

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

PERIODS OF THE CHILDREN'S LIFE

Methodical recommendations
for the students of IIIrd course of the medical faculty

Kharkiv – 2018

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*Approved to the print by the decision of Scientific and Methodological Council
V. N. Karazin Kharkiv National University
(protocol № 5 from 24.04.2018)*

P 26 Periods of the children's life : methodical recommendations for the students of IIIrd course of the Medical Faculty / compilers M. O. Bugaevska, T. V. Zimnytska. – Kharkiv : V. N. Karazin Kharkiv National University, 2018. – 20 p.

Methodical recommendations is worked out on the basis of Programs of discipline «Propedeutics of pediatrics» for students of higher medical educational institutions of III-IV levels of accreditation, authorized by Ministry of Health of Ukraine. This recommendation is intended for English-speaking medical students of the IIIrd year.

УДК 613.95+616-053.2(0.72)

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INTRODUCTION

The organism of the child has a number of anatomophysiological features, that undergo age-related changes throughout the entire period of childhood. The approach to the evaluation of those or other characteristics of children with norms established for adults and only reduced in proportion to the age of the examined child, its weight or height, is completely wrong. We can't also talk about "norms" for children in general, without differentiating them in the age range. For example, the pulse, respiratory rate, blood pressure figures, leukocyte formula, digestive enzyme activity indices, etc., characteristic of healthy infants, should be regarded as clearly pathological for children of older ages. For the same impact, young children react quite differently than older children.

That is why further scientific achievements of pediatrics and the success of practical work of each child's doctor are possible only when assessing the dynamics of anatomical, physiological, reactive and other features of a healthy and sick child, depending on his age.

The reasons for the division of human ontogenesis into periods in childhood are: constant growth and development of the child, anatomical and physiological, functional and psychological signs in the child's body during different days, months and years of his life.

1. DISTRIBUTION OF CHILDHOOD FOR PERIODS

The periods of a child's life are divided into two stages. Intrauterine (prenatal) period, in which the following stages are distinguished: a) germinal stage, b) embryonic stage, c) fetal stage. Extra uterine (postnatal) period is divided into: a) neonatal period, b) breast-feed (infant's) period, c) pre- preschool (toddler's) period, d) preschool period, e) junior school period, f) senior school (adolescence) period, which consists from three following periods: prepubescent, pubescent, postpubescent.

In medical practice three more terms are widely used: antenatal (prenatal) period (antenatal or prenatal anamnesis) – is that of the whole period of pregnancy; perinatal period (perinatal anamnesis) – which include late fetal, intranatal and early neonatal periods together (from 28th weeks of intrauterine development till 7th day of life; postnatal period (postnatal anamnesis) – from birth till 18 years (table № 1).

Table № 1

Periods of the children's life

		Intrauterine period (40 weeks)		Extra uterine period (from birth-18 years)									
Germinal stage (0-2 weeks)	Embryonic stage (3-8 weeks)	Phase of placental development (9-40 weeks)		Intranatal period (2-20 hours)	Neonatal		Brest-feeding 29 th days – 1 year)	Pre-preschool (1-3 years)	Preschool (3-6 years)	Junior school (girls 6-10 years, boys 6-12 years)	Senior school (12-18 years) adolescence		
		Early fetal stage (9-28 weeks)	Late fetal (after the 28 th week till the beginning of delivery)		Early (1-7 days)	Late (8-28 days)					Prepubescent 10- 12 years (girls); 12-14 years (boys)	Pubescent 12-14 years (girls); 14-16 years (boys)	Postpubescent – 14-18 years (girls); 16-20 years (boys)
Antenatal(Prenatal) period				Perinatal period		Postnatal period							

2. INTRAUTERINE PERIOD OF CHILDREN'S LIFE

Intrauterine (prenatal or antenatal) period continues from fertilization up until birth of child – 270 days (in practice – first day of the last menstrual cycle of the mother – 280 d. (40 wk). It is subdivided into 3 following stages: germinal stage (0–2 week), embryonic stage (2–8 week), fetal stage: early (9–28 week) and late (28–40 week).

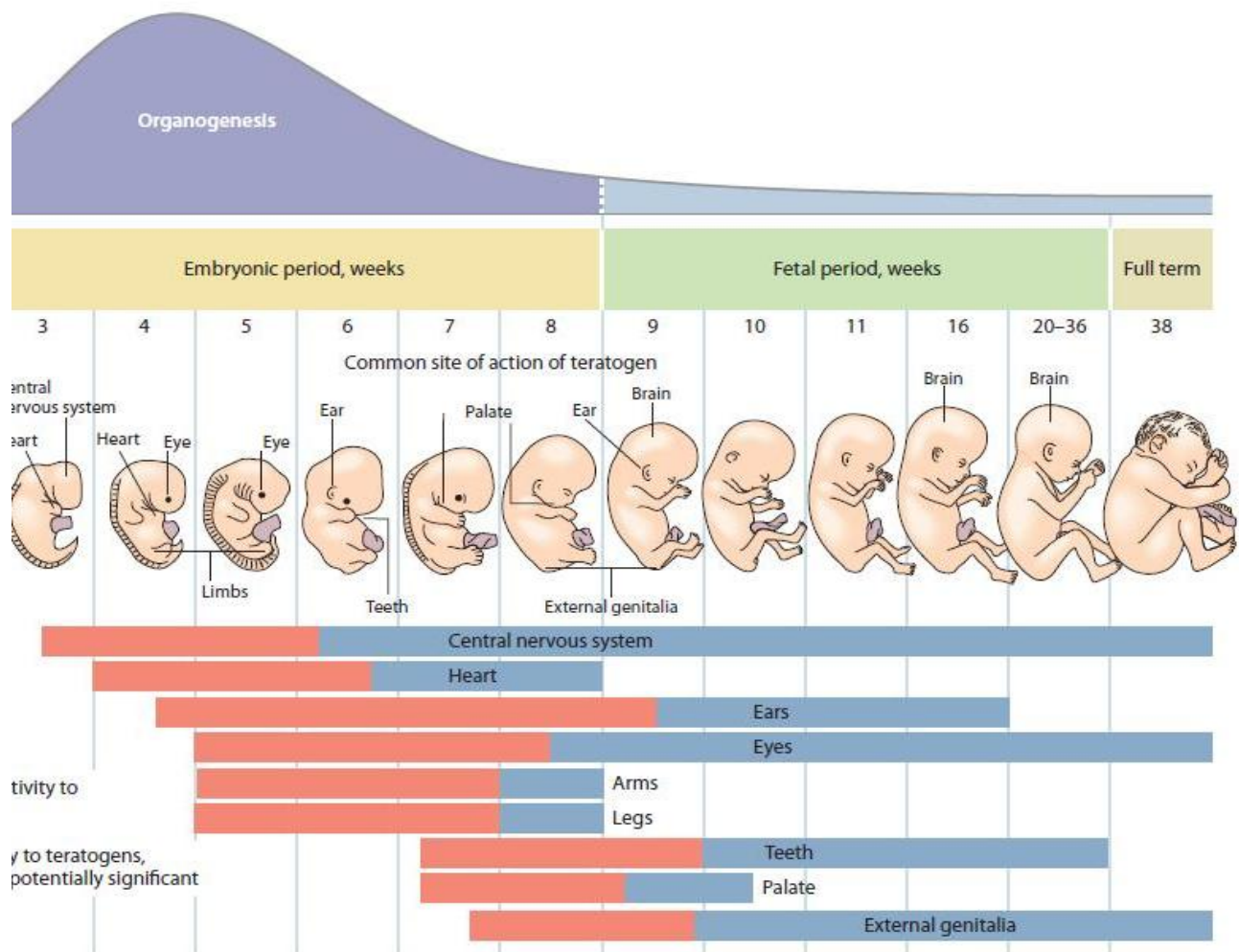


FIGURE 3.5

<http://slideplayer.com/slide/6248998/>

Germinal stage

Conception occurs when the female egg (ovum) is fertilized by the male sperm. Under normal circumstances, one egg is released approximately once a month from a woman's ovary during a process called ovulation. The genetic material of the sperm and egg then combine to form a single cell called a zygote and the germinal stage of prenatal development commences.

The zygote soon begins to divide rapidly in a process called cleavage, first into two identical cells called *blastomeres*, which further divide to four

cells, then into eight, and so on, the blastocyst is formed. At this stage the blastocyst consists of 200 to 300 cells and is ready for implantation. The process in which the blastocyst implants into the uterine wall is called implantation. It marks the beginning of the embryonic stage.

Embryonic stage

The embryonic stage begins after implantation and lasts until eight weeks after conception. Soon after implantation, the cells continue to rapidly divide and clusters of cells begin to take on different functions (called differentiation). A process (gastrulation) leads to the formation of three distinct layers called germ layers: the ectoderm (outer layer), the mesoderm (middle layer), and the endoderm (inner layer). As the embryo develops, each germ layer differentiates into different tissues and structures.

Some of the major events that occur during the embryonic stage are as follows:

- Week 3: Beginning development of the brain, heart, blood cells, circulatory system, spinal cord, and digestive system;
- Week 4: Beginning development of bones, facial structures, and limbs (presence of arm and leg buds); continuing development of the heart (which begins to beat), brain, and nervous tissue;
- Week 5: Beginning development of eyes, nose, kidneys and lungs; continuing development of the heart (formation of valves), brain, nervous tissue, and digestive tract;
- Week 6: Beginning development of hands, feet, and digits; continuing development of brain, heart, and circulation system;
- Week 7: Beginning development of hair follicles, nipples, eyelids, and sex organs (testes or ovaries); first formation of urine in the kidneys and first evidence of brain waves;
- Week 8: Facial features more distinct, internal organs well developed, the brain can signal for muscles to move, heart development ends, external sex organs begin to form.

By the end of the embryonic stage, all essential external and internal structures have been formed. The embryo is now referred to as a fetus.

When an embryo becomes a fetus at eight weeks, it is approximately 3 centimeters (1.2 inches) in length from crown to rump and weighs about 3 grams (0.1 ounce). By the time the fetus is considered full-term at 38 weeks gestation, he or she may be 50 centimeters (20 inches) or 3.3 kilograms (7.3 pounds). Although all of the organ systems were formed during embryonic development, they continue to develop and grow during the fetal stage.

Early fetal stage

Weeks 9–12: The fetus reaches approximately 8 cm. (3.2 in.) in length; the head is approximately half the size of the fetus. External features such as the face, neck, eyelids, limbs, digits, and genitals are well formed. The beginnings of teeth appear, and red blood cells begin to be produced in the liver. The fetus is able to make a fist;

- Weeks 13–15: The fetus reaches approximately 15 cm. (6 in.) in length. Fine hair called lanugo first develops on the head; structures such as the lungs, sweat glands, muscles, and bones continue to develop. The fetus is able to swallow and make sucking motions;

- Weeks 16 – 20: The fetus reaches approximately 20 cm. (8 in.) in length. Lanugo begins to cover all skin surfaces, and fat begins to develop under the skin. Features such as finger and toenails, eyebrows, and eyelashes appear. The fetus becomes more active, and the mother can sometimes begin to feel fetal movements at this stage;

- Weeks 21–24: The fetus reaches approximately 28.5 cm. (11.2 in.) in length and weighs approximately 0.7 kg (1 lb. 10 oz.). Hair grows longer on the head, and the eyebrows and eye lashes finish forming. The lungs continue to develop with the formation of air sac (alveoli); the eyes finish developing;

- Weeks 25–28: The fetus reaches approximately 38 cm. (15 in.) in length and weighs approximately 1.2 kg (2 lb. 11 oz.). The next few weeks mark a period of rapid brain and nervous system development. The fetus gains greater control over movements such as opening and closing eyelids and certain body functions. The lungs have developed sufficiently that air breathing is possible.

Late fetal stage

- Weeks 29–32: The fetus reaches approximately 38–43 cm. (15–17 in.) in length and weighs approximately 2 kg (4 lb. 6 oz.). Fat deposits become more pronounced under the skin. The lungs remain immature but breathing movements begin. The fetus's bones are developed but not yet hardened;

- Weeks 33–36: The fetus reaches approximately 41–48 cm. (16–19 in.) in length and weighs 2.6–3.0 kg (5 lb. 12 oz. to 6 lb. 12 oz.). Body fat continues to increase, lanugo begins to disappear, and fingernails are fully grown;

- Weeks 36–38: The fetus reaches 48–53 cm. (19–21 in.) in length is considered to be full-term by the end of this period. Lanugo has mostly disappeared and is replaced with thicker hair on the head. Fingernails have grown past the tips of the fingers. In a healthy fetus, all organ systems are functioning.

3. PATHOLOGICAL CONDITIONS THAT ARE FORMED AT DIFFERENT STAGES OF INTRAUTERINE DEVELOPMENT

Factors of congenital anomalies genesis

Approximately 10–15 % of congenital anomalies genesis are associated with chromosomal aberrations or originate in gene mutations. Great importance is also due to environmental factors (teratogens) 10–15 %.

In most cases, multifactor causes and unknown factors (70–80 %). Among the teratogenic factors, the harmful environmental elements, the use of certain medicines by a pregnant woman, are important. Smoking during pregnancy is linked to low birth weight, which can result in a weakened immune system, poor respiration, and neurological impairment. The alcohol use can lead to fetal alcohol syndrome, which is linked to heart defects, body malformations, and mental retardation. The use of illicit psychoactive drugs such as cocaine and methamphetamine is also linked to low birth weight and neurological impairment. There are a number of maternal diseases that can negatively impact the fetus, including herpes, rubella, and AIDS, cytomegaly virus and the toxoplasmosis parasite (*Toxoplasma gondii*). Teratogenic factors also include ionizing radiation.

The sensitivity of the fetus to damage causing factors changes during its development. The first trimester of gravidity is the time, when the embryo is highly sensitive to teratogens, while in the second and third trimester (with organogenesis practically finished) the sensitivity decreases. This means that the sooner the damage occurs, the more serious the consequences are. The co-called critical stage of the fetus is from the 3rd to the 9th week of gestation. Critical stages of the organs are specific for each organ and slightly vary from one another. For the central nervous system and cardiovascular systems, the 3-6th week of gestation is considered critical;

for the sensory organs – eyes and ears – 4-9th week of gestation; for the limbs- from the end of 4th week to the middle of 8th week of gestation; for palate and teeth – 6-8th week of gestation; for external genitalia – 7-9th week of gestation.

Pathologic conditions formed in a period of progenesis are called gametopathy. If this occurs during blastogenesis, it is called blastopathy, during embryogenesis – embryopathy, during fetogenesis – fetopathy.

Gametopathy

Gametopathy is an injury of ovum and sperm during ovo- and spermatogenesis until fertilization. Gametopathy occurs in gene mutations,

chromosomal aberrations. At present about 150 autosomal recessive genetic defects and 200 defects with autosomal dominant inheritance are known. There are also defects connected with sex X chromosome.

The most frequent examples of gametopathy: Down syndrome, Klinefelter syndrome and its variants, Turner syndrome, Patau syndrome, Edwards syndrome, triploidy.

Down syndrome is characterized by intrauterine growth retardation, mental retardation, short stature, obesity, high relative risk of acute leukemia in the first 5 years of life, immunodeficiency, increased risk of bacterial pneumonia, congenital heart diseases, which is the main cause of early. Macroscopic appearance of children with Down syndrome: brachycephaly, microcephaly, flattened occiput, flat face, upslanting palpebral fissures, epicanthic folds, small nose with broad and flat nasal bridge, open mouth with protruding tongue, slightly abnormal ears, fifth finger clinodactyly, single palmar crease(simian crease), mongoloid face. Children with Down syndrome may have hypoplasia of the thymus, brain damage, gastrointestinal system malformations: duodenal atresia, umbilical hernia.

Turner syndrome is characterized by prominent edema over the dorsum of the hands and feet; nuchal cystic hygroma; pulmonary hypoplasia in some cases. Macroscopic appearance: broad webbed neck, broad chest with increased internipple distance, low hairline, swollen hands and feet in a newborn. The defeat of cardiovascular system is observed in 20 % of cases, mainly coarctation of the aorta; aortic valvular stenosis, hypoplastic left heart syndrome. Kidney defeat: horseshoe kidney. Ovarian defeat: gonadal dysgenesis – the follicles progressively disappear after 16 weeks of gestation and ovaries of a term infant are completely fibrotic without follicles. The main symptoms in late childhood and adolescence: short-stature; in girls the primary amenorrhea, infertility. Boys have female habitus, normal intellect.

Blastopathies and embryopathies

Blastopathies occur during the first 2 weeks from the moment of fertilization (germinal stage).

The most frequent are twin monstrosity, diplopagus (symmetrical accretion of twins), heteropagus (one of the twins is underdeveloped). Teratomas are also considered to be as asymmetric monsters.

Embryopathy is the pathology developed within the period of 3–9 weeks. According to the WHO, their frequency is 1.3 %. It has increased up to 7 % recently. Types of embryos may be as follows:

- absence of any organ or part of the body (agenesis, aplasia, acrania, anencephalia);

- underdeveloped organ (hypoplasia of lungs, thymus, chondrodystrophy);
- overdeveloped organ (hyperplasia of thymus, adrenal glands);
- changes in the shape of the organ (double stomach, ball-like heart);
- changes in the organ localization (dextrocardia);
- preserved embryonic organ.

Among *CNS defects* there are: anencephalia (absence of brain substance); acrania (absence of the bones of cranial vault); microcephalia (hypoplasia of the brain); congenital hydrocephalia; cyclopia.

Main *congenital heart defects*: defect of interventricular septum; defect of interatrial septum; absence of interventricular or interatrial septum: three-chamber heart; common arterial trunk; complete transposition of the main vessels; stenosis and atresia of pulmonary artery; stenosis and atresia of aorta; open Botallo's duct; Fallot's triad, tetrad, pentad.

Diabetic embryopathy is characterized by combined defects, the so-called VACTERL association (V (Vertebral anomalies) – 70 %), A (Anal atresia 55 %), C (Cardiovascular anomalies 75 %), TE (Tracheo-esophageal fistula) – 70 %), R (Renal defects 50 %) – agenesis, dysplasia, hydronephrosis; L (Limb defects 70 %), hypoplasia of thumb or radial bone, polydactylia, synductylia). Teratogenic effect of diabetes mellitus occurs during the critical period (2 to 6 weeks after conception). The exact cause of the teratogenic effect is not known. Specialized preconceptional and prenatal care with strict glycemic control reduce the likelihood of congenital defects.

Fetopathy

The main non-infectious fetopathies are hemolytic neonatal diseases, diabetic fetopathy, macrosomia.

Diabetic fetopathy presents as fetal macrosomia in the 3rd trimester of gestation. The accelerated growth (exactly fetal obesity) results from fetal hyperinsulinemia when more glucose and other nutrients reach the fetus. The birthweight is greater than 4000g. Fat is stored preferentially in the abdominal and interscapular region, abdominal and shoulder circumference is increased. Complications during labor are common and there is an increased risk of birth injury and asphyxia. The early postnatal period complications include: transient hypoglycemia; transient hypertrophic cardiomyopathy with subaortic stenosis, congestive heart failure; polycythemia; hyperbilirubinemia; respiratory distress syndrome.

Alcoholic fetopathy. This is a combination of various mental and physical defects in a child that is congenital and incurable. The reason for its development is alcohol consumption by a pregnant woman. The most

common manifestation is a violation of mental development, prenatal or postnatal growth and body weight deficiency, specific features of the facial and skull structure (broad flat bridge of nose, small eye slits, microcephaly, epicanthus, jaw hypoplasia, micrognathia, cleft palate).

Cytomegalovirus infection. Generalized form of infection develops in the newborns. DNA-containing virus enters the organism of the fetus from the mother through the placenta. Generalized infection in children is characterized by CNS involvement, which is not observed in acquired cytomegaly. Encephalitis with formation of cytomegalic cells, perivascular infiltration and calcinosis foci in the subependymal zone is observed in children. These phenomena cause hydrocephalia. Cytomegalic cells can be found in the lungs, kidneys, liver, intestine, pancreas, adrenal gland, thymus. Hemorrhages and necroses can also be observed in these organs. The disease lasts several days (sometimes weeks). It ends with death caused by damage to vitally important organs.

Congenital toxoplasmosis. It is a disease caused by toxoplasma. It develops as a result of hematogenic transfer from the mother's organism. The source of human infection is dogs and cats. After teratogenic exposure there is an embryopathy that is incompatible with life.

Congenital rubella. This is a viral infection in which the newborn was infected by the mother during pregnancy. The manifestations include multiple congenital malformations that can lead to death of the child. In congenital rubella, the most common occurrence is the triad of anomalies of development (triad Gregg), which includes cataracts, heart defects and deafness. However, other, quite diverse developmental disorders (brain damage with mental retardation, microcephaly, convulsive syndrome, glaucoma, microphthalmia, hepatitis, interstitial pneumonia, hemolytic anemia, bone damages) can also be formed.

Fetopathy may be early and late. In early fetopathy, the child has phenomena of brain damage. In late fetopathy, the newborns have marked meningoencephalitis, hydrocephalus, intracranial calcifications, eye damage. In cases of generalization infection can also be detected in other organs such as the lungs, liver, heart, kidneys, adrenal glands and skeletal muscle.

Intranatal period

The intranatal period lasts from 2–4 hours to 18–20 hours (from the uterine contractions till clamping of the umbilical cord). The main pathological conditions that arise during this period are birth trauma with a lesion of the central nervous system, a disturbances of umbilical blood supply, respiratory disorders.

4. EXTRA UTERINE PERIOD OF CHILDREN'S LIFE

Neonatal period

The main characteristic of the neonatal period is the adaptation of the transition from intrauterine life to extrauterine. The transition to postnatal life is accompanied by many changes in physiological, biochemical, immunological and hormonal functions. The states reflecting the process of adaptation to new living conditions are called transitional (borderline, transient, physiological). Border states call these states because they occur on the verge of two periods of life (intrauterine and extrauterine) and under certain conditions can acquire pathological rice, leading to the disease. The transition from one state to another is quite complicated. Border states do not develop in every child, but knowledge of their clinical and paraclinical manifestations, laboratory equivalents is extremely important for the physician. Most studied transitional states of newborns:

- transpiratory hyperventilation and features of the breathing act in the early neonatal period;
- transitory blood circulation;
- transient hyperfunction of the glands of the internal secretion;
- sexual crises;
- transitory loss of the initial body mass;
- transient violation of the thermal balance;
- translational changes of the skin;
- translational hyperbilirubinemia;
- transient bowel catarrh and dysbiosis;
- transitional features of metabolism;
- transitory features of early neonatal hemostasis and hemopoiesis;
- border conditions of newborns associated with the function of the kidneys.

Pathological conditions of the neonatal period:

- Immunologic maternal-fetal incompatibility (Rh-factor, ABO system-hemolytic disease);
- consequences of delivery trauma; asphyxia;
- acquired diseases (sepsis, gastroenteritis, meningitis).

Hemolytic disease of the newborn (HDN). The cause of HDN is rhesus incompatibility of the mother's and fetal blood (Rh-negative mother and Rh-positive fetus). The rhesus factor is located in the erythrocytes of the fetus, it passes through the placenta to the mother's blood and causes anti-

rhesus antibody production. The mother's antibodies destroy the fetal erythrocytes, which leads to an increase in indirect bilirubin and jaundice.

Asphyxia is connected with oxygen deficiency and is characterized by disturbance of respiration and blood circulation. Asphyxia can be caused by various factors causing: disturbance in fetus supply with oxygen (winding round with umbilical cord, nodes of umbilical cord, detachment and presentation of the placenta, maternal diseases), birth injury, respiratory distress.

Pneumopathy is lung disease which occurs as a rule in immature children. The immature lung lacks surfactant which is necessary for spreading the lung during the inspiration and which prevents the lungs collapse during the expiration.

Pneumonia of newborns may occur in uterus (in ante- and intranatal periods) as well as after the birth. The etiology is different. The most frequent are coccus pneumonias, *Kiebsiella*, colon bacillus. The disease often develops against a background of amniotic fluid aspiration both infected and not infected.

Newborn injuries are caused by the condition of the fetus and by the state of maternal passages, the course of the delivery.

Cephalohematoma is hemorrhage under the periosteum of the cranial bones. It is always localized in one bone. It disappears slowly. When infected, it may become a source of purulent meningitis.

The most severe intracranial injury is hemorrhage to the meninges and brain substance.

Breast-feeding period (infant)

This period (29 day to 1 year of life) is characterized by intensive growth and the development of the child.

Infants double their weight at the age of six month and triple by the end of first year of life and increased the body high by 25 cm. Psychomotor development is characterized by the gradual disappearance of unconditioned reflexes, the formation of motor, static, sensory functions, the beginning of the development of speech. Also in this period occurs the formation of skeletal system, eruption of milk teeth.

Pathological conditions of the breast-feeding period:

The most common pathological conditions are disorders of physical development and nutrition.

Hypothrophy (protein-energy insufficiency) is a chronic nutritional disorder that is associated with malnutrition and is characterized by

slowing the increase in body weight relative to height, progressive decrease in subcutaneous tissue, change in body proportions, metabolism, weakening of immunity, delayed physical and neuro-mental development.

Hypostature is a chronic nutritional disorder characterized by identical lag in growth and body weight with a satisfactory state of subcutaneous fat and turgor of tissues. It occurs in children of the first year of life in comparison with average normative parameters for corresponding age who suffer from congenital heart defects, defects in the development of the central nervous system, encephalopathy and endocrine pathology.

Paratropy is a chronic nutritional disorder in young children, characterized by an increased body weight of 10 % or more compared to the average normative, excessive development of subcutaneous tissue.

Rickets is a disease of infants and young children, which is based on a violation of mineral metabolism, primarily phosphorus-calcium, which leads to a disorder in the proper formation of the skeleton and the functions of internal organs and systems.

Atopic dermatitis is a chronic allergic disease that develops in individuals with a genetic predisposition to atopy and is characterized by a relapse, typical skin rash and hypersensitivity to specific (allergens) and nonspecific stimuli.

The course of acute respiratory infections is characterized by fast development and generalization of process, complications, such as acute bronchiolitis, pneumonia.

Acute intestinal infections very quickly lead to dehydration.

Pylorospasm is a disease characterized by functional disorders of the neuromuscular apparatus of the pylorus (the zone where the stomach passes into the duodenum), which leads to its narrowing. It occurs mainly in newborns and infants, manifested by frequent regurgitation and periodic vomiting that occurs soon after the baby is fed. This condition is corrected by diet and medical treatment.

Pyloroshtenosis is a congenital narrowing of the pyloric canal due to malformations (hypertrophy and hyperplasia of the gastric pyloric muscle fibers and thickening of the mucous membrane of the pyloric part or degenerative changes of the intramural nerve cells). Characterized by vomiting (fountain's type) after feeding, rapid weight loss, constipation. Diagnosed in the first weeks of life and requires surgical treatment.

Pre- preschool and preschool periods

Pre- preschool (toddler's) period from 1 to 3 years of life and preschool period from 3 to 6 years of life. At this age the child transits to the adult's diet.

Decrease in speed of the physical development. Actively improve of the functional capabilities of organs and systems. At the age of 5–6, replacement of the teeth with permanent teeth begins. Developing subtle motor skills: the ability to ride a two-wheeled bike, skate, dance, embroider, knit.

A child has a very good memory: it is easy to remember poetry, tell tales, learn another's language.

In the education of a child of this period, a clear organization of educational work at home and in children's groups is of particular importance.

Pathological conditions of pre- preschool and preschool periods

The propensity to generalize the process and toxic reactions is noticeably reduced, but there are allergic diseases, bronchial asthma, obstructive bronchitis, kidney disease (acute pyelonephritis, glomerulonephritis).

Bronchial asthma is a chronic disease characterized by an inflammatory process in the respiratory tract, has a paroxysmal course and is accompanied by bronchial spasms with suffocating attacks.

Acute pyelonephritis is an inflammation of the kidneys of a bacterial origin that affects the kidney parenchyma and the bowl-and-pelvis system and proceeds with high fever, pain, pyuria, and impaired renal function.

Glomerulonephritis is a diffuse kidney disease, develops on an immune basis and is primarily localized in the glomeruli. Occurs due to various reasons (often after an infection), usually ends with recovery, but sometimes becomes chronic.

Among the diseases of the gastro-intestinal tract, there is functional dyspepsia, functional disorders of the digestive tract.

Functional dyspepsia is a disease of infants characterized by a digestive disorder that is not associated with organic causes and arises from a discrepancy in the volume and composition of food in the physiological possibilities of the child for its utilization.

High frequency of *infectious diseases* such as chicken pox, measles, rubella, scarlet fever, mumps, acute respiratory viral infections and respiratory diseases. This is due to the high contagiousness of these diseases, as well as the fact that most children of this age attends children's collectives.

Junior and senior school periods

Junior school period lasts from 6 to 10 years for girls and from 6 to 12 years for boys. Characterized by the finishing of the morphological

differentiation of the cerebral cortex cells, especially the motor site, as well as the formation of the peripheral innervations organ. Muscle mass is significantly increasing, motor skills develop, such as speed, agility, strength, endurance.

The primary importance of hormones of the thyroid and sexual glands is noted, therefore endocrine dysfunctions are possible. Milky teeth are completely replaced by permanent teeth.

Develops perseverance, necessary skills are formed, the ability to a long-term goal-oriented activity (mental and physical). The maximum gaming activity falls on this period. The amount of attention and its stability are increasing.

Senior school (adolescence) period lasts from 10–12 to 18 years. It consists from three following periods: prepubescent 10–12 years (girls), 12–14 years (boys); pubescent 12–14 years (girls), 14–16 years (boys); postpubescent 14–18 years (girls), 16–20 years (boys). This is a period of puberty. It is characterized by pronounced rearrangement of the endocrine system and increased growth. In girls, secondary sexual characteristics develop for 1–1.5 years faster than in boys.

Pathological conditions of junior and senior school periods

Among pathological conditions, psychoneurosis, functional disorders of cardiac function (functional cardiopathy, vegetative dysfunction), endocrine gland dysfunction (obesity, nanism, hyperthyroidism) are the most important, which is caused by rapid disproportional growth of the whole body and particular organs, as well as by the instability of the vegetative and endocrine system. In addition, often there are defects in the development of the sexual apparatus (dysmenorrhea, amenorrhea), skeletal disorders (skoliosis), changes on the part of the organ of vision.

Among gastrointestinal diseases, organic lesions are predominantly found (gastroduodenitis, cholecystitis, peptic ulcer and duodenal ulcer).

5. QUESTIONS FOR SELF-CONTROL

1. Periods of the child's age, their characteristics and peculiarities of the pathology in different age periods.
2. Morphofunctional characteristics and peculiarities of intrauterine period of children's life.
3. Basic pathological conditions of embryonic and fetal periods .

4. Factors participating on the congenital anomalies genesis (teratogens), their classification and characteristics.
5. Critical stage of the fetus, critical stages of the main organs and systems.
6. Characteristics and peculiarities of perinatal period, main pathological conditions of this period.
7. Morphofunctional characteristics and peculiarities of postnatal period.
8. Basic pathological conditions of different periods of extra-uterine life.

6. TESTS

1. List all the stages of intrauterine development in the correct order:
 - A Germinal, Early fetal, Embryonic, Late fetal
 - B Germinal, Embryonic, Fetal, Prenatal
 - C Embryonic, Germinal, Early fetal, Late fetal
 - D Germinal, Embryonic, Early fetal, Late fetal
 - E Embryonic, Early fetal, Late fetal, Prenatal

2. List all the periods of extrauterine development in the correct order:
 - A Neonatal, Infant's, Preschool, Junior school, Senior school
 - B Neonatal, Infant's, Toddler's, Preschool, Junior school, Senior school
 - C Breast-feed, Neonatal, Preschool, Junior school, Senior school
 - D Neonatal, Breast-feed, Pre- preschool, Preschool, Senior school
 - E Neonatal, Breast-feed, Infant's, Preschool, Junior school, Senior school

3. What is included in the perinatal period?
 - A Early fetal, Late fetal, Intranatal, Neonatal
 - B Late fetal, Intranatal, Neonatal
 - C Late fetal, Intranatal, Late neonatal
 - D Late fetal, Intranatal, Early neonatal
 - E Early fetal, Intranatal, Late neonatal

4. Early fetal stage of prenatal period lasts:
 - A. From the moment of fertilization up until 2 months
 - B. From the 3-th month up to the end of pregnancy
 - C. From the beginin of the 9-th week up to the end of 28-th week
 - D. After the 28-th week until the child's birth
 - E. From the moment of fertilization to the end of 28-th week

5. What kind of pathology can develop if the teratogenic factor has acted in the first 2 weeks of pregnancy?
 - A. Early fetopathy

- B. Late fetopathy
- C. Embryopathy
- D. Gametopathy
- E. Blastopathy

6. What is the critical stage of the prenatal period?

- A. From the 3rd to the 9th week of gestation
- B. From the moment of fertilization up until 2 months
- C. From the 9th to the 28th week of gestation
- D. From the 28th to the 36th week of gestation
- E. From the 9th to the 12th week of gestation

7. Paratrophy is a disease of following period of childhood:

- A. Senior school period
- B. Breast-feeding
- C. Preschool period
- D. Junior school period
- E. Pre-preschool period

Standards of answers to the tasks: 1D, 2B, 3D, 4C, 5D, 6A, 7B

7. REFERENCE

The main sources of information

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ПЕРІОДИ ДИТЯЧОГО ВІКУ

Методичні рекомендації
для студентів III курсу медичного факультету

(Англ. мовою)

Коректор *І. Ю. Агаркова*
Комп'ютерне верстання *В. В. Савінкова*
Макет обкладинки *І. М. Дончик*

Формат 60x84/16. Ум. друк. арк. 1,23. Наклад 50 пр. Зам. № 59/18.

Видавець і виготовлювач
Харківський національний університет імені В. Н. Каразіна,
61022, м. Харків, майдан Свободи, 4.
Свідоцтво суб'єкта видавничої справи ДК № 3367 від 13.01.2009

Видавництво ХНУ імені В. Н. Каразіна
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