, and the discharge of stones in the urine;
- Diagnosis is based on medical history, clinical presentation, urinalysis results, renal ultrasound, cystochromoscopy..



- ✓ **Treatment is usually conservative (spasmolytics, analgesics, perirenal blockade); with no effect - ureteral catheterization. In the case of the combination of ULD with pyelonephritis appoint AB-therapy with the restoration of the passage of urine. With the ineffectiveness of the combined treatment is performed pielo- nephrotomy or to prevent the development of purulent process in the kidney.**
- ✓ **Pregnancy and childbirth depends on the duration of the disease, the localization of the calculus, renal function, extent and severity of the inflammatory process. Contraindications to pregnancy is bilateral nephrolithiasis with renal insufficiency, calculus in only one kidney.**

Diabetes

- pregnant women with diabetes are considered high risk in relation to the development of perinatal and maternal morbidity;
- Pregnancy is a diabetogenic factor and causes disease progression; in turn, causes diabetes complicated by pregnancy and childbirth, has an impact on fetal development, leads to severe complications in pregnant women and fetal malformations;
- distinguish between type I diabetes (insulin-dependent) diabetes, type II (non-insulin dependent), pregestatsional and gestational.

Pregestational diabetes

- syndrome of chronic hyperglycemia due to absolute or relative insulin deficiency, which is a violation of all kinds of metabolism, angiopathy, neuropathy, damage to many otranov and tissues;
- Classification:
- type (I and type II);
- severity (mild, moderate, severe);
- state compensation (compensation subindemnification, decompensation).
- Complications - ketoacidotic, hyperosmolar, lactatesidemitic, hypoglycemic coma, chronic microangiopathy, macroangiopathy, neuropathy, damage to other organs.

Contraindications to carrying a pregnancy: diabetic nephropathy stage IV or V, the clinical manifestations of diabetic macroangiopathy, precoma state in the I trimester.

Indications for hospitalization: decompensation of carbohydrate metabolism, the progression of vascular complications, complications of pregnancy, fetal distress, signs of diabetic fetopathy.

Indications for cesarean section: retinal hemorrhage, moderate or severe preeclampsia, fetal distress, breech presentation of the fetus, fetal weight of 4000 g

Gestational diabetes

- impaired glucose tolerance of any degree detected during pregnancy;
- risk factors - hereditary factor, gestational diabetes during a previous pregnancy, obesity, polyhydramnios, macrosomia, stillbirth, congenital malformations of the fetus, glycosuria;
- tactics of pregnancy and childbirth - careful monitoring of the pregnant woman and the fetus on the same principles as in the pregestational diabetes.

Anemia of pregnant

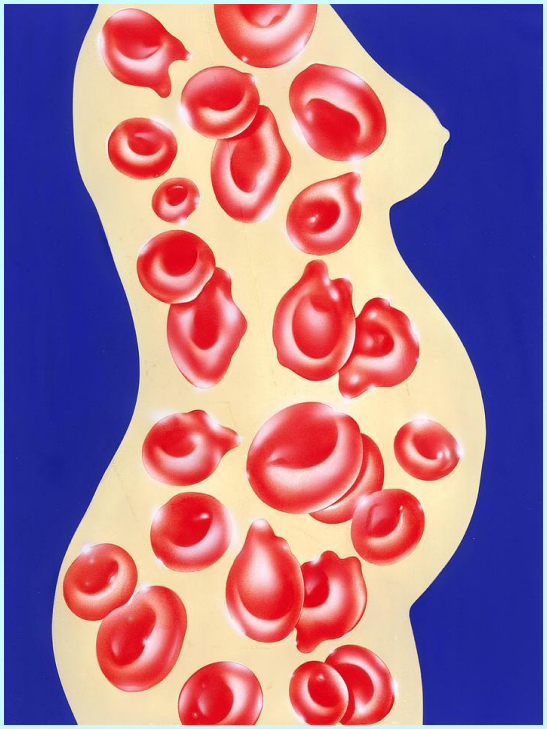
Classification.

etiology: iron, folic acid deficiency, vitamin B12 deficiency, thalassemia, hemolytic, aplastic;

by severity: mild (Hb 109-90 g / l, Ht 37-31), average (Hb 89-70 g / L, Ht 30-24), severe (Hb 69-40 g / L, Ht 23-13).

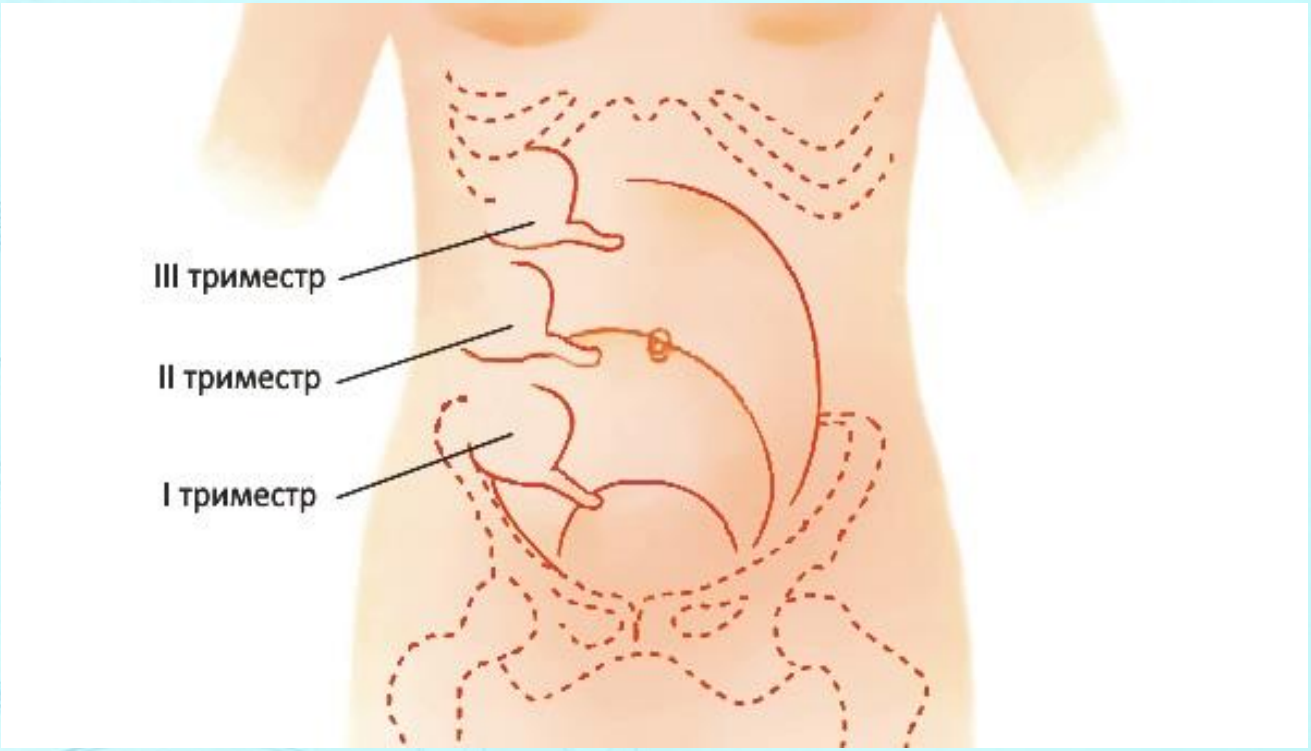
Treatment depends on the type and severity of anemia.

If aplastic anemia is contraindicated in pregnancy and is subject to termination in both early and late period.



Acute appendicitis

- the frequency of acute appendicitis is around 90% of all cases of acute abdomen in pregnancy;
- mainly occurs in the first half of pregnancy and does not differ in clinical manifestations of acute appendicitis out of pregnancy.



- in the second half of pregnancy clinical manifestations undergo some changes due to anatomical location of the appendix or other abdominal organs due to the growth of the pregnant uterus, changes in intestinal blood flow and a tendency to pregnant coagulopathy;
- nausea, vomiting, leukocytosis have no diagnostic value; pain usually begins in the epigastrium, extending to the right iliac region; protective muscle tension is weak due to hyperextension of the anterior abdominal wall and the location of the appendix of the uterus; often determined by the Michelson-Bartome symptoms (increased pain on palpation of the abdomen in a position on the right side;
- treatment - operative in any stage of pregnancy.

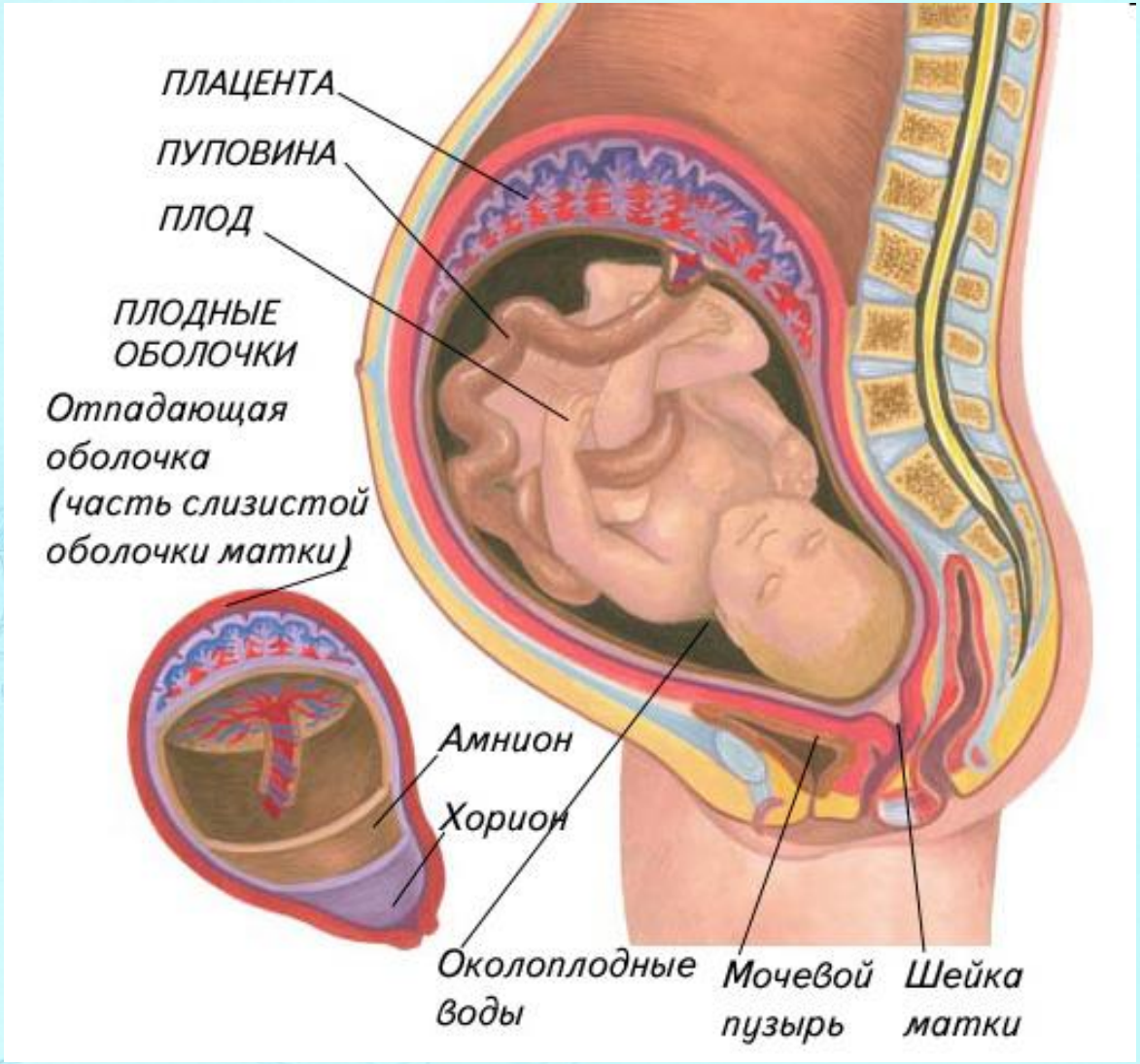
АКТУАЛЬНЫЕ ВОПРОСЫ ПЕРИНАТАЛЬНОЙ МЕДИЦИНЫ

- **Перинатология** *(греч. **peri** – вокруг + **natus** – рождение + **logos** – учение, наука)* – наука, находящаяся на стыке акушерства и педиатрии и изучающая перинатальный период.
- **Перинатальный период** – период от 22-й недели беременности (антенатальный), включающий период родов (интранатальный) и заканчивающийся через 168 часов (7 суток) после рождения (постнатальный).

Задачами перинатальной медицины являются:

- изучение особенностей внутриутробного развития плода;
- изучение патогенеза и диагностики нарушений и заболеваний плода и новорожденного;
- обеспечение плода и новорожденного современной разносторонней медицинской помощью до, во время родов и после рождения;
- снижение перинатальной смертности.

Строение плодного яйца во 2-й половине беременности



Методы оценки состояния плода

- **неинвазивные:**

✓ биохимический скрининг (определение PAPP-A, ХГЧ, АФП);

✓ УЗИ;

✓ биофизический профиль плода;

✓ допплерометрическое исследование ФПК;

✓ кардиотокография.

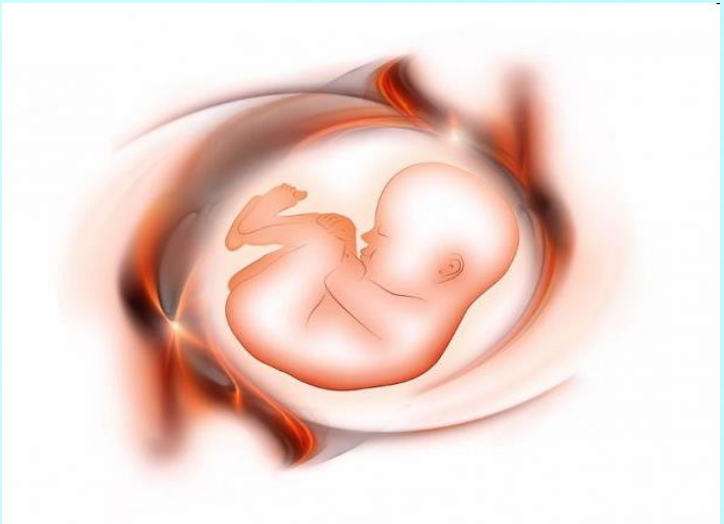
- **инвазивные:**

✓ амниоскопия;

✓ амниоцентез;

✓ биопсия хориона;

✓ кордоцентез.



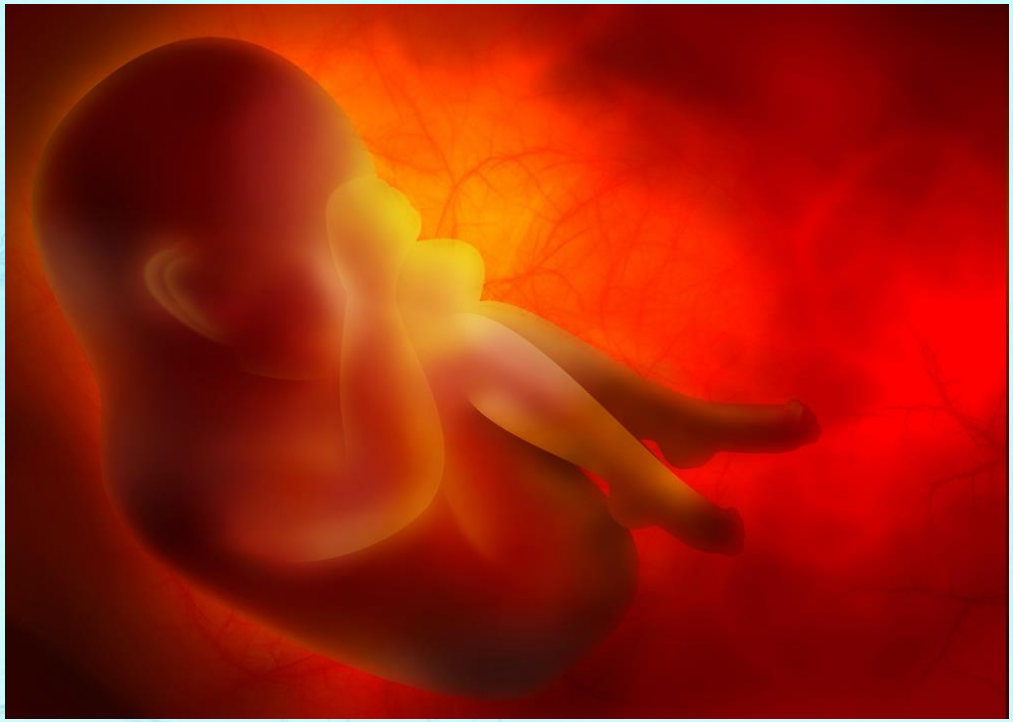
Медико-генетическое консультирование

- **показания для медико-генетической консультации:**

- наличие врожденных пороков развития или наследственного заболевания у супругов или близких родственников;
- рождение детей с пороками развития или наследственными заболеваниями;
- рождение в семье умственно неполноценных лиц;
- брак между близкими родственниками;
- бесплодие или привычное невынашивание;
- аменорея;
- перинатальная смертность;
- влияние тератогенных и мутагенных факторов на родителей;
- осложненное течение беременности.

Аномалии развития плодного яйца

- Под *аномалиями развития* или *врожденными пороками развития* следует понимать стойкие морфологические изменения органов или всего организма.



По этиологическому признаку различают 3 группы пороков:

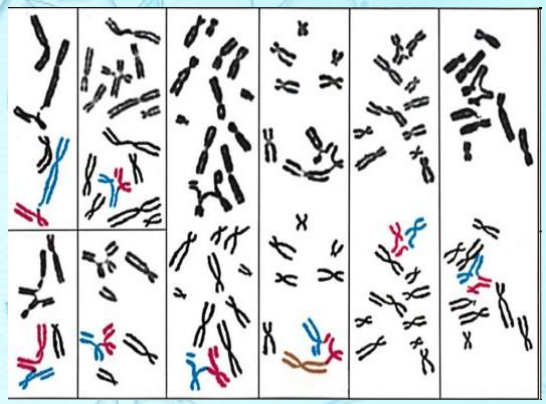
1. наследственные (генные и хромосомные);
2. экзогенные (обусловленные воздействием тератогенных факторов на эмбрион и плод);
3. мультифакторные (общее влияние генетических и экзогенных факторов).

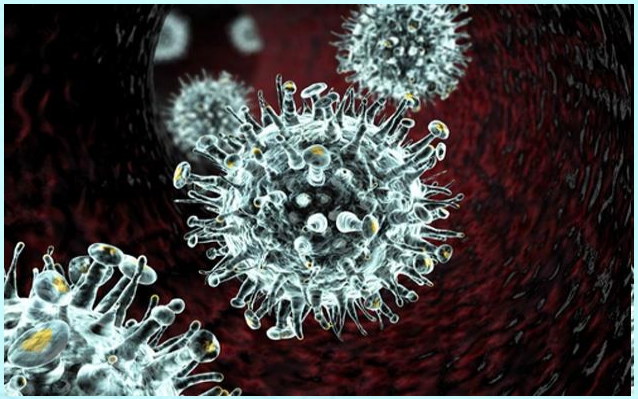
Причины пороков развития плода:

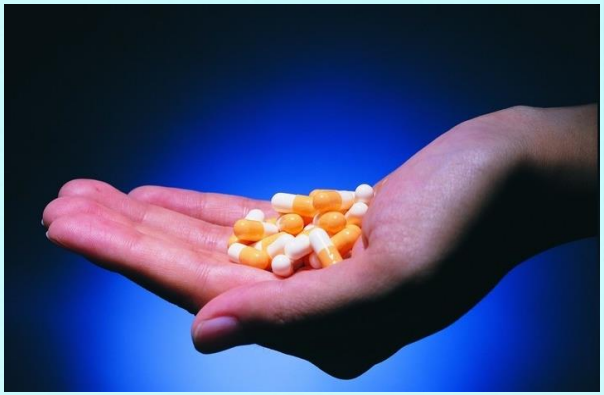
а) эндогенные (генные мутации, хромосомные аберрации, эндокринные заболевания, возраст родителей);

б) экзогенные (физические факторы – радиационные, механические; химические – лекарства, бытовая химия, гипоксия, неполноценное питание; биологические – вирусы, бактерии, изоиммунизация);

в) мультифакторные.







Аномалии развития плода могут возникать в разные периоды онтогенеза.

- ***Гаметопатии*** и ***бластопатии*** обусловлены изменениями генетического аппарата, а также могут возникать в процессе созревания половых клеток, во время оплодотворения или в начальных стадиях дробления оплодотворенной яйцеклетки (первые 15 суток). Большая часть беременностей прерывается через 3-4 нед. после повреждения или гибели зародыша;

- ***Эмбриопатии*** возникают в период от 16-го дня по 10-ю неделю после оплодотворения (период органогенеза). Беременность нередко завершается выкидышем, рождением ребенка с увечьями или мертворождением;
- ***Фетопатии*** – заболевания или функциональные расстройства, которые возникают у плода под влиянием экзогенных факторов в период с 11-й недели беременности до рождения.

К врожденным порокам относятся следующие нарушения развития:

- агенезия – полное отсутствие органа;
- аплазия – отсутствие органа с наличием его сосудистой ножки;
- гипоплазия – недоразвитие органа;
- гипотрофия – уменьшение массы плода;
- гипертрофия – увеличение массы органа;
- макросомия – увеличение длины и массы плода;
- гетеротопия – наличие клеток или тканей органа в другом органе, где их быть не должно;
- эктопия – изменение положения органа;
- атрезия – отсутствие канала или отверстия;
- стеноз – сужение канала или отверстия;
- неразделение (слияние) органов – сиамские близнецы (паги), неразделение конечностей или их частей (синдактилия и т.п.);
- дисхрония – нарушение темпов развития.

Классификация ВПР плода

- **А. Врожденные пороки развития органов и систем**

1. Пороки ЦНС и органов чувств;
2. Пороки лица и шеи;
3. Пороки сердечно-сосудистой системы;
4. Пороки дыхательной системы;
5. Пороки органов ЖКТ;
6. Пороки костно-мышечной системы;
7. Пороки мочевыводящих путей;
8. Пороки половых органов;
9. Пороки эндокринных желез;
10. Пороки кожи и ее придатков;
11. Пороки последа
12. Другие пороки.

- **Б. Многочисленные врожденные пороки**

1. Хромосомные синдромы;
2. Генные синдромы;
3. Пороки, обусловленные экзогенными факторами;
4. Синдромы неустановленной этиологии;
5. Множественные неуточненные пороки.

- **Выделяют также:**

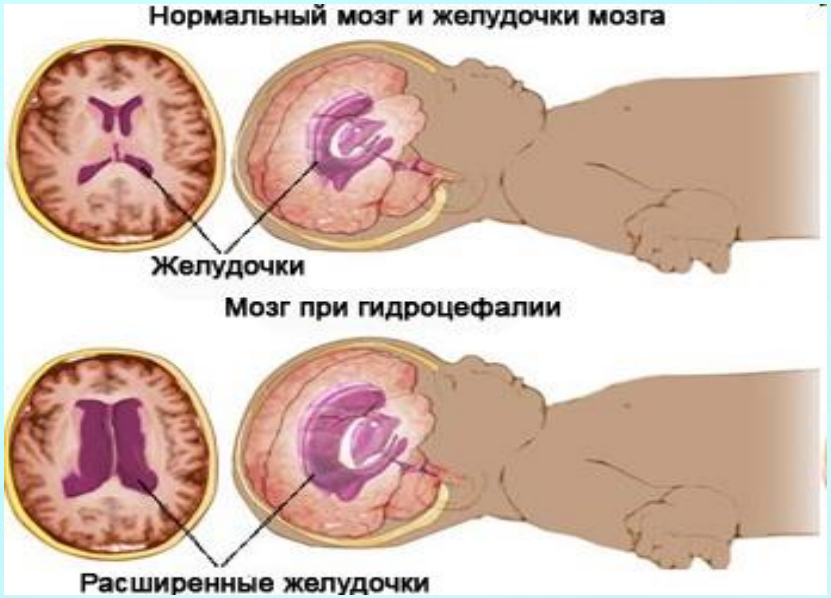
изолированные (локализованные в одном органе);

системные (в пределах одной системы органов);

многочисленные (в органах двух и более систем) пороки.

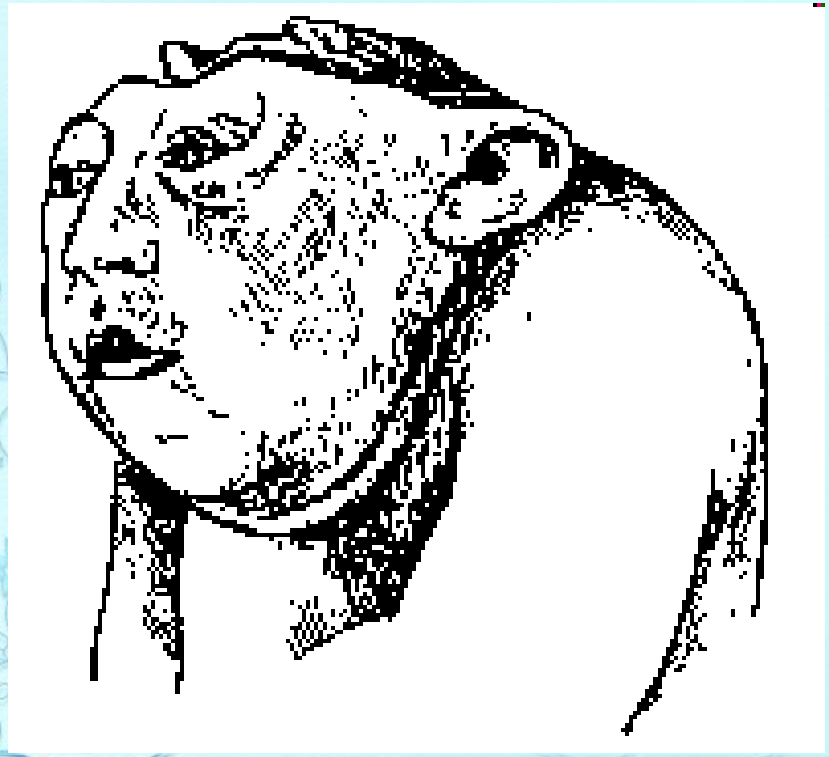
Гидроцефалия

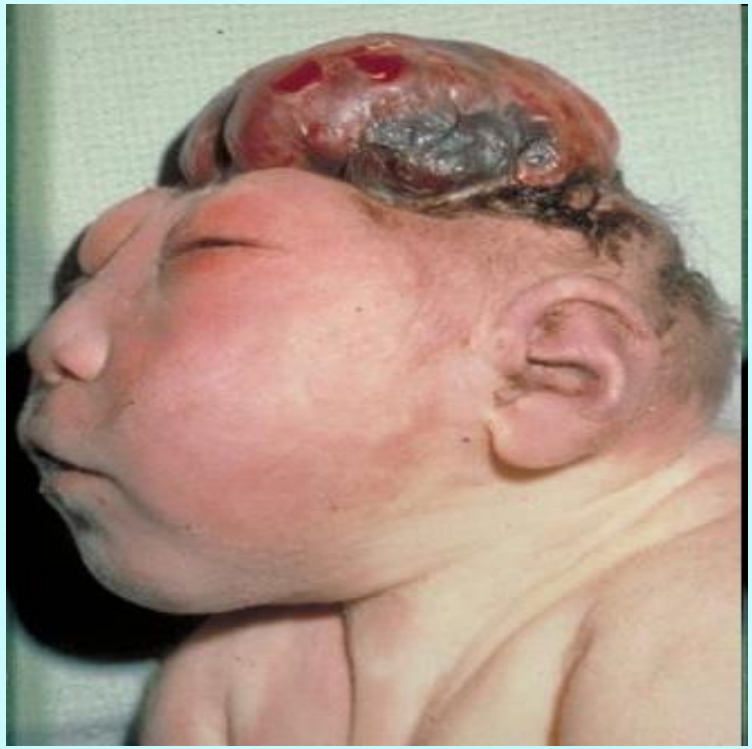
- возникает вследствие обструкции на одном из участков циркуляции цереброспинальной жидкости;
- в основном представлена стенозом сильвиева водопровода, открытой гидроцефалией (расширение желудочков мозга и субарахноидальной системы мозга в результате обструкции внежелудочковой системы путей оттока цереброспинальной жидкости); синдромом Денди-Уокера (сочетание гидроцефалии, кисты задней черепной ямки, дефектов червя мозжечка, из-за которых киста соединяется с пустотой IV желудочка).



Анэнцефалия

- отсутствие полушарий головного мозга и большей части свода черепа; при этом наблюдается дефект лобной доли выше супраорбитальной области, теменная и часть затылочной кости отсутствуют.



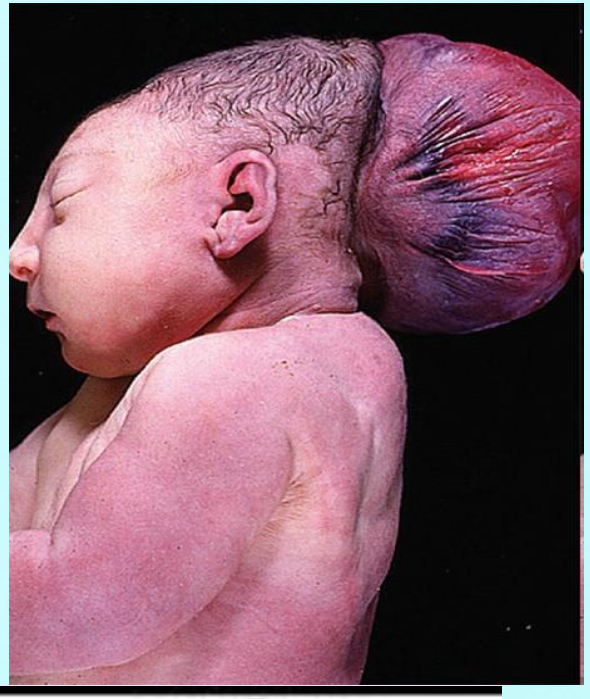


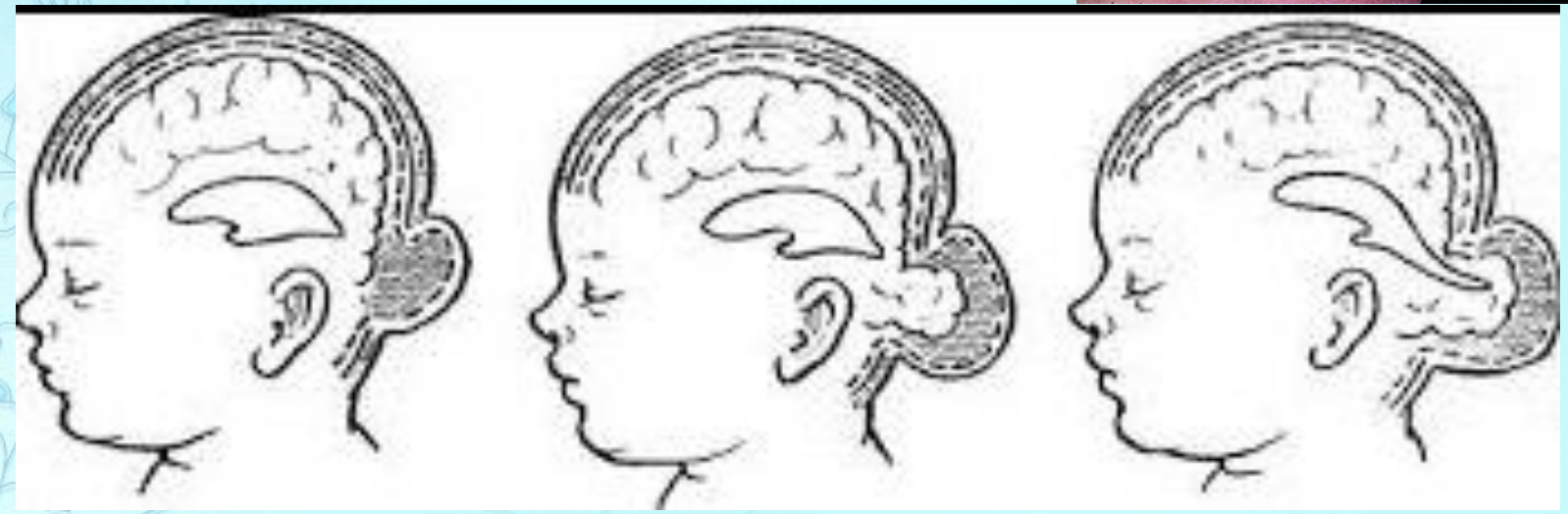
Цефалоцеле (расщепление черепа)

- выпячивание содержимого черепной коробки через костный дефект;
- **различают:**

✓ краниальное цефалоцеле (выпячивание через дефект только менингеальных оболочек);

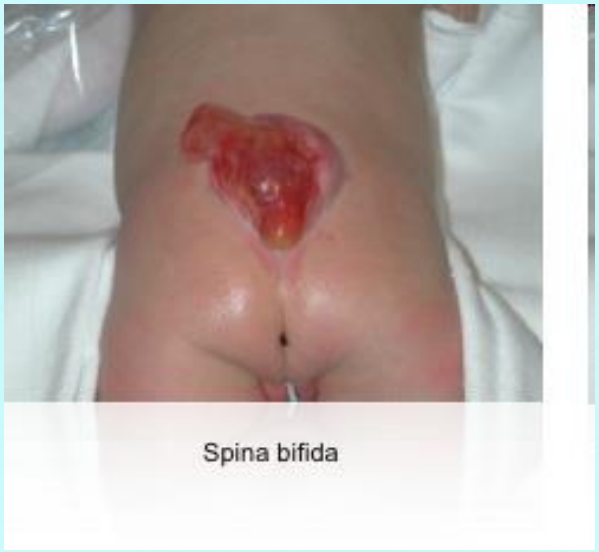
✓ энцефалоцеле (при нахождении в грыжевом мешке ткани мозга).





Spina bifida (спинномозговая грыжа)

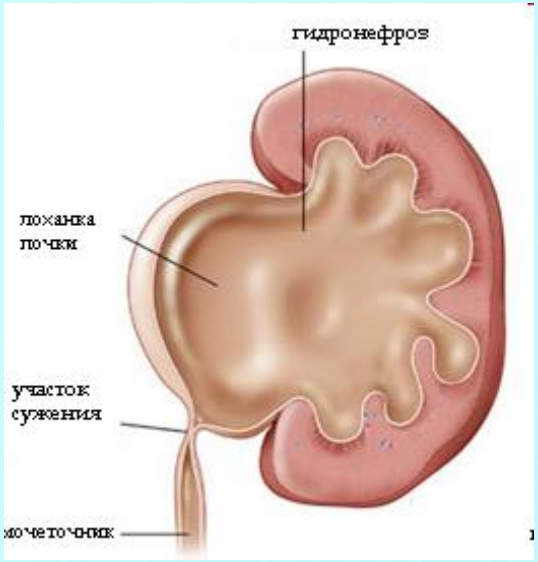
- срединный дефект дорсальных дуг позвонков, который сопровождается оголением содержимого спинномозгового канала;
- различают кистозную форму с образованием грыжевого мешка, который содержит оболочки и/или вещество мозга, и скрытую форму, которая не сопровождается образованием грыжевого выпячивания;
- часто сочетается с гидроцефалией, врожденными пороками сердца и мочеполовой системы.

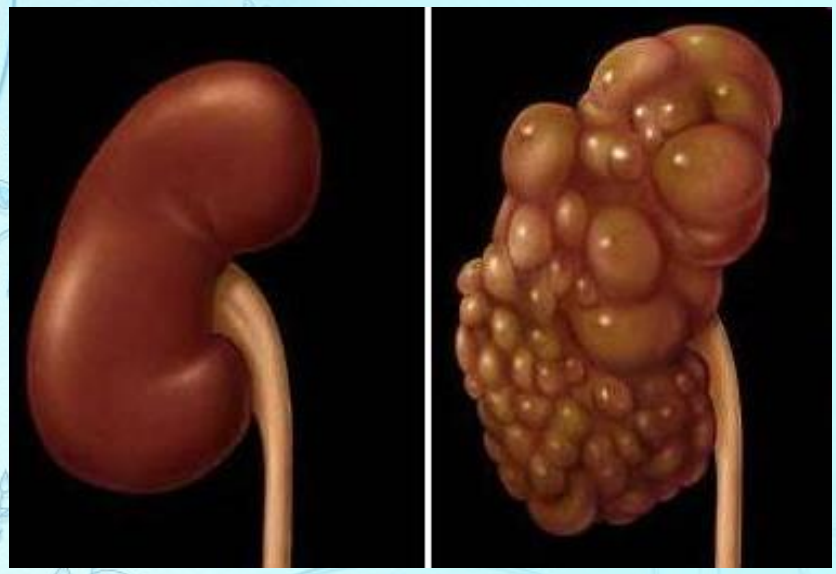


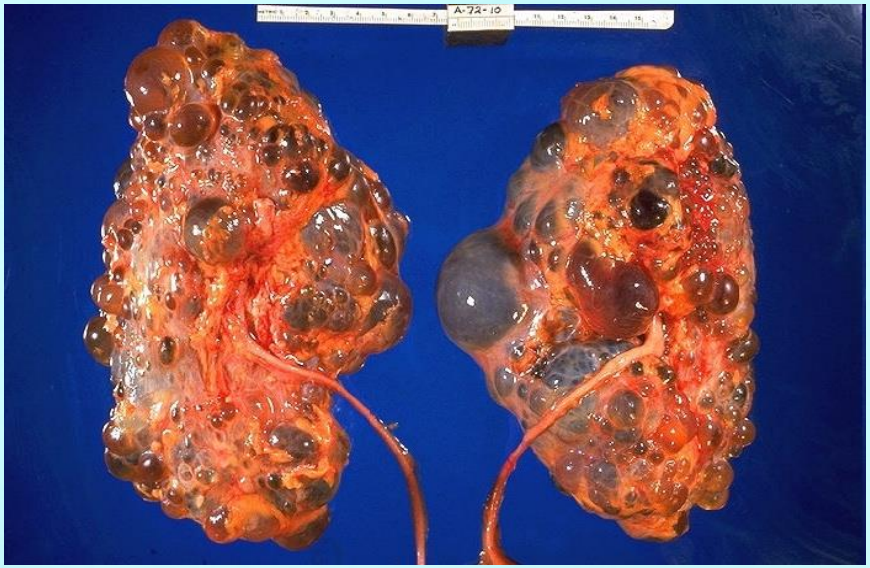
Spina bifida

Пороки развития мочеполовой системы

- поликистозная болезнь почек инфантильного и взрослого типов;
- врожденный гидронефроз.



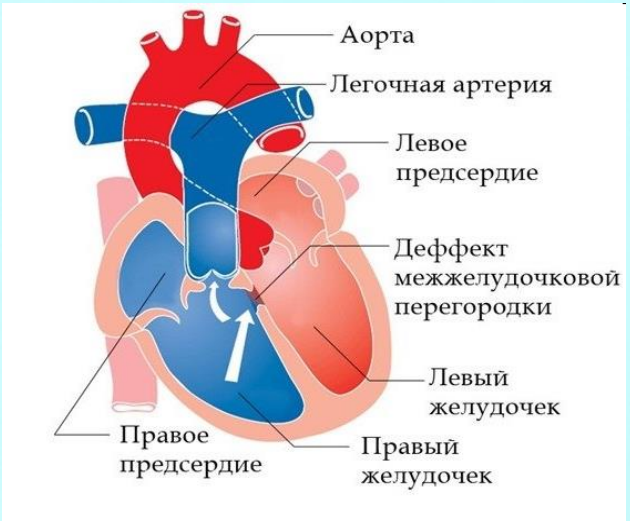


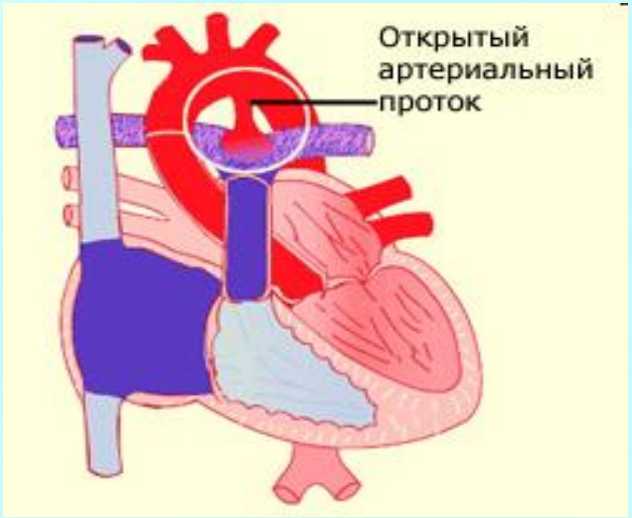


Врожденные пороки сердца

- в 90% случаев ВПС являются результатом мультифакторного повреждения (генетическая склонность и факторы окружающей среды);
- наиболее распространенными ВПС являются:

- дефекты межпредсердной и межжелудочковой перегородок;
- открытый артериальный проток;
- стеноз легочной артерии;
- гипопластический синдром левых отделов сердца;
- единый желудочек и др.

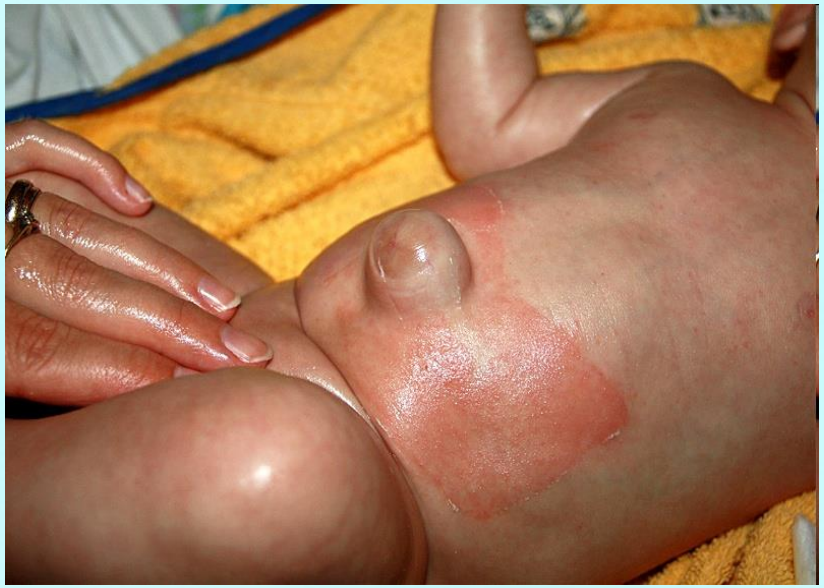




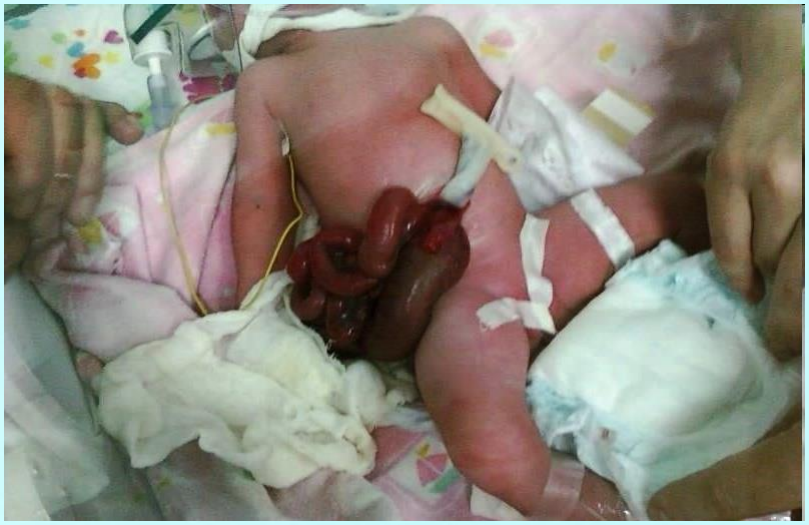
Аномалии развития ЖКТ

- Диафрагмальная грыжа представляет собой перемещение органов брюшной полости в грудную полость через дефект диафрагмы.

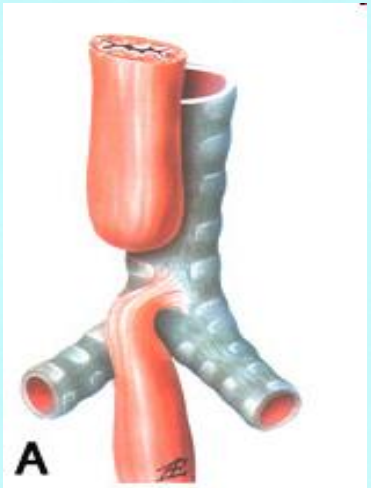
- Омфалоцеле (пупочная грыжа) – дефект передней брюшной стенки в области пупочного кольца, при котором образуется грыжевой мешок с внутрибрюшным содержимым, покрытый амниоперитонеальной мембраной.



- Гастрошизис – дефект передней брюшной стенки в околопупочной области с эвентерацией петель кишечника, покрытых воспалительным экссудатом.

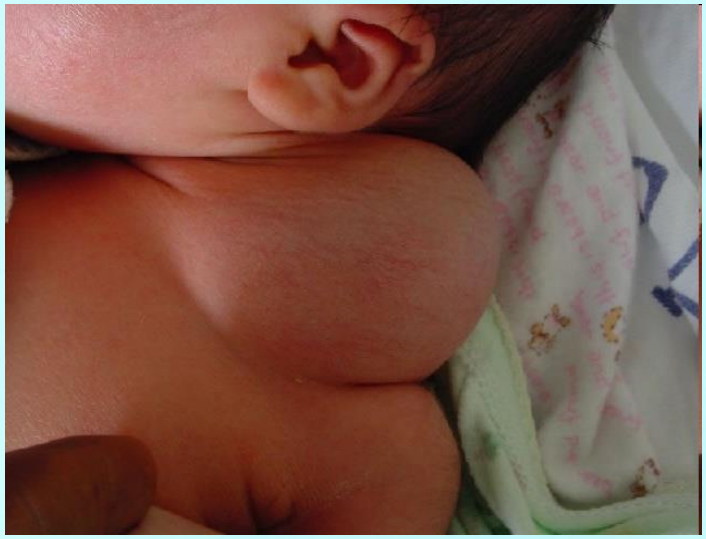


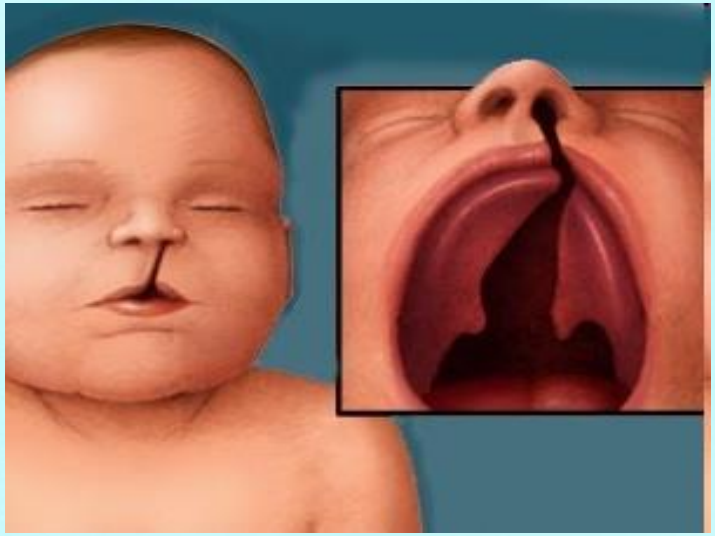
- Атрезия пищевода (с трахеопищеводным свищом и без него) – отсутствие сегмента пищевода, который сопровождается образованием фистулы между ним и дыхательными путями.



Аномалии структур лица и шеи плода

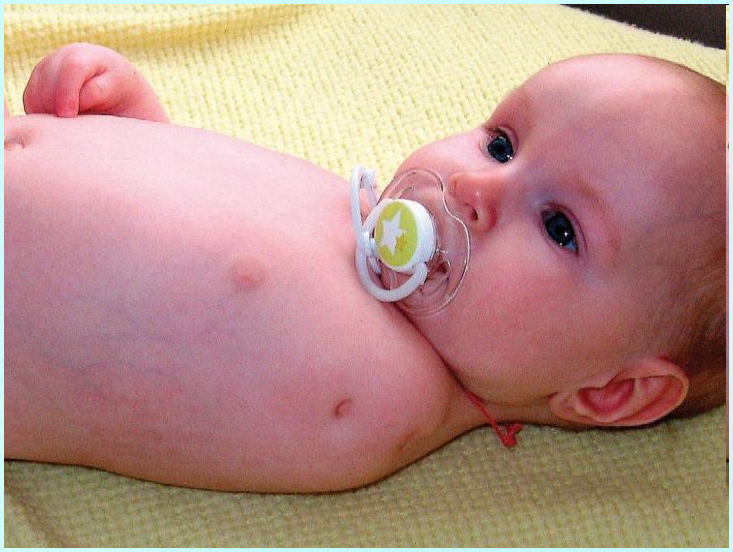
- расщепление верхней губы и неба;
- кистозная гигрома (лимфангиома) шеи.

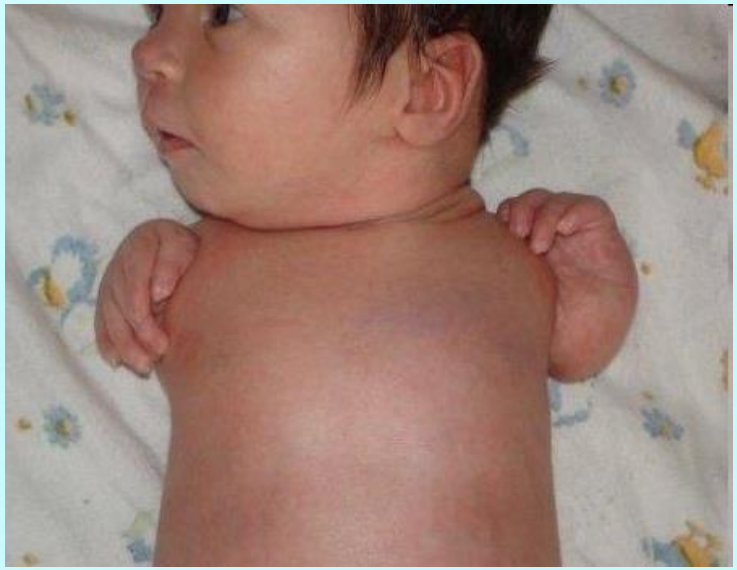




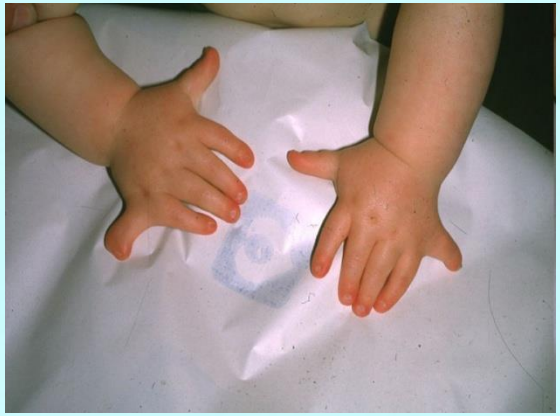
Аномалии развития костной системы

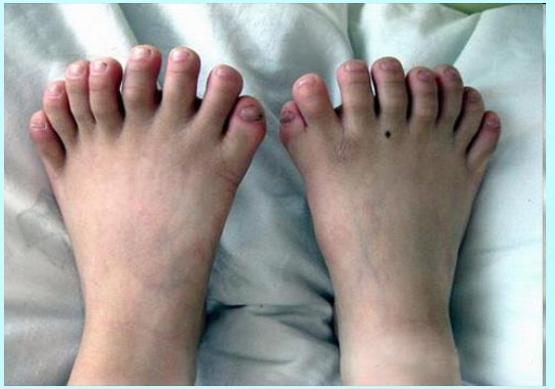
- амелия (аплазия всех конечностей);
- фокомелия (недоразвитие проксимальных отделов конечностей, при этом кисти и стопы соединяются непосредственно с туловищем);
- аплазия одной из костей голени или предплечья;

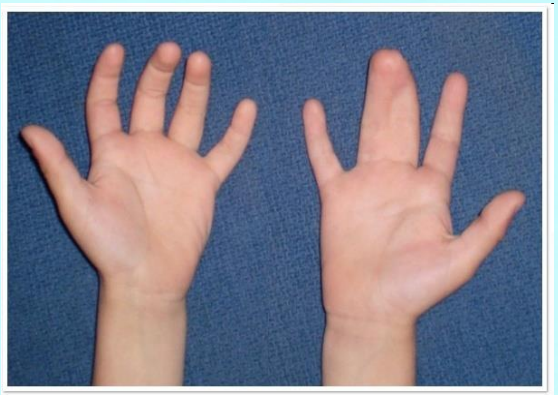




- полидактилия (увеличение числа пальцев на конечности);
- синдактилия (уменьшение числа пальцев вследствие сращения мягких тканей или костной ткани рядом расположенных пальцев);
- аномальная установка стоп;
- остеохондродисплазия (характеризуется аномалиями роста и развития хрящей и/или костей).

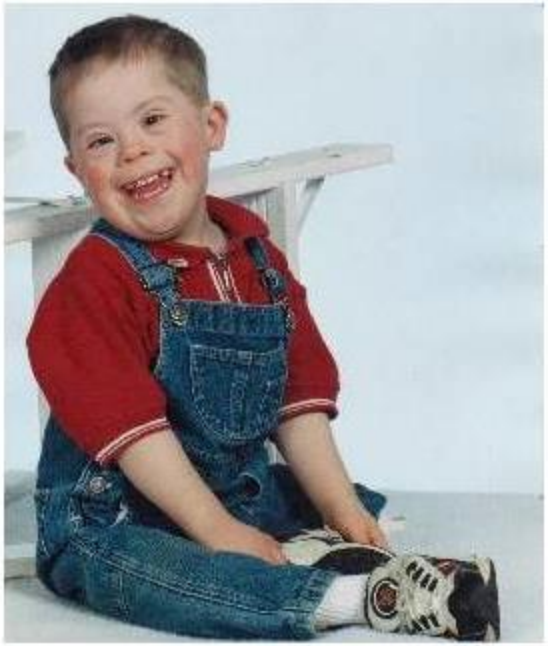




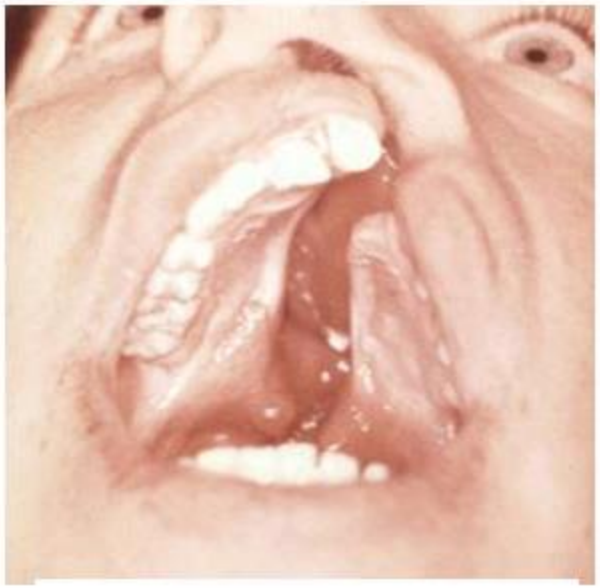


Хромосомные болезни

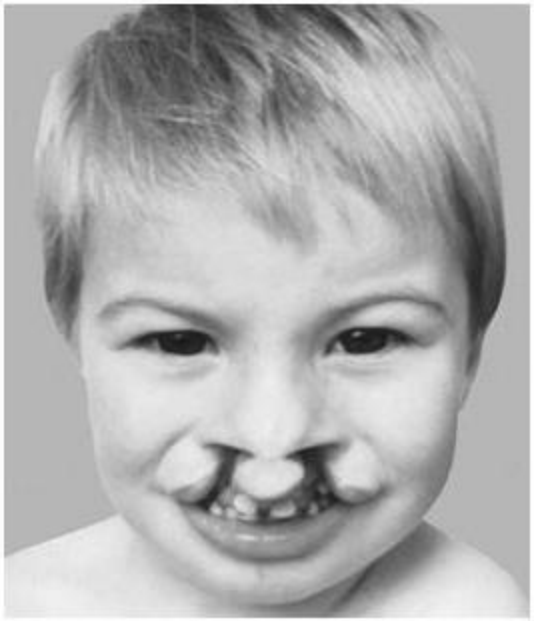
(аномалии аутосом)



Синдром Дауна
(трисомия по 21 паре)



Синдром Патау
(трисомия по 13 паре)



Синдром Эдвардса
(трисомия по 18 паре)

Аномалии половых хромосом

- синдром Шерешевского-Тернера

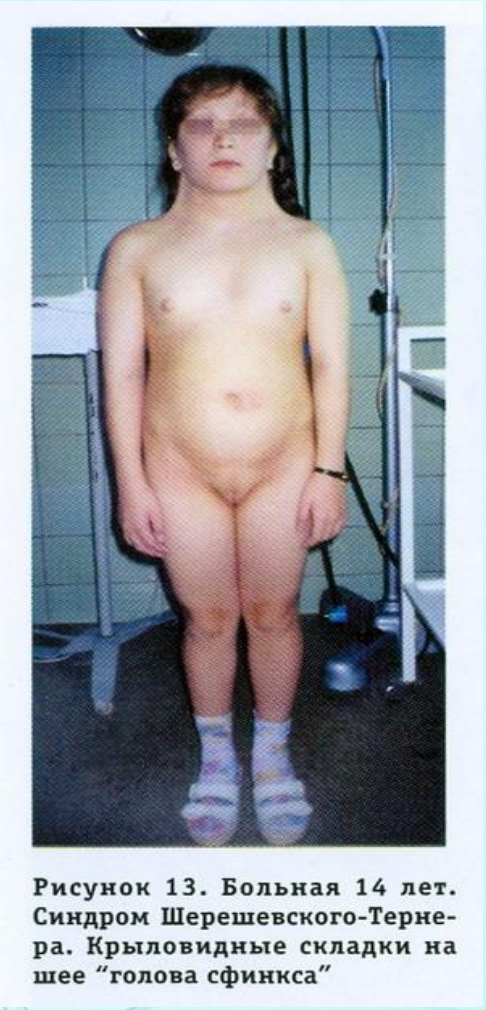


Рисунок 13. Больная 14 лет. Синдром Шерешевского-Тернера. Крыловидные складки на шее “голова сфинкса”

- синдром Клайнфельтера

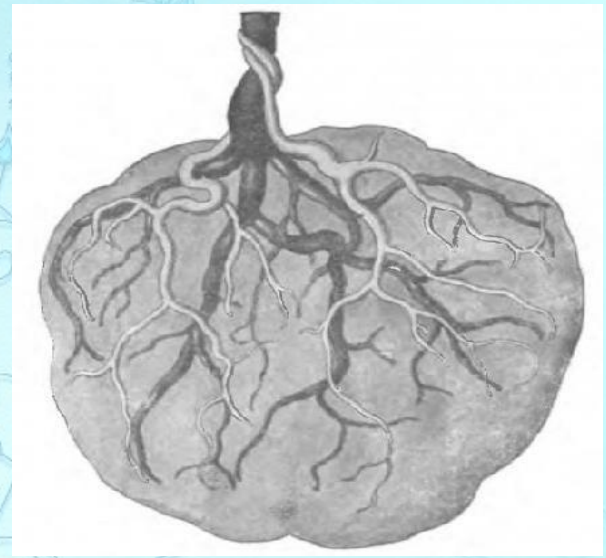
Наследственные заболевания

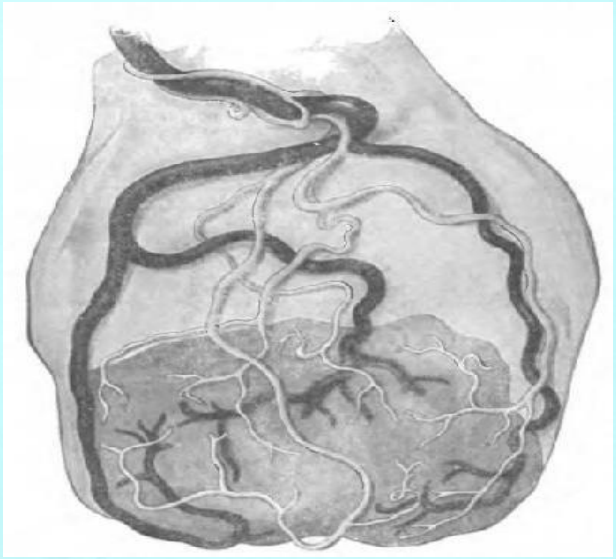
- генетически обусловленные заболевания, унаследованные по аутосомно-доминантному или аутосомно-рецессивному типу, а также связанные с полом;
- к ним относятся:

- **муковисцедоз** – заболевание, унаследованное по аутосомно-рецессивному типу; обусловлено мутацией гена, расположенного на длинном плече 7-й хромосомы;
- **гемоглобинопатии** (серповидно-клеточная анемия и талассемия) – наследуются по аутосомно-рецессивному типу.

Аномалии пуповины

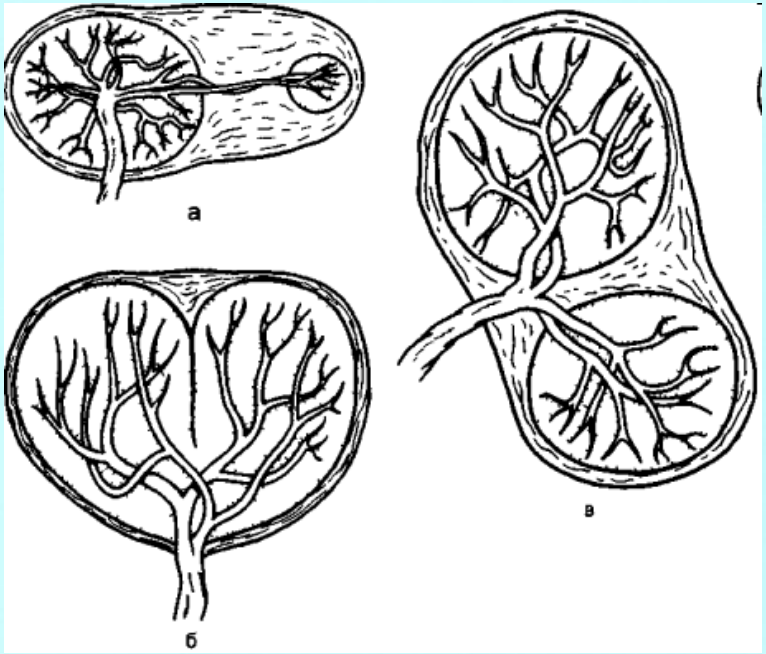
- Неправильное развитие сосудов (единственная артерия пуповины, третья артерия пуповины, аневризмы, атипичные анастомозы, артериальные узлы и др.);
- Изменение длины пуповины (чрезмерно длинная, короткая);
- Образование истинных и ложных узлов пуповины;
- Патологическое прикрепление пуповины (краевое и оболочечное).





Аномалии плаценты

- Увеличение массы плаценты (при сифилисе, иммунологическом конфликте и др.);
- Нарушения формы (вследствие дистрофических изменений в эндометрии);
- Дополнительные дольки плаценты;
- Плацента из двух частей (placenta bipartiata);
- Окончатая плацента (placenta fenestrata);
- Бобовидная, подковообразная, поясообразная плацета.



- а – плацента с добавочной долькой;
- б – плацента из двух частей;
- в – удвоение плаценты.

Маловодие

- состояние, при котором количество околоплодных вод составляет менее 0,5 л;
- обусловлено снижением секреторной функции амниотического эпителия, агенезией почек плода, поликистозом почек, задержкой развития плода;
- при маловодии часто наблюдается невынашивание беременности, болезненные ощущения во время шевеления плода, затяжные роды, медленное раскрытие шейки матки, иногда – преждевременная отслойка плаценты;
- со стороны плода возможно ограничение его подвижности, задержка развития, искривление позвоночника, сращения между кожей плода и амнионом.

Многоводие

- состояние, характеризующееся чрезмерным накоплением околоплодной жидкости – более 1,5 л;
- **<u>этиологическими факторами</u>** являются:

✓ со стороны матери: вирусные инфекции, сахарный диабет;

✓ со стороны плаценты и амниона: чрезмерная продукция или медленное всасывание околоплодной жидкости амниотическим эпителием, хорионангиома, артериовенозный свищ;

✓ со стороны плода: многоплодная беременность, пороки развития плода.

- **<u>осложнениями беременности</u>** при многоводии являются:

✓ неправильное положение плода;

✓ одышка у беременной в связи с высоким стоянием диафрагмы;

✓ преждевременные роды.

- **<u>осложнения в родах</u>**:

✓ слабость родовой деятельности вследствие перерастяжения матки;

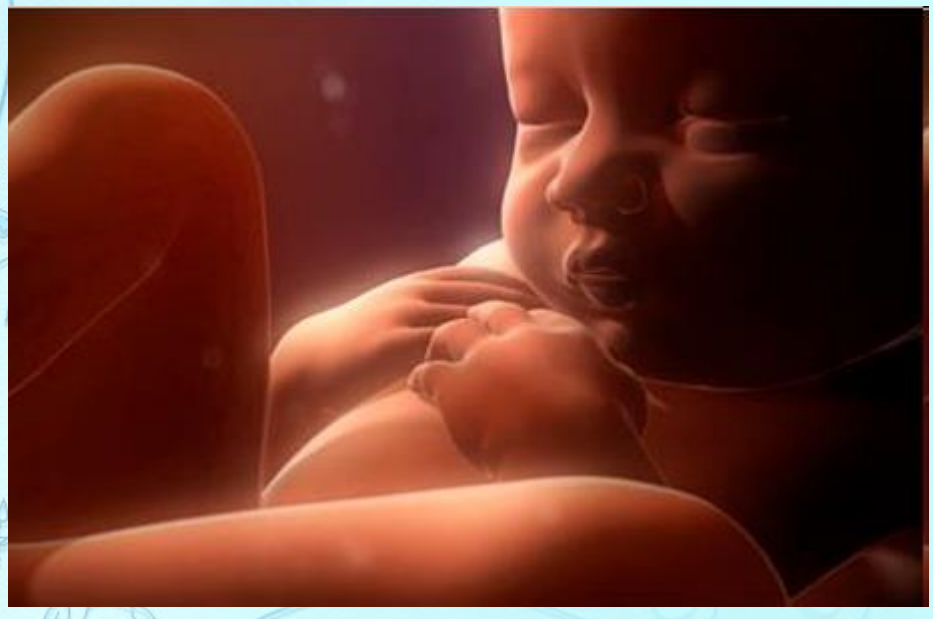
✓ преждевременное излитие вод, которое может сопровождаться выпадением петель пуповины и мелких частей плода;

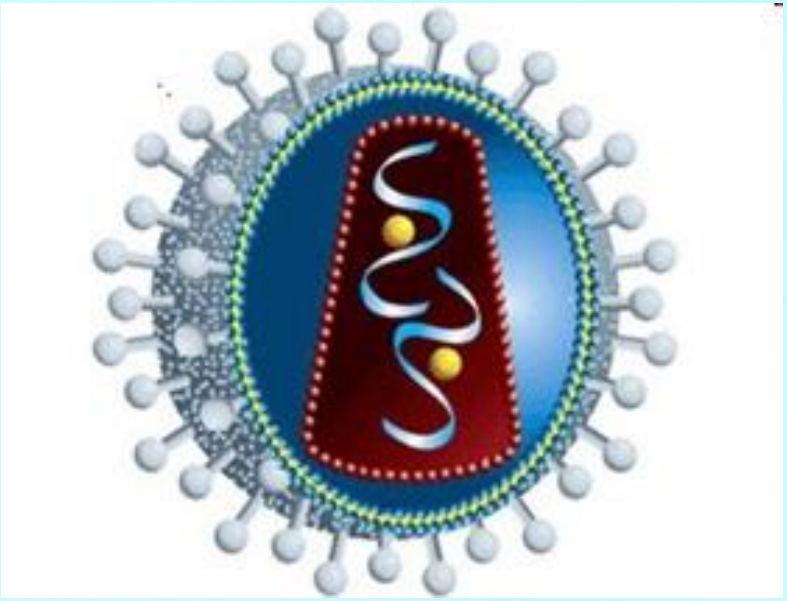
✓ преждевременная отслойка плаценты;

✓ гипотоническое кровотечение в раннем послеродовом периоде.

Перинатальные инфекции

- это заболевания плода или новорожденного в результате гематогенного (трансплацентарного), амниального, восходящего или нисходящего инфицирования в поздний фетальный период (после 22-й недели беременности) и клинически проявляющиеся в ранний неонатальный период.





- различают понятия:

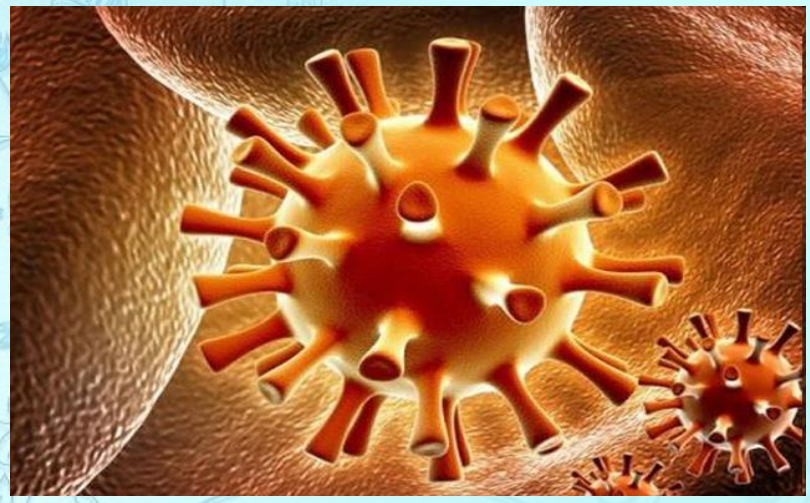
✓ **внутриутробное инфицирование** – это инвазия возбудителя инфекции в организм плода, что не всегда приводит к развитию патологических изменений;

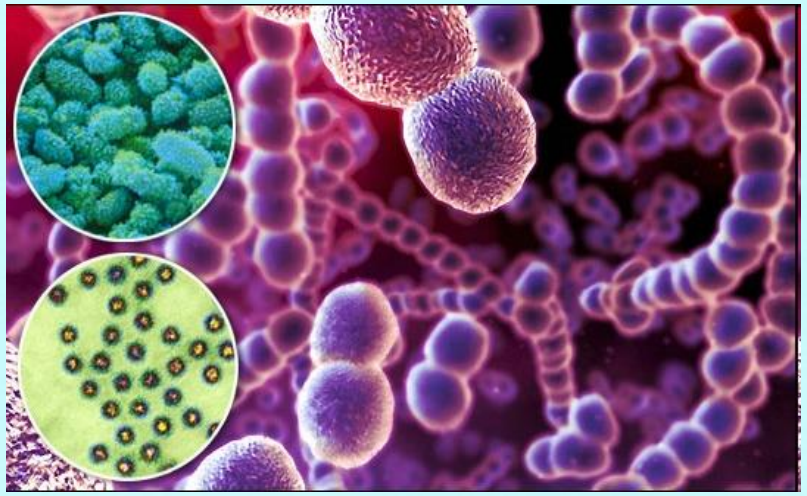
✓ **внутриутробная инфекция** – заболевание плода, возникшее инвазии возбудителя инфекции, или инфекционное поражение новорожденного.

- поражение плода сопровождается формированием врожденных аномалий развития или специфического симптомокомплекса (ЗВУР, гидроцефалия, кальцификаты мозга, гепатоспленомегалия, желтуха тяжелой степени.

Этиология

- перечень безусловных возбудителей довольно большой и включает десятки видов практически всех классов организмов – от вирусов до простейших и грибов;
- в структуре антенатальной смертности в результате внутриутробного инфицирования 27,2% случаев приходится на вирусную инфекцию, 26,3 – на смешанную и 17,5% – на бактериальную.





- в 1971 г. была выделена группа инфекций, которые, несмотря на выраженные отличия в структуре и биологических свойствах возбудителей, характеризуются подобными клиническими симптомами и вызывают у плода стойкие структурные дефекты разных органов и систем, наиболее тяжелыми среди которых являются поражения ЦНС. Для обозначения этой группы была предложена аббревиатура **TORCH**.
- **T** – токсоплазмоз;
- **O** (others) – другие инфекции (гепатит В и С, сифилис, хламидиоз, микоплазмоз, гонококковая инфекция, листериоз; недавно в этот перечень включили ВИЧ-инфекцию, ветряную оспу, энтеровирусную инфекцию);
- **R** – краснуха (рубеола);
- **C** – цитомегаловирус;
- **H** – вирус герпеса.

Несмотря на широкий спектр микроорганизмов, все внутриутробные инфекционные процессы имеют общие признаки:

- латентное или стертое течение, что значительно затрудняет диагностику, особенно при внутриклеточной локализации возбудителя (хламидии, микоплазмы, вирусы и др.) и не позволяет своевременно начать этиотропную терапию;
- активация латентно персистирующей инфекции возможна при любом нарушении гомеостаза у беременной (анемия, гиповитаминоз, физическая или психоэмоциональная нагрузка, стресс, декомпенсация экстрагенитальных заболеваний неинфекционного генеза.

Общими также являются неблагоприятные последствия перинатальных инфекций во время беременности:

- задержка внутриутробного развития плода;
- преждевременные роды;
- врожденные пороки развития;
- перинатальные потери;
- острые и персистирующие инфекции у новорожденных;
- бессимптомные инфекции с поздними клиническими проявлениями;
- инвалидность с детства.

Плацентарная недостаточность

- это комплекс нарушений функций плаценты (транспортной, трофической, эндокринной, метаболической), обусловленных морфофункциональными изменениями в ней и нарушениями маточно-плацентарного кровообращения.

Факторы риска развития ПН

- возраст младше 17 и старше 35 лет;
- неблагоприятные социально-бытовые условия (недостаточное питание);
- токсическое и радиационное воздействие окружающей среды;
- вредные привычки (курение, алкоголизм, наркомания);
- инфекционные заболевания (TORCH-инфекции);
- экстрагенитальные заболевания (нейроэндокринные нарушения, гипертензия, заболевания почек и др.);
- гинекологические заболевания (опухоли матки, хронические воспалительные процессы эндометрия);
- неблагоприятный акушерско-гинекологический анамнез;
- осложнения беременности (ранние гестозы, угроза прерывания беременности, многоплодие, преэклампсия, анемия, иммунологический конфликт и др.)

Классификация плацентарной недостаточности

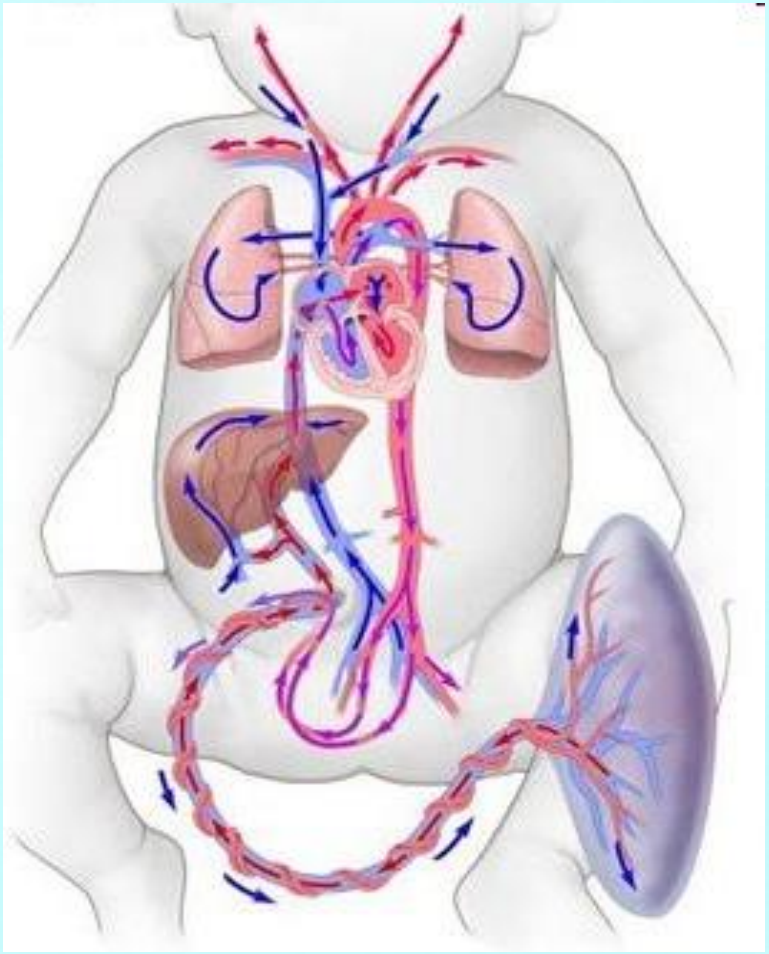
- **1. Формы:**
- ✓ плацентарно-мембранная;
- ✓ клеточно-паренхиматозная;
- ✓ гемодинамическая.
- **2. В зависимости от времени возникновения:**
- ✓ первичная;
- ✓ вторичная.
- **3. По клиническому течению:**
- ✓ острая;
- ✓ хроническая.
- **4. Стадии микрогемоциркуляторных нарушений в плаценте:**
- ✓ компенсированная;
- ✓ субкомпенсированная;
- ✓ декомпенсированная.

Развитие плацентарной недостаточности приводит к:

- дистресс-синдрому плода;
- задержке внутриутробного развития плода;
- патологическим состояниям и заболеваниям новорожденного.

Дистресс-синдром плода

- это недостаточное снабжение кислородом тканей и органов плода или неадекватная утилизация кислорода, приводящие к задержке роста плода, поражению его ЦНС, нарушениям сердечной деятельности вплоть до внутриутробной гибели.



Классификация

- **1. В зависимости от длительности:**

✓ острый;

✓ хронический.

- **2. В зависимости от интенсивности:**

✓ функциональный;

✓ метаболический;

✓ деструктивный.

- **3. По механизму развития:**

✓ гипоксический;

✓ циркуляторный;

✓ гемический;

✓ тканевой.

Диагностика

- в начальной стадии беременная отмечает учащение и усиление двигательной активности плода. При прогрессирующем длительном процессе движения плода ослабляются вплоть до их прекращения. Уменьшение числа движений плода до 3 и менее в течение 1 ч указывает на внутриутробное страдание плода и служит показанием к срочному дополнительному обследованию.
- диагностика дистресса основывается на оценке функционального состояния плода с использованием дополнительных методов (кардиотокография, эхография, допплерометрия кровотока в системе мать-плацента-плод, определение биофизического профиля плода, кислотно-основное состояние пуповинной крови плода, полученной путем кордоцентеза).

Основными направлениями терапии плацентарной недостаточности и дистресса плода являются:

- назначение спазмолитиков и дезагрегантов;
- лечение сопутствующих заболеваний беременной;
- поэтапное динамическое наблюдение за состоянием плода.

Показания к экстренному родоразрешению путем кесарева сечения:

- критические изменения кровотока в артериях пуповины (нулевой, реверсный);
- острый дистресс-синдром плода (брадикардия и децелерации ЧСС по данным КТГ) независимо от типа кровотока в артериях пуповины;
- патологический БПП (4 балла и менее) при отсутствии биологической зрелости шейки матки;
- наличие густого мекония в амниотической жидкости в сочетании с патологическими изменениями сердечного ритма плода.

Синдром задержки внутриутробного развития плода

- это замедление роста и развития плода, которое проявляется при рождении ребенка с недостаточной массой тела и низкими морфологическими показателями зрелости относительно гестационного возраста.

Факторы риска возникновения ЗВУР:

- **медицинские:**
- ✓ хроническая артериальная гипертензия;
- ✓ сахарный диабет;
- ✓ системные заболевания соединительной ткани;
- ✓ тромбофилия;
- ✓ заболевания почек;
- ✓ преэклампсия;
- ✓ многоплодная беременность;
- ✓ кровопотеря во время беременности;
- ✓ аномалии пуповины и расположения плаценты;
- ✓ перинатальные инфекции;
- ✓ ЗВУР в анамнезе;
- ✓ хромосомные и генетические нарушения;
- ✓ применение лекарственных препаратов;
- **социально-экономические:**
- ✓ неполноценное питание;
- ✓ курение, употребление алкоголя, наркотиков;
- ✓ загрязнение окружающей среды;
- ✓ профессиональные вредности.

Классификация ЗВУР

- **симметричная форма** – масса и длина плода уменьшены пропорционально;
- **асимметричная форма** – уменьшение массы плода при нормальных показателях длины его тела.

По данным УЗИ выделяют три степени тяжести ЗВУР:

- **I степень** – отставание параметров фетометрии на 2 недели от срока беременности;
- **II степень** – отставание на 3-4 недели от срока беременности;
- **III степень** – отставание более чем на 4 недели.

Принципы лечения ЗВУР:

- Лечение заболеваний беременной, приводящих к возникновению данного синдрома.
- При нормальных показателях биофизических методов диагностики состояния плода возможно амбулаторное наблюдение и пролонгирование беременности.

Госпитализация беременной в акушерский стационар осуществляется при:

- Патологическая или сомнительная оценка БПП;
- Замедленный диастолический кровоток в артериях пуповины;
- Критические изменения кровотока в артериях пуповины.

К досрочному родоразрешению прибегают при:

- Ухудшению показателей плодового кровотока после 30-й недели беременности;
- В сроке беременности до 30 недель, учитывая глубокую функциональную незрелость плода и высокую вероятность перинатальных потерь, вопрос о способе родоразрешения решается индивидуально в зависимости от акушерской ситуации и согласия проинформированной беременной.