

**ZAPORIZHZHIA STATE MEDICAL UNIVERSITY**  
**DEPARTMENT OF HOSPITAL PEDIATRICS**

**NEONATOLOGY**

**(The collection of Test Tasks on hospital pediatrics for the  
5 th year English-speaking students of medical faculty)**

**ZAPORIZHZHIA – 2016**

УДК: 616-053.31(075.8)=20

ББК: 57.3я71

Н52

**Леженко Г.О., Резніченко Ю.Г., Пашкова О.Є., Гиря О.М.,  
Каменщик А.В., Лебединець О.М., Врублевська С.В.,  
Гладун К.В., Сидорова І.В.**

**НЕОНАТОЛОГІЯ (збірник тестів та ситуаційних завдань для  
самостійної роботи англомовних студентів V курсу медичного  
факультету): навчально-методичний посібник.-на  
англійській мові.-Запоріжжя.-2016.- 148 с.**

**Заклад-розробник:**

Запорізький державний медичний університет

**Рецензенти:**

Завідувач кафедри факультетської педіатрії Запорізького державного медичного університету, доктор медичних наук, професор **Недельська С.М.**

Завідувач кафедри пропедевтики дитячих хвороб Запорізького державного медичного університету, доктор медичних наук, професор **Іванько О.Г.**

Методичний посібник затверджено на засіданні Центральної методичної Ради Запорізького державного медичного університету.

Протокол № 5 від 02.06.2016.

### **Developing establishment:**

Zaporizhzhya State Medical University

### **Compilers:**

The head of hospital pediatric department, medical sciences doctor, professor **Lezhenko G.O.**

Professor of hospital pediatric department, medical sciences doctor, **Reznichenko Y.G.**

Associate professor of hospital pediatric department, medical sciences doctor, **Pashkova O.E.**

Associate professor of hospital pediatric department, medical sciences candidate, **Hyria O.M.**

Associate professor of hospital pediatric department, medical sciences candidate, **Kamenshchyk A.V.**

Assistant professor of hospital pediatric department, medical sciences candidate, **Lebedinets O.M.**

Associate professor of hospital pediatric department, medical sciences candidate, **Vrublevska S.V.**

Assistant professor of hospital pediatric department, medical sciences candidate, **Gladun K.V.**

Assistant professor of hospital pediatric department, medical sciences candidate, **Sidorova I.V.**

### **Reviewers:**

The head of faculty pediatric department of Zaporizhzhya State Medical University, medical sciences doctor, professor, **Nedelska S.M.**

The head of pediatric propedeutics department of Zaporizhzhya State Medical University, medical sciences doctor, professor, **Ivanko O.G.**

The methodical manual is ratified on the meeting of the Central Methodical Council of Zaporizhzhya State Medical University.

Protocol № 5 from 02.06.2016.

## CONTENTS

Introduction		5
Section 1	The features of adaptational period in premature newborn children. Stages of nursing for premature children.	13
Section 2	Asphyxia in neonates.	31
Section 3	Birth trauma of newborns.	49
Section 4	Respiratory distress syndrome, pneumopathies and pneumonias in neonates.	67
Section 5	Hemolytic and hemorrhagic diseases in newborns.	86
Section 6	Intrauterine infections of newborns (TORCH - infections)	106
Section 7	Bacterial infections in newborns	124

## **INTRODUCTION**

### **EXPLANATORY MESSAGE**

#### **1. PURPOSE AND THE TASK OF SUBJECT**

##### **THE GOAL OF THE COURSE:**

A doctor preparation by the profession of “General Medicine” from the section of child's diseases in accordance to professional requirements to the graduating students of medical faculty in the higher medical educational establishments of Ukraine.

##### **THE TASK OF SUBJECT:**

During the hospital pediatrics course for students who studying on “General Medicine” specialty there are 10 lectures will be delivered ( 20 educational hours), and 15 four sentinel practical classes (60 educational hours) will be conducted, 40 educational hours will be selected for independent outclass students work.

During the study there are 2 final intermediate class and the case history passing is conducted that is the students have to write by the diseases of new-born children. In completion of studying course the students pass 2 module tests from the subject of “hospital pediatrics”.

In 9-10 semesters the students of “General Medicine” specialty study the diseases of new-born children, of endocrine and blood systems Teaching of treatment questions is conducted differently for outpatient and hospital stages, for the stages of rehabilitation and clinical supervision.

The important section for the 5-th year students education is the mastering of practical skills on neonatology, children hematology, children endocrinology which are necessary for solving the problems in diagnostics, differential diagnostics, treatment and prophylaxis of above mentioned pathology in children.

The student master these skills during all types of studying in hospital pediatrics course.

The student ought to see any diagnostic or treatment method in action, to know the principles of it, ought to complete it in certain clinical situation, to clarify the obtained results of diagnostic tests or the treatment.

In studying of hospital pediatrics course students must know:

- etiology and pathogenesis of the most widespread diseases of newborn period, haematological and endocrine diseases of child's age, methods of it diagnostics, differential diagnostics, treatment and prophylaxis.
- Features of clinical course in the most widespread diseases of newborn period, haematological and endocrine diseases of child's age, methods of it diagnostics, differential diagnostics, treatment and prophylaxis.

By finishing hospital paediatrics course students must be able:

- to estimate the state of newborn child;
- to care after a newborn child;
- to prescribe nursing regimen for the premature and injured newborns;
- to prescribe the feed for mature and premature newborns;
- to apply the modern methods of diagnostics, treatment, rehabilitation of children in diseases of newborn period, endocrine and hemopoetic systems;
- be able to render the first aid in critical conditions which appear in newborn children in diseases of blood and endocrine system in children.

During a course considerable attention must be paid to basics of first aid in children's critical conditions.

## TABLE OF CONTENTS OF THE PROGRAM

### 2.1. TEMATIC PLAN OF LECTURES ON MODULE 2

№	Topic	Amount of hours
1	The especialities of premature newborns adaptation and the feeding of prematures newborns.	2
2	Asphyxia of newborns. Birth trauma of newborns.	2
3	RDS in newborns.	2
4	Hemolytic disease in newborns	2
5	Bacterial infections in newborns.	2
	Total hours	10

**2.2. THE PLAN OF PRACTICAL CLASSES (SEMINARS) FOR  
STUDENTS STUDYING Specialty “GENERAL MEDICINE”**

Module N 2. Neonatology.

№	Topic	Amount of hours
1	The especialities of adaptation in premature newborns. Organization of nursing and feeding in the premature children.	4
2	Asphyxia in neonates.	4
3	Birth trauma of newborns.	4
4	Respiratory system diseases in newborns	4
5	. Hemolytic and hemorrhagic diseases in newborns.	4
6	Intrauterine infections of newborns, (TORCH - infections)	4
7	Bacterial infections in newborns	4
8	Final module control	4



**2.3. PLAN OF OUTCLASS WORK IN HOSPITAL PEDATRICS FOR THE  
STUDENTS STUDYING SPECIALTY  
“GENERAL MEDICINE”**

#	Topic	Amount of hours
1	Adaptational reaction in newborns	1
2.	Seizures in newbornds. Causes. Urgent aid. Treatment.	2
3.	The anomalies of respiratory system development in newborns.	1
4	Replace blood transfusion operation. Indications. Methodics of conducting. Complications.	1
5.	Congenital syphilis.	1
6.	The features of antibacterial therapy in newborns.	1
7	Patients management and case history writing from the neonatology.	5
8	Preparing to the final module control in neonatology.	5
	In total	20

THE STRUCTURE OF TEST CREDIT TO MODULE N 2.. Neonatology

Topic	Hours of lectures	Hours of classes.	Out-class Preparation	Individual work
<b><i>Semantic module 7. Premature newborns</i></b>				Examination of sick child, Writing and the defending of the educational case report.
1. The especialities of adaptation in premature newborns. Organization of nursing and feeding in the premature children.	2	4	1	
<b><i>Semantic module 8 The most wide-spreaded non-infectious diseases in newborns.</i></b>				
2. Asphyxia in neonates.	1	4	1	
3. Birth trauma of newborns.	1	4	1	
4. Respiratory system diseases in newborns.	2	4	1	
5. Hemolytic and hemorrhagic diseases in newborns.	2	4	1	
<b><i>Semantic module 9. Perinatal infections.</i></b>				
6. TORCH-infections in children.		4	2	
7. Bacterial infections in newborns..	2	4	1	
Patients management and the case report writing.			5	
Final module control		4	5	
<b>In total:</b> ECTS credits - 2,0; hours - 60; 10 of them are lectures. :	10	32	18	

**POINTS DISTRIBUTION FOR THE ASSESMENT OF STUDENTS  
PERFORMANCE. MODULE N 2. Neonatology.**

Module # 2 (maintenance for the estimated activity)	Maximal points are possible
<i>Semantic module 7</i>	
Topic 1. The especialities of adaptation in premature newborns. Organization of nursing and feeding in the premature children.	12
<i>Semantic module 8</i>	
Topic 2. Asphyxia in neonates.	12
Topic 3. Birth trauma of newborns.	12
Topic 4. Respiratory system diseases in newborns	12
Topic 5. . Hemolytic and hemorrhagic diseases in newborns.	12
<i>Semantic module 9</i>	
Topic 6. Intrauterine infections of newborns, (TORCH - infections)	12
Topic 7. Bacterial infections in newborns	12
<b>Individual independent preparation</b> - patients management and writing of case report.	36
<b>Current performance in total:</b>	120
<b>Final module control</b>	80
<b>POINTS IN TOTAL FOR THE MODULE</b>	200

Note: In mastering the topic after the traditional system the points has given to the student as follows: «5» - 20 points, «4» - 16 points, «3» - 12 points, «2» - 0 points.. Maximal amount of points for current educational performance of student are 120. A

student allowed to pass the final module control in terms of performance exhibition according to the requirements of tutorial and in case of obtaining no less than 72 points for current performance during the practical classes. (12 x 6). Final module control is setting off to the student in getting not less than 50 of 80 points.

## **TOPIC: THE FEATURES OF ADAPTATIONAL PERIOD IN PREMATURE NEWBORN CHILDREN. STAGES OF NURSING FOR PREMATURE CHILDREN.**

Premature infants. Etiological factors of prematurity. Physiological features. Morphologic and functional criteria of maturity in premature newborn children. The features of adaptational period in premature newborn children. Differential diagnosis of hyperbilirubinemias. Intrauterine growth retardation: causes, diagnostics, treatment, prophylaxis. Stages of nursing for newborn children, principles of feeding. Emergency in urgent state: hypoglycemia, respiratory failure, enteroparesis, hyperbilirubinemia.

### **I. Actuality of the theme.**

The period of gestation is one of the most important predictors of an infant's subsequent health and survival. In 2004, more than 500,000 infants, or 12.5 percent of all infants, were born preterm, which is considered birth at less than 37 completed weeks of gestation (CDC, 2005a). On the basis of new estimates provided in this report, the annual societal economic burden associated with preterm birth in the United States was in excess of \$26.2 billion in 2005 (this estimate represents a lower boundary). The percentage of preterm deliveries has risen steadily over the last 2 decades. Most of this increase has been among children born at 32 to 36 weeks gestation. In the past, low birth weight has been used as an indicator for preterm birth; however, the present Institute of Medicine (IOM) committee considers low birth weight to be a poor surrogate and has specifically focused its analysis on preterm birth. Compared with infants born at term (37 to 41 weeks of gestation), preterm infants have a much greater risk of death and disability. Approximately 75 percent of perinatal deaths occur among preterm infants (Slattery and Morrison, 2002). Almost one-fifth of all infants born at less than 32 weeks gestation do not survive the first year of life, whereas about 1 percent of infants born at between 32 and 36 weeks of gestation and 0.3 percent of infants born at 37 to 41 weeks of gestation do not survive

the first year of life. The infant mortality rate (IMR) per 1,000 live births for infants born at less than 32 weeks of gestation was 180.9, nearly 70 times the rate for infants born at between 37 and 41 weeks of gestation (Mathews et al., 2002). Advances in medical technologies and therapeutic perinatal and neo including those born when they are as young as a gestational age of 23 weeks. However, surviving infants have a higher risk of morbidity. Neuro-developmental disabilities can range from major disabilities such as cerebral palsy, mental retardation, and sensory impairments to more subtle disorders, including language and learning problems, attention deficit hyperactivity disorder, and behavioral and social-emotional difficulties. Preterm infants are also at increased risk for growth and health problems, such as asthma or reactive airway disease.

Although significant improvements in treating preterm infants and improving survival have been made, little success in understanding and preventing preterm birth has been attained. The complexity of factors that are involved in preterm birth will require a multidisciplinary approach to research directed at understanding its etiologies, pathophysiology, diagnosis, and treatments. However, there are barriers to the recruitment and participation of scientists in these investigations. A critical barrier to research is the demand on clinical researchers in academic centers to provide clinical income and other duties that take them away from research. This necessitates the development of new ways to provide support to allow the time to conduct this important research. The challenge for researchers and clinicians remains to identify interventions that prevent preterm birth; reduce the morbidity and mortality of the mother or the infant, or both, once preterm birth occurs; and reduce the incidence of long-term disability in children in the most comprehensive and cost-effective manner possible.

## II. Classes (pointing of planned mastering level )

1. A student must know (to familiarize):  $\alpha 1$

- About the place of prematurity, small-for-gestational age infants in the structure of intrauterine and perinatal life;
- About statistical information in relation to morbidity, frequencies of complications, lethality, nearest and remote prognosis;
- About history of scientific study and payment of domestic scientists;

2. A student must know ( master):  $\alpha 2$

- the etiology of intrauterine growth retardation and preterm birth;
- the anatomic and physiologic features of premature children ;
- the features of adaptational period in premature newborn children;
- the morphological and functional criteria of maturity in premature newborn children;
- key links of intrauterine growth retardation ;
- clinical classification of intrauterine growth retardation and preterm birth ;
- the classic clinical manifestation of intrauterine growth retardation ;
- laboratory and instrumental diagnosis of intrauterine growth retardation;
- the features of bilirubin metabolism;
- the stages of nursing for newborn children;
- the treatment principles of intrauterine growth retardation;
- the principles of feeding;
- the prophylaxis of intrauterine growth retardation and preterm birth ;
- the emergency in urgent state: hypoglycemia, respiratory failure, enteroparesis, hyperbilirubinemia.

3. A student must seize the skills:  $\alpha 3$

- collection of complaints and anamnesis of disease;
- examination of premature newborn children and children with intrauterine growth retardation;
- formulating and substantiating the preliminary diagnosis;

- determining a laboratory and instrumental examination plan of patient's investigation (to obedience of diagnostics standards);

By the abilities:

- interpreting the result of laboratory and instrumental investigations.
- conducting differential diagnosis among the main syndrome in premature newborn children;
- conducting differential diagnosis among intrauterine growth retardation and intrauterine (fetal) hypotrophy.
- giving recommendations in relation to the patient regimen and diet to the premature newborn children and children with intrauterine growth retardation, taking into account the stage of disease, severity of the state and concomitant pathology;
- completing the treatment plan to premature newborn children and children with intrauterine growth retardation according to the standards taking into account the stage of disease, complications and concomitant pathology.
- rendering first aid in extreme situations and exigent states.
- 

### **III. Aims of personality development (educative aims):**

- A student must learn to adhere to the rules of behaviour and principles of medical etiquette and deontology near a bed patient with premature newborn children and children with intrauterine growth retardation;
- to try to use hands on ability to set a psychological contact with a family of a newborn children;
- to master a sense of professional responsibility for a timely and adequate of skilled medicare.

### **Methodical materials for the class basic stage supporting**



**The questions for the control of primary knowledge level of abilities and skills:**

1. What are the main maternal factors of preterm birth?
2. The birth-weight classification of infants.
3. What are the features of respiratory system in preterm infants?
4. What are the features of temperature regulation in preterm infants?
5. What are the features of circulatory systems?
6. What are the main maternal and placental factors of intrauterine growth retardation?
7. What are the main types of intrauterine growth retardation?
8. To explain the Ballard Score.
9. To explain the method of feeding for LBW infant.
10. When should we use total parenteral nutrition for preterm infants?
11. What kind of prevention of infection for preterm infants do you know?
12. To explain the incubator care for preterm infants.

## Primary tests

1. Preterm birth is
  - A. less than 35 weeks
  - B. less than 36 weeks
  - C. less than 37 weeks
  - D. less than 38 weeks
  - E. less than 39 weeks
  
2. Normal birth weight is
  - A. 4000 and more
  - B. 2500-3999
  - C. less than 2500
  - D. less than 1500
  - E. 1500-2500
  
3. The maternal factors of preterm birth
  - A. maternal anemia
  - B. maternal infections
  - C. incompetence of cervix
  - D. complications of pregnancy
  - E. all listed above
  
4. The maternal causes of low birth weight:
  - A. short stature of mother
  - B. young mother
  - C. smoking
  - D. prime of grand multipara
  - E. all listed above
  
5. The environmental causes of low birth weight:
  - A. racial
  - B. social status

- C. nutritional
- D. geographic
- E. all listed above

6. Problems of IUGR infants:

- A. hypoxia
- B. Meconium aspiration
- C. hypothermia
- D. large brain
- E. all listed above

7. What are the most informative criteria of gestational age estimation after birth of child?

- A. Locating of umbilical ring.
- B. Interrelation between the child's body weight and height .
- C. The sum of points after Dubovitz (or Ballard) score.
- D. Child's weight.
- E. Presence of nail plates.

8. Treatment principles of intrauterine growth retardation:

- A. insulin therapy
- B. antibiotic therapy
- C. correction breast feeding
- D. correction the function of gastrointestinal tract
- E. all listed above

9. Physiological loss of body weight in infant with very low birth weight:

- A. less than 2 %
- B. more than 15 %
- C. 10-15 %
- D. 16-20 %
- E. 30 %

10. Quantity of milk for premature infant with weight 2000 on 4 day of life is:
- A. 200ml
  - B. 280ml
  - C. 360ml
  - D. 380ml
  - E. 400 ml
11. How do you count the quantity of milk for premature infant during 10 days
- A. 1/5 body weight
  - B. 120 kcal/kg
  - C. Romel's formula
  - D. Phinkelshtain's formula
  - E. all listed above
12. In the case of the 2 stage of prematurity the breast feeding start:
- A. at once
  - B. in 2 h
  - C. in 3 h
  - D. in 9 h
  - E. in 24 h
13. Principles of feeding for 33 weeks age infants
- A. nipple
  - B. stomach pump
  - C. spoon
  - D. breast feeding
  - E. syringe
14. Choose uncharacteristic syndrome for IUGR infants
- A. meconium aspiration
  - B. polycythemia

- C. development delay
- D. spastic syndrome
- E. microcephaly

15. What is the medical treatment in the case of IUGR of the 3 degree

- A. retabolil
- B. fencarol
- C. diazepam
- D. aminocapronic acid
- E. dratoverin

16. The neurologic features for preterm infants:

- A. muscular hypotonia
- B. poor neonatal reflexes
- C. square window wrist 45-90
- D. hypoglycemia
- E. all listed above

17. The medical factors of preterm birth:

- A. severe cardiac illness in the mother
- B. placental dysfunction
- C. isoimmunization
- D. uncontrolled diabetes mellitus
- E. all listed above

18. Choose predisposing factor for IUGR:

- A. history of still birth
- B. history of smoking
- C. bleeding during the pregnancy
- D. kidney disease
- E. all listed above

19. Severe hypothermia leads to:

- A. cold injury
- B. spasms
- C. acidosis
- D. hypoxia
- E. all listed above

20. Placental factors of IUGR:

- A. implantation of placenta
- B. abruption placenta
- C. extensive placenta infarcts
- D. single umbilical artery
- E. all listed above

### **Typical situational tasks of 2 level**

1. The nurse from the level II neonatal intensive care nursery calls you to evaluate a baby. The infant, born at 32 weeks' gestation, is now 1 week old and had been doing well on increasing nasogastric feedings. This afternoon, however, the nurse noted that the infant has vomitted the last two feedings and seems less active. Your examination reveals a tense and distended abdomen with decreased bowel sounds. As you are evaluating the child, he has a grossly bloody stool. Your management of this infant should include

- a. Surgical consultation for an emergent exploratory laparotomy
- b. Continued feeding of the infant, as gastroenteritis is usually self-limited
- c. Stool culture to identify the etiology of the bloody diarrhea and an infectious diseases consultation
- d. Stopping feeds, beginning intravenous fluids, ordering serial abdominal films, and initiating systemic antibiotics
- e. Upper GI series and barium enema to evaluate for obstruction

2. A recovering premature infant who weighs 950 g (2 lb, 1 oz) is fed breast milk to provide 120 cal/(kg\_d). Over ensuing weeks, the baby is most apt to develop
- Hypernatremia
  - Hypocalcemia
  - Blood in the stool
  - Hyperphosphatemia
  - Vitamin D toxicity
3. An infant weighing 1400 g (3 lb) is born at 32 weeks' gestation in a delivery room that has an ambient temperature of 24°C (75°F). If left in an open crib for a few minutes, this child is likely to demonstrate
- Ruddy complexion
  - Shivering
  - Hypertension
  - Increased respiratory rate
  - Metabolic alkalosis
4. Two infants are born at 36 weeks' gestation. Infant A weighs 2600g (5 lb, 12 oz) and infant B weighs 1600g (3 lb, 8 oz). Infant B is more likely to have which of the following problems?
- Congenital malformations
  - Low hematocrit
  - Hyperglycemia
  - Surfactant deficiency
  - Rapid catch-up growth retardation
5. A 3-day-old infant born at 32 weeks' gestation and weighing 1700 g (3 lb, 12 oz) has three episodes of apnea, each lasting 20 to 25 s and occurring after a feeding. During these episodes, the heart rate drops from 140 to 100 beats per min, and the child remains motionless; between episodes, however, the child displays normal

activity. Blood sugar is 50 mg/dL and serum calcium is normal. The child's apneic periods most likely are

- a. Due to an immature respiratory center
- b. A part of periodic breathing
- c. Secondary to hypoglycemia
- d. Manifestations of seizures
- e. Evidence of underlying pulmonary disease

**Methodical materials for the class basic stage supporting**

A professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming .

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct patient examination for preterm infants, small for gestational age infants, hyperbilirubinemia.	1. To conduct complaints and disease's anamnesis taking.  2. To take thoroughly the patient's life anamnesis.  3. To conduct examination of the patient.	Pay attention to the features of disease course, underlying factors, newborn, concomitant diseases etc.  To establish the risk factors presence are facilitates of disease occurrence.  To assess patient's general condition, stage of prematurity, position in bed, color and humidity of skin and mucose, presence of neck veins and



		4. To investigate cardiovascular and nervous system of the patient (palpation, percussion).	extremities swelling. To pay regard to pulse rhythm, its tension and size on both hands, apex shove, its properties, margins of absolute and relative cardiac dullness, its changes, HR (tachi-or bradycardia, extra-systole), BP.
		5. To conduct heart and main vessels auscultation.  6. To investigate the pulmonary system (percussion, bronchophony).  7. To conduct lungs auscultation.  8. To investigate the system of digestion.	To pay regard to heart tones weakening or amplifying, appearance of murmurs and additional III, IV tones.  To pay attention to features of percussion and auscultation in children of different age.  To pay attention to features of intoxication
2	To formulate the preliminary diagnosis.	1.To formulate the preliminary diagnosis 2. To substantiate all the components of preliminary diagnosis taking as a basis complaints, anamnesis, and examinations.	Basing on modern classification formulate the preliminary diagnosis of prematurity and to substantiate each component of it.

3	To evaluate the parameters of additional laboratory investigations.	<p>1. To evaluate the blood count data.</p> <p>2. To evaluate the biochemistry data.</p> <p>3. To evaluate the intrauterine infections data.</p>	<p>To pay attention to the signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate.</p> <p>To pay attention to the specific IG levels.</p> <p>To pay attention to the etiology of intrauterine infections and their sensitivity to the antibiotics and antiviral agents.</p>
4	To understand the data of additional and laboratory investigation.	To understand the data of X-ray of thorax, ultrasonogram.	To pay special attention to the damage of brain, lungs and liver.
5.	To conduct differential diagnosis.	<p>1. Consistently to find the common signs in complaints, life and disease anamnesis, data of examination, data of laboratory and instrumental investigations in patient's and in similar states.</p> <p>2. To find differences between complaints, information of life and disease anamnesis, examination data, information about the laboratory and</p>	Special attention must be paid to differential diagnosis among the types of intrauterine growth retardation, neonatal hypotrophy, birth trauma.

		<p>instrumental methods of research and in similar nosology.</p> <p>3. On the basis of the differences found to exclude similar diseases from the list of possible diagnoses.</p> <p>4. To conduct differential diagnostics according to the above mentioned algorithm among all the nosologies having the similar signs, among prematurity, immaturity .</p> <p>5. Taking into account the impossibility to exclude the diagnosis of prematurity and intra-uterine growth retardation from the list of credible diagnoses to draw a conclusion about the probability of such a diagnosis.</p>	
6	To formulate the final clinical diagnosis.	<p>To formulate the final clinical diagnosis</p> <p>Taking the preliminary diagnosis, as a basis additional investigations</p>	<p>Basing on modern classification of thyroid diseases, formulate the diagnosis, complications of disease and the</p>

		data, conducted differential diagnosis, substantiate all the elements of the final clinical diagnosis.	presence of concomitant diseases.
7	To prescribe treatment for patients.	1.To prescribe non medicinal treatment  2.To prescribe medicinal treatment.	Expressly specify the regimen and detailed diet according to a disease.  Taking into account the age, severity of patient's state, the stage of disease, the presence of complications and concomitant pathology, prescribe modern medicinal treatment .

**Materials of the medical support for the students independent training: a reference chart for organization of students independent work with educational literature.**

Tasks	Instructions
To study the etiology of intrauterine growth retardation and preterm birth. Be able to detect the degrees of preterm birth.	To select the key links of intrauterine growth retardation and preterm birth.
To study anatomic and physiologic features of premature children ; the features of adaptational period in premature newborn children	To establish the symptoms and gather it to clinical syndromes of premature newborn children

To study the additional methods of research (laboratory, instrumental)	To work out a plan of patient examination.
To conduct differential diagnostics, to establish a final diagnosis	To substantiate the basic components of diagnosis in accordance with modern classification, and to conduct a differential diagnosis.
To prescribe the individual holiatry to patient with the intrauterine growth retardation and preterm birth. Principles of feeding Able to render the first aid in the case of hypoglycemia, respiratory failure, enteroparesis, hyperbilirubinemia.	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient's state, stage of disease, presence of complications and concomitant diseases.

## THE RECOMMENDED LITERATURE

### Basic literature:

1. Nelson Textbook of Pediatrics, ed 16.2000.
2. Сміян І.С. Лекції з педіатрії. – Тернопіль, «Підручники і посібники», 2006 – С. 151-177.
3. Сміян І.С. Педіатоія (цикл лекцій). - Тернопіль, „Укрмедкнига”, 1999. - С. 179-216.
4. Аряєв М.Л. Неонатологія . Київ, «Адеф-Україна», 2003. – С. 515-550.
5. Неонатологія: навч. посібник / зп ред. П.С. Мощича, О.Г. Сулими,. – к.: Вища школа, 2004. – С. 130-165.
6. Госпітальна педіатрія / за ред. І.С.Сміяна, В.Г. Майданика - Тернопіль-Київ, 1997. - С. 4-75.

### Additional literature:

1. Шабалов Н.П. Неонатологія. Т.П. - Санкт-Петербург, «Спеціальная

Литература», 1997. - У.110-123., 65-81.

2. Неонатология:Руководство / под ред. В.В. Гаврюшова, К.А.Сотниковой'. - Л. Медицина, 19а5. - С. 112-124.

3. Неонатология:Пер.с англ./Под ред.Т.Л.Гомелла, М.Д.Каннигам. - М.:Медицина,1995. - С.328-350.

**TOPIC: ASPHYXIA IN NEONATES.** Etiology, pathogenesis of asphyxia in newborn period. Classification of asphyxia, clinical presentation, diagnostics, differential diagnostics, treatment, prophylaxis. Emergency in asphyxia in newborn period.

Neonatal Resuscitation. Prognosis.

**Amount of educational hours** – 4 academic hours.

### **I. ACTUALITY OF THEME**

The knowledge of asphyxia manifestations in neonates allows to conduct in due time diagnostics, differential diagnostics, medical treatment and prophylaxis. Recent studies have reported that 2 % of all newborns required assisted ventilation directly after the delivery. Asphyxia: means to be pulseless, but more useful is a definition of impaired or interrupted gas exchange. In the human, the transition from fetus to neonate represents a series of rapid and dramatic physiologic changes. This transition goes smoothly most of the time; however, approximately 10% of the time the active intervention of a skilled individual or team is necessary to assist in that transition to ensure that it occurs with the least possible damage. Although certain episodes of fetal asphyxia cannot be prevented, there are many circumstances in which, in the immediate neonatal period, a prompt and skilled resuscitation may prevent lifelong adverse sequelae. This, along with the fact that the need for intervention cannot always be predicted, has prompted the International Guidelines for Neonatal Resuscitation to state: “At least one person skilled in initiating neonatal resuscitation should be present at every delivery. An additional person capable of performing a complete resuscitation should be immediately available. Although many elements of a resuscitation sequence have been agreed on, debate and discussion regarding the process continue. Research has yet to answer many questions. For the present, guidelines such as those published by the American Academy of Pediatrics and the American Heart Association as well as those of the International Liaison Committee on Resuscitation (ILCOR) represent a middle

ground for various contending views. During a period of asphyxia, the resulting hypoxemia, acidosis, and poor perfusion can damage a neonate's brain, heart, kidney, liver, and lungs. The resulting clinical abnormalities include cerebral edema, irritability, seizures, cardiomegaly, heart failure, renal failure, poor liver function, disseminated intravascular coagulopathy, and respiratory distress syndrome. Therefore a prophylaxis, treatment and rehabilitation of this state, is not only medical but also social, problem

**Concrete purposes:**

1. To determine the etiologic and pathogenetics factors in intrauterine hypoxia and asphyxia in newborn period.
2. To classify and analyse the typical clinical manifestation of asphyxia in newborn period.
3. To determine the features of asphyxia for newborns and put a preliminary clinical diagnosis.
4. To make the plan of examination and analyse the information about laboratory and instrumental data in the classic course of asphyxia in newborn period.
5. To demonstrate skills of treatment, rehabilitation and prophylaxis of asphyxia in children.
6. To diagnose complications of asphyxia and to diagnose and render an urgent help in emergency in asphyxia.
7. To conduct differential diagnostics of asphyxia and other nervous system diseases in newborn period.
8. To determine nearest and remote prognosis in patients with asphyxia in newborn period.
9. To demonstrate the skills of medical specialist's moral and deontological principles and principles of professional subordination in pediatrics.



## **II. Classes ( pointing of planned mastering level )**

### **1. A student must have a conception ( familiarize): $\alpha 1$**

- The place of asphyxia in the structure of nervous system diseases in children;
- Statistical information in relation to morbidity, frequency of complications, lethality, the nearest and remote prognosis in patients with asphyxia ;
- About the history of scientific studying and the contribution of domestic scientists;

### **2. A student must know ( master): $\alpha 2$**

- causes of asphyxia in newborn period;
- key links of asphyxia in newborn period;
- key links of the nervous system diseases pathogenesis in newborn period ;
- classification of asphyxia ;
- classical clinical manifestation of asphyxia in newborn period ;
- clinical syndromes in dependence of asphyxia period ;
- laboratory and instrumental diagnosis of asphyxia ;
- complications of asphyxia ;
- treatment principles of asphyxia in newborn period.

### **3. A student must master: $\alpha 3$**

#### **Skills:**

- Collection of complaints and anamnesis of disease;
- Examination of newborn with asphyxia and revealing the main symptoms and syndromes;
- To formulate and substantiate the preliminary diagnosis;
- Determination of laboratory and instrumental inspection plan of patient's examination (according to diagnostics' standards );

#### **Abilities:**

- To interpret the results of laboratory and instrumental tests.
- To conduct differential diagnosis among asphyxia and other nervous system diseases in newborn period.

- To give recommendations in relation to the patient's regimen and diet with the asphyxia, taking into account the stage of the disease, severity of the state and concomitant pathology;
- To complete the treatment plan in asphyxia according to standards taking into account the stage of the disease, complications and concomitant pathology.
- To assign the treatment for newborn child in dependence of asphyxia severity
- To render first aid in extreme situations in newborn child in dependence of asphyxia severity
- To render primary resuscitation of newborn.

### **III. Aims of personality development (educative aims):**

- A student must learn to adhere rules of behaviour and principles of medical etiquette and deontology, to develop bedside manner;
- Be able to set a psychological contact with a patient and his family;
- To master the sense of professional responsibility for a timely and adequate medicare.

### **Questions for self-control**

1. Name the main causes of asphyxia.
2. Point out the classification of asphyxia.
3. What the main clinical manifestations of asphyxia and ultrasound findings?
4. Define diagnostic and differential diagnostic measures in asphyxia.
5. What is the common treatment tactics in asphyxia?
6. What are the main consequences of asphyxiain later periods of childhood and their prophylaxis ?

### The primary control tests

1. A mother delivers a neonate with meconium staining and Apgar scores of 3 at 1 and 5 min of life. She had no prenatal care and the delivery was by emergency cesarean section for severe fetal bradycardia. Which of the following sequelae could be expected to develop in this intubated neonate with respiratory distress?
  - a. Sustained rise in pulmonary arterial pressure
  - b. Hyperactive bowel sounds
  - c. Microcephaly with micrognathia
  - d. Cataracts
  - e. Thrombocytosis
  
2. Child was born after third pregnancy and second labors, 42 w. of gestational age, body weight 4200 g, length 58 cm. In the labors there is meconium in amniotic fluid. Aspiration of amniotic fluid suspected. Independent respiration is absent. What tactics indicated in this case?
  - A. A tactile stimulation
  - B. Closed cardiac massage
  - C. Suction of respiratory ways
  - D. Oxygen therapy.
  - E. Treatment of oligemia
  
3. At 43 weeks' gestation, a long, thin infant is delivered. The infant is apneic, limp, pale, and covered with "pea soup" amniotic fluid. The first step in the resuscitation of this infant at delivery should be
  - a. Suction of the trachea under direct vision
  - b. Artificial ventilation with bag and mask
  - c. Artificial ventilation with endotracheal tube
  - d. Administration of 100% oxygen by mask
  - e. Catheterization of the umbilical vein

4. An infant who appears to be of normal size is noted to be lethargic and somewhat limp after birth. The mother is 28 years old, and this is her fourth delivery. The pregnancy was uncomplicated, with normal fetal monitoring prior to delivery. Labor was rapid, with local anesthesia and intravenous meperidine administered for maternal pain control. Which of the following therapeutic maneuvers is likely to improve this infant's condition most rapidly?

- a. Intravenous infusion of 10% dextrose in water
- b. Administration of naloxone
- c. Administration of vitamin K
- d. Measurement of electrolytes and magnesium levels
- e. Neurologic consult

5. You are called to the delivery room. A newborn infant seems lethargic and has poor tone with only marginal respiratory effort, but his heart rate is above 100 beats per min. The mother had an uncomplicated pregnancy, and delivery was uncomplicated and vaginal 10 min after spontaneous rupture of membranes. The mother received only pain medications while in labor. The most important aspect of the management is (SELECT 1 TREATMENT)

- a. Atropine
- b. *N*-acetylcysteine
- c. Meso-2,3-dimercaptosuccinic acid (DMSA succimer)
- d. Naloxone
- e. Sodium bicarbonate

6. What cause of asphyxia is wrong

- A. Knotting of cord
- B. maternal staphylococcus
- C. maternal acute bleeding
- D. Diabetes in mother
- E. preterm gestation

7. A 3-day-old infant born at 32 weeks' gestation and weighing 1700 g (3 lb, 12 oz) has three episodes of apnea, each lasting 20 to 25 s and occurring after a feeding. During these episodes, the heart rate drops from 140 to 100 beats per min, and the child remains motionless; between episodes, however, the child displays normal activity. Blood sugar is 50 mg/dL and serum calcium is normal. The child's apneic periods most likely are

- a. Due to an immature respiratory center
- b. A part of periodic breathing
- c. Secondary to hypoglycemia
- d. Manifestations of seizures
- e. Evidence of underlying pulmonary disease

8. A newborn infant develops respiratory distress immediately after birth. His abdomen is scaphoid. No breath sounds are heard on the left side of his chest, but they are audible on the right. Immediate intubation is successful with little or no improvement in clinical status. The most likely explanation for this infant's condition is.

- a. Pneumonia
- b. Cyanotic heart disease
- c. Diaphragmatic hernia
- d. Choanal atresia
- e. Pneumothorax

9. Asphyxia is severe if Apgar scores are during first minute

- A. 0-3
- B. 0-6
- C. 6-8
- D. 3-7
- E. 4-6

10. Assessment of newborn by Apgar should be performed at the

- A. 1 and 5 minutes of life

- B. 1 and 10 minutes of life
- C. 5 and 10 minutes of life
- D. 10 and 15 minutes of life
- E. 1 and 20 minutes of life

11. A newborn infant is having poor neonatal reflexes, uncoordinated sucking, swallowing, difficulties in feeding. The most important next step to quickly establish the diagnosis is

- a. Echocardiogram
- b. Ultrasonography
- c. Passage of catheter into nose
- d. Hemoglobin electrophoresis
- e. Bronchoscopic evaluation of palate and larynx

12. Child was born after third pregnancy and second labors, 40 w. of gestational age, body weight 4200g, length 55cm. Aspiration of amniotic fluid suspected. Independent respiration is absent, heart rate is 50 beats/min. What tactics indicated in this case?

- A. A tactile stimulation
- B. Closed cardiac massage
- C. Suction of respiratory ways
- D. Oxygen therapy.
- E. Treatment of oligemia

13. Child was born after second labors, 38 w. of gestational age, body weight 3200g, length 52cm. Independent respiration is absent, heart rate is 110 beats/min. What tactics indicated in this case?

- A. A tactile stimulation
- B. Closed cardiac massage
- C. Suction of respiratory ways
- D. Oxygen therapy.

E. Passage of catheter into nose

14. In newborn child the cramps and tetany have developed in the first day of life . Ca concentration is 6,2 g/l (N - 8,5-10,5). What from following diagnoses are the least probable?

- A. Acute hypoxia of fetus.
- B. Big amount of intaked phosphorus
- C. Diabetes in mother
- D. Hyperparathyropdism in mother
- E. Prematurity

15. Step A resuscitation includes

- A. A tactile stimulation
- B. Closed cardiac massage
- C. Suction of respiratory ways
- D. Oxygen therapy.
- E. Passage of catheter into nose

16. Step B resuscitation includes

- A. Mechanical ventilation whis mask and bag
- B. Closed cardiac massage
- C. Suction of respiratory ways
- D. Oxygen therapy.
- E. Passage of catheter into nose

17. Step C resuscitation includes

- A. Mechanical ventilation whis mask and bag
- B. Closed cardiac massage and ventilation
- C. Suction of respiratory ways
- D. Oxygen therapy.
- E. Passage of catheter into nose

18. Diagnosis of neonatal hypoglycemia if a blood glucose level is less than

- A. 1,7 mmol/L
- B. 5,5 mmol/L
- C. 2,2 mmol/L
- D. 3,3 mmol/L
- E. 0,7 mmol/L

19. A newborn infant has no respiration and neonatal reflexes. What is necessary in first step

- A. Mechanical ventilation with mask and bag
- B. Closed cardiac massage and ventilation
- C. Suction of respiratory ways
- D. Oxygen therapy.
- E. Apgar assessment

20. For assessment of asphyxia severity following scale should be used

- A. Silverman
- B. Downess
- C. Ballard
- D. Apgar
- E. Glasgo



## **SITUATIONAL TASKS**

### **Situational Task 1**

A mother delivers a neonate with meconium staining and Apgar scores of 3 at 1 and 5 min of life. She had no prenatal care and the delivery was by emergency cesarean section for severe fetal bradycardia.

1. Which pulmonary sequelae could be expected to develop in this intubated neonate with respiratory distress?
2. Which other sequelae could be expected to develop in this intubated neonate with respiratory distress?

### **Situational Task 2**

A 2-day-old infant with meconium aspiration syndrome is worsening. The delivered FiO<sub>2</sub> is 100%, and yet his arterial PaO<sub>2</sub> is 40 mmHg on the most recent arterial blood-gas analysis. You have increased his ventilator pressures without success.

1. What is the next step in this patient's management?

### **Situational Task 3**

A 19-year-old primiparous woman develops toxemia in her last trimester of pregnancy and during the course of her labor is treated with magnesium sulfate. At 38 weeks' gestation, she delivers a 2100-g infant with Apgar scores of 1 at 1 min and at 5 at 5 min. Laboratory studies at 18 h of age reveal a hematocrit of 79%, platelet count of 100,000/ $\mu$ L, glucose 38 mg/dL, magnesium 2.5 meq/L, and calcium 8.7 mg/dL. Soon after, this the infant has a generalized convulsion.

1. What is most likely cause of the infant's seizure?
2. Conduct differential diagnostics.
3. What therapy is necessary?

### **Situational Task 4**

An infant who appears to be of normal size is noted to be lethargic and somewhat limp after birth. The mother is 28 years old, and this is her fourth delivery. The pregnancy was uncomplicated, with normal fetal monitoring prior to delivery. Labor

was rapid, with local anesthesia and intravenous meperidine administered for maternal pain control.

1. What are first steps in the management of this infant?
2. Which of the following therapeutic maneuvers is likely to improve this infant's condition most rapidly?

### **Situational Task 5**

At 43 weeks' gestation, a long, thin infant is delivered. The infant is apneic, limp, pale, and covered with "pea soup" amniotic fluid.

1. What should be first step in the resuscitation of this infant at delivery?
2. What are the steps in the management of this infant?

### Methodical materials for the class basic stage supporting.

A professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming .

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct examination of the patient with intrauterine hypoxia and asphyxia in newborn period.	<ol style="list-style-type: none"> <li>1. To conduct the complaints and disease anamnesis.</li> <li>2. To gather thoroughly the patient's life anamnesis.</li> <li>3. To conduct examination of the patient.</li> <li>4. To investigate cardiovascular system of the patient (palpation, percussion).</li> <li>5. To conduct auscultation of the heart and of the main vessels.</li> <li>6. To investigate the</li> </ol>	<p>To pay attention to features of disease course, underlying factors, concomitant diseases etc.</p> <p>To establish the risk factors which can cause the development of disease.</p> <p>To assess patient general condition, position in bed, color and humidity of skin and mucose, presence of neck veins and extremities' swelling.</p> <p>To pay regard to rhythm of pulse, it tension and size on both hands, apex shove, it properties, margins of absolute and relative cardiac dullness, it changes, HR (tachi-or bradycardia, extrasystole), BP.</p> <p>To pay regard to heart tones weakening or amplifying, appearance of murmurs and additional III, IV tones.</p>

		<p>pulmonary system (percussion, bronchophony).</p> <p>7. To conduct lungs auscultation.</p> <p>8. To investigate the system of digestion.</p>	<p>Pay attention to features of percussion and auscultation in neonates with asphyxia</p> <p>Pay attention to changes in neonates</p>
2	To formulate the preliminary diagnosis.	<p>1. To formulate the preliminary diagnosis</p> <p>2. To substantiate all components of preliminary diagnosis based on complaints, anamnesis, and examinations.</p>	To formulate the based on modern classification preliminary diagnosis of asphyxia and to substantiate each component of it.
3	To evaluate the parameters of additional laboratory investigations.	<p>1. To evaluate the blood count data.</p> <p>2. To evaluate the biochemistry data.</p> <p>3. To evaluate the screening of sera for all components of the TORCH-complex</p>	<p>To pay attention to signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate.</p> <p>Pay attention to cholesterol, lipids, bilirubin, calcium and glucose levels, detection of pathogen-specific IgM and IgG.</p>
4	To understand the data of additional and laboratory investigation.	To understand the data of ultrasound, X-ray and MRI diagnostics.	To pay special attention to the normal parameters of ultrasound, X-ray and MRI diagnostics in diseases in newborn period.
5	To conduct differential	1. Consistently to find the common signs in com-	Special attention must be paid to differential diagnosis among

	<p>diagnosis.</p>	<p>plaints, life and disease anamnesis, data of examination, data of laboratory and instrumental investigations in patient and in similar states.</p> <p>2. To find differences between complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods of research and in similar nosology.</p> <p>3. On the basis of found out differences to exclude similar diseases from the list of credible diagnoses.</p> <p>4. To conduct differential diagnostics according to the above mentioned algorithm among all of nosologies are having the similar signs, among other nervous system diseases in newborn period.</p> <p>5. Taking into account the impossibility to exclude the diagnosis of natal injuries from the list of credible</p>	<p>the intrauterine hypoxia and asphyxia in newborn period, intrauterine infections and neonatal infections, congenital thyroid deficiency.</p>
--	-------------------	---	---

		diagnoses to draw a conclusion about most probability of such diagnosis.	
6	To formulate the concluding clinical diagnosis.	<ol style="list-style-type: none"> <li>1. To formulate the concluding clinical diagnosis.</li> <li>2. Basing on preliminary diagnosis, additional investigations data, conducted differential diagnosis to substantiate all elements of concluding clinical diagnosis.</li> </ol>	Being based on modern classification of natal injuries to formulate a diagnosis, complications of disease and presence of concomitant diseases
7	To prescribe treatment for patients.	<ol style="list-style-type: none"> <li>1. To prescribe non medicinal treatment</li> <li>2. To prescribe the medicinal treatment.</li> </ol>	<p>To specify the regimen and detailed diet according to the disease.</p> <p>Taking into account age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal treatment in accordance to the standards of intra-uterine hypoxia and asphyxia in newborn period therapy.</p>

**Materials of the medical support for the students' self training:  
a reference chart for organization of students independent work with  
educational literature.**

Tasks	Instructions
To study the etiology and pathogenesis of intrauterine hypoxia and asphyxia in newborn period	To enumerate basic etiologic factors, to select the key links of hypoxia and asphyxia in newborn period pathogenesis.
To study clinical manifestations hypoxia and asphyxia in newborn period.	To establish the symptoms and to gather it in the clinical syndromes to put the probable diagnosis of asphyxia
To study diagnostic criteria of hypoxia and asphyxia in newborn period	To make the flow diagram of disease
To study the additional methods of research (laboratory, instrumental)	To work out a plan of patient investigation.
To study the changes in additional investigational methods which are pathognomonic for hypoxia and asphyxia in newborn period.	To enumerate the basic diagnostic criteria of asphyxia according to the data of additional investigational methods.
To conduct differential diagnostics, s to establish a concluding diagnosis	To substantiate the basic components of diagnosis in accordance with the modern classification, and to conduct a differential diagnosis.
To prescribe the individual holiatry to patient with the hypoxia and asphyxia in newborn period. To be able to render the first aid in emergency in asphyxia.	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient state, the stage of disease, the presence of complications and concomitant diseases.

## THE RECOMMENDED LITERATURE

### Basic:

1. Nelson Essentials of Pediatrics, fifth edition, Copyright © 2007 / edited by Richard E. Behrman, Robert M. Kliegman, Ann M. Arvin; senior editor, Waldo E. - Section XII.
2. Rudolph's Pediatrics, 21<sup>st</sup> Edition. Chapter 2.
3. Key Topics in Neonatology. Richard H. Mupanemunda, Michael Watkinson, BIOS Scientific Publishers Limited, 1999, p.16 -19.

### Additional:

1. Martin: Fanaroff and Martin's Neonatal-Perinatal Medicine, 8th ed., Copyright © 2006 Chapters 25, 26, 28 , 42, 43 .
2. Аряєв М.Л. Неонатологія. - Київ: «АДЕФ-Україна.», 2006. - 754 с
3. Шабалов Н.П. Неонатологія. Том I - Санкт-Петербург, 2006г.
4. Неонатологія. Навчальний посібник для практичних занять зі студентами медичних факультетів вищих навчальних медичних закладів / Волосовець О.П., Безруков Л.О. та інш. - Чернівці, 2000. - С. 203 - 214.



## **TOPIC: BIRTH TRAUMA OF NEWBORNS.**

Classification of birth trauma. Etiology, pathogenesis, clinical presentation, diagnostics, differential diagnostics, treatment, prophylaxis. Emergency in birth trauma. Prognosis.

### **I. ACTUALITY OF THEME**

The knowledge of birth trauma manifestations (CNS and spinal) in neonates allows to conduct in due time diagnostics, differential diagnostics, medical treatment and prophylaxis.

The continuing advances in antenatal and perinatal care have led to a progressive fall in fetal deaths due to trauma during delivery. However, birth injuries still cause a significant neonatal morbidity of which neonatal staff should be aware. Difficult delivery by any methods is a prime risk factor but so is a very rapid delivery. An increased risk is also attached to preterm delivery, Caesarean delivery and multiple pregnancy. Birth trauma (CNS and spinal) may lead to the mental and physical development retardation and psychological inability of children, that is why the early diagnosis, treatment, rehabilitation and prophylaxis are very important.

#### **Concrete purposes:**

1. To determine the etiologic and pathogenesis factors in natal injuries in newborn period.
2. To classify and analyse the typical clinical manifestation of natal injuries in newborn period.
3. To determine the features of natal injuries for newborns and put a preliminary clinical diagnosis.
4. To make the plan of examination and the information about laboratory and instrumental data in the classic course of natal injuries in newborn period.
5. To demonstrate skills of treatment, rehabilitation and prophylaxis in natal trauma in

children.

6. To diagnose complications of natal trauma and to diagnose and render an urgent help in emergency in birth trauma.

7. To conduct differential diagnostics of natal injuries and other nervous system diseases in newborn period.

8. To determine nearest and remote prognosis in patients with birth trauma in children.

9. To demonstrate the skills of medical specialist's moral and deontological principles and principles of professional subordination in pediatrics.

## **II. Classes (pointing of planned mastering level )**

### **1. A student must have a conception (familiarize): $\alpha 1$**

- The place of birth trauma in the structure of nervous system diseases in children;
- Statistical information in relation to morbidity, frequency of complications, lethality, the nearest and remote prognosis in patients with birth trauma;
- The history of scientific studying and the contribution of domestic scientists;

### **2. A student must know ( master): $\alpha 2$**

- causes of natal injuries in newborn period;
- key links of natal injuries in newborn period;
- key links of the nervous system diseases pathogenesis in newborn period ;
- classification of birth trauma;
- classical clinical manifestation of natal injuries in newborn period ;
- clinical syndromes in dependence of natal trauma period ;
- laboratory and instrumental diagnosis of natal trauma ;
- complications of natal trauma;
- treatment principles of natal injuries in children.

### **3. A student must master: $\alpha 3$**

**Skills:**

- Collection of complaints and anamnesis of disease;
- Examination of patient with natal injuries and revealing the main symptoms and syndromes;.
- To formulate and substantiate the preliminary diagnosis;
- Determination of laboratory and instrumental inspection plan of patient's examination (according to diagnostics' standards );

**Abilities:**

- To interpret the results of laboratory and instrumental tests.
  - To conduct differential diagnosis among natal injuries and other nervous system diseases in newborn period.
  - To give recommendations in relation to the patient's regimen and diet with the natal injuries , taking into account the stage of the disease, severity of the state and concomitant pathology;
- To complete the treatment plan in natal injuries according to standards taking into account the stage of the disease, complications and concomitant pathology.
- To give the first aid in extreme situations in newborn with natal injuries .
- To realize the life prognosis of patients with natal injuries

**III. Aims of personality development (educative aims):**

- A student must learn to adhere rules of behaviour and principles of medical etiquette and deontology, to develop bedside manner;
- Be able to set a psychological contact with a patient and his family;
- To master the sense of professional responsibility for a timely and adequate medicare.

**Questions for elementary level of knowledge control**

1. Name the main causes of birth injuries?
2. Point out the classification of birth trauma.

3. What are the main clinical manifestations of natal trauma in intracranial and spinal injuries?
4. Define diagnostic and differential diagnostic measures in natal injuries.
5. What are the common treatment tactics in CNS and spinal injuries?
6. What are the main consequences of natal trauma in later periods of childhood and their prophylaxis?

### **The primary control tests**

1. In a child there is formation on his head is soft with consistency, spreads outside the cranial bone. In examination after 2 day this formation was not detected.

What is the diagnosis?

- A. Subdural hematoma
- B. Cephalohematoma
- C. Cerebral hernia
- D. Epidural hematoma
- E. Caput succedaneum

2. In a child has delivered with a severe natal trauma of CNS in age of 5 days take place an anxiety, periodically there are short-term clonic and tonic cramps. What period of natal trauma in a child?

- A. Subacute
- B. Acute
- C. The period of the residual phenomena
- D. The early regenerative period
- E. The late regenerative period

3. In a prematurely born child has delivered with a severe natal trauma of CNS, in age of 25 days take place an anxiety, periodically there are short-term clonic and tonic cramps. What period of natal trauma in a child?

- A. Subacute

- B. Acute
- C. The period of the residual phenomena
- D. The early regenerative period
- E. The late regenerative period

4. In a child has delivered with a severe natal trauma of CNS, in the age of 1,5 year there is psychomotor retardation, pallor of skin, rapid fatigueability.

What period of natal trauma takes place in this case?

- A. Subacute
- B. Acute
- C. The period of the residual phenomena
- D. The early regenerative period
- E. The late regenerative period

5. In a baby to the day of excerpion remains a cephalohematoma of considerable dimensions. What is the tactic?

- A Introduction to the hematoma of sclerosing solutions.
- B. Not to treat
- C. To direct after the excerpion to neuro-surgeon.
- D.CT of cerebrum
- E. LP in a maternity hospital.

6. In a child has delivered with a severe natal trauma of CNS in age of 5 month take place an anxiety, moderate developmental retardation, periodically there is infringement of microcirculation, marble of skin, motive disturbances. What period of natal trauma in a child?

- A. Subacute
- B.The period of the residual phenomena
- C.Acute
- D. The early regenerative period
- E. The late regenerative period

7. In a child has delivered with natal trauma of CNS in age of 4 month. the head dimensions are correspond to age, take place the mild hyperesthesia, anxiety. Lumbar puncture: the liquor follows a jet What syndrome of natal trauma takes place in this case?

- A. Convulsive
- B. Hydrocephalic
- C. Asthenoneurotic
- D. Hypertensive
- E. Depression of CNS.

8. In a child on a 3 day after delivery a severe vomit appeared, anxiety, strain of the big fontanel, divergence of cranial seams, Grefe symptom, positive Lessage symptom, in lumbar puncture in a liquor the blood is revealed. What type of intracranial hemorrhage it is needed to diagnose in this case? A. In brain parenchyma

- B. Intraventricular
- C. Subdural
- D. Subarachnoidal
- E. Epidural

9. In prematured child on 2 day after birth there were tonic cramps with the subsequent development of opisthotonus, has stopped to suck independently, anisocoria, oppression of reflexes were admit An intraventricular hemorrhage is suspected. What test will allow confirming a diagnosis?

- A. X-ray of skull.
- B. Diafanoscopy.
- C. Neurosonography.
- D. Reovasography of cerebral vessels
- E. All listed above.

10. In newborn child to the end of 1 day of life on the basis of clinic survey and according to the data of neurosonography an intraventricular hemorrhage suspected. What preparations are listed below pathogenically indicated in this case?

- A. Magnesium sulfas
- B. Cephalosolinum
- C. Dicinonum
- D. Calcium gluconat
- E. ATP
- F. All listed above

11. A 1-month-old comatose infant with multiple broken bones in various stages of healing, bulging anterior fontanelle, and retinal hemorrhages. (SELECT 1 ABNORMALITY)

- a. Intraventricular hemorrhage
- b. Caput succedaneum
- c. Subdural hemorrhage
- d. Subarachnoid hemorrhage
- e. Cephalohematoma

12. A 13-day-old female infant delivered by midforceps after occiput-posterior presentation has massive, persistently enlarging cephalohematoma. Indicate therapy

- A. Therapy is not indicated
- B. Surgical drainage
- C. Introduction to the hematoma of sclerosing solutions.
- D. Bronchoalveolar lavage
- E. Phototherapy

13. A term newborn has rhythmic, multifocal, clonic seizures lasting 3 minutes on the second day after birth. The intrapartum history is significant for a difficult vertex vaginal delivery assisted with forceps. Apgar scores were 8 and 9 at 1 and 5 minutes,

respectively. The infant had appeared well until the onset of seizures. The serum glucose, calcium, and electrolyte concentrations are normal.

Of the following, the MOST useful test for confirmation of the diagnosis is

- A. cerebrospinal fluid examination
- B. computed tomography
- C. cranial ultrasonography
- D. electroencephalography
- E. fiberoptic transillumination

14. A term newborn has multifocal, rhythmic, migratory clonic seizures at 6 hours after birth. The infant is lethargic, hypotonic, and hyperreflexic. She has a weak suck and constricted but reactive pupils.

Of the following, the MOST likely cause of seizures in this infant is

- A. bacterial meningitis
- B. benign familial seizures
- C. hypocalcemia
- D. perinatal asphyxia
- E. subarachnoid hemorrhage

15. A near-term newborn was delivered by emergent cesarean section following placental abruption. Because of respiratory depression, she required resuscitation. The Apgar scores were 1, 4, and 7 at 1, 5, and 10 minutes, respectively. The cord blood pH was 6.9, and the base deficit 18 mEq/L. At 6 hours of age, the infant has clonic seizures, which are controlled with phenobarbital. She is obtunded but arousable and shows proximal muscle hypotonia. Her mother asks about the long-term prognosis for her child.

Of the following, the MOST likely long-term outcome in this infant is

- A. cerebral palsy
- B. hearing loss
- C. normal development
- D. seizure disorder



E. visual impairment

16. A term newborn, one of twins, is plethoric and has a central venous hematocrit of 72% (0.72). Of the following, the MOST likely complication in this infant is

A. disseminated coagulopathy

B. hypoglycemia

C. necrotizing enterocolitis

D. renal failure

E. seizures

17. A 1-day-old term newborn during crying face asymmetry is marked – the left angle of the mouth is lowered. What natal trauma takes place in this case?

a. Intraventricular hemorrhage

b. Caput succedaneum

c. Natal injury of facial nerve

d. Subarachnoid hemorrhage

e. Cephalohematoma

18. In a child has delivered with a severe natal trauma of CNS in age of 5 days take place an anxiety, periodically there are short-term clonic and tonic cramps. What syndrome of natal trauma has the child?

A. Convulsive

B. Hydrocephalic

C. Asthenoneurotic

D. Hypertensive

E. Depression of CNS.

19. A 1-day-old healthy infant with a superficial swelling over the right parietotemporal region that does not cross the suture lines. What is the diagnosis?

A. Subdural hematoma

B. Cephalohematoma

C. Cerebral hernia

D. Epidural hematoma

E. Caput succedaneum

20. The examination of a newborn's back reveals a quarter-size "lump" of soft tissue overlying the lower spine. Evaluation with ultrasound of this lesion may demonstrate

a. Ebstein pearl

b. Mongolian spot

c. Cephalohematoma

d. Omphalocele

e. Occult spina bifida

## **SITUATIONAL TASKS**

### **Situational Task 1**

A 1-day-old infant who was born by a difficult forceps delivery is alert and active. She does not move her left arm, however, which she keeps internally rotated by her side with the forearm extended and pronated; she also does not move it during a Moro reflex. The rest of her physical examination is normal.

1. What diagnosis is most likely indicated?
2. Why is this diagnosis most likely indicated?
3. Conduct differential diagnostics.
4. What tests are confirmed the suspected diagnosis injury to the phrenic nerve ?

### **Situational Task 2**

1-day-old infant who was born by a difficult forceps delivery is alert and active and immediately develops tachypnea with cyanosis. She improves somewhat on oxygen but has predominantly thoracic breathing movements, and the chest x-ray, which appears to have been taken inadvertently at expiration, seems normal.

1. What procedure is most likely to provide a specific etiologic diagnosis?
2. What tests are confirmed the suspected diagnosis injury to the phrenic nerve ?
3. What tests are confirmed the suspected diagnosis injury of the fifth and sixth cervical nerves?

### **Situational Task 3**

A 19-year-old primiparous woman develops toxemia in her last trimester of pregnancy and during the course of her labor is treated with magnesium sulfate. At 38 weeks' gestation, she delivers a 2100-g infant with Apgar scores of 1 at 1 min and at 5 at 5 min. Laboratory studies at 18 h of age reveal a hematocrit of 79%, platelet count of 100,000/ $\mu$ L, glucose 38 mg/dL, magnesium 2.5 meq/L, and calcium 8.7 mg/dL. Soon after, this the infant has a generalized convulsion.

1. What is the most likely cause of the infant's seizure?
2. Conduct differential diagnostics.

#### **Situational Task 4**

The signs and symptoms of meningitis in an infant can be different than those in an adult.

1. What signs and symptoms of meningitis in an infant do you know
2. Which of the signs and symptoms of meningitis is more helpful in an adult patient than in a 1-month-old?

#### **Situational Task 5**

A 1-day-old healthy infant with a superficial swelling over the right parietotemporal region that does not cross the suture lines.

1. What diagnosis is most likely indicates? Why this diagnosis is most likely indicates?
2. Conduct differential diagnostics.

### Methodical materials for the class basic stage supporting.

A professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming .

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct examination of the patients with natal injuries	<p>1.To conduct the complaints and disease anamnesis.</p> <p>2.To gather thoroughly the patient’s life anamnesis.</p> <p>3.To conduct examination of the patient.</p> <p>4.To investigate cardiovascular system of the patient (palpation, percussion).</p>	<p>To pay attention to features of disease course, underlying factors, concomitant diseases etc.</p> <p>To establish the risk factors which can cause the development of disease.</p> <p>To assess patient general condition, position in bed, color and humidity of skin and mucose, presence of neck veins and extremities’ swelling.</p> <p>To pay regard to rhythm of pulse, it tension and size on both hands, apex shove, it properties, margins of absolute and relative cardiac dullness, it changes, HR (tachy- or bradycardia, extra systole), BP.</p>
		5.To conduct of the heart and of the main vessels auscultation.	To pay regard to heart tones weakening or amplifying,

		<p>6.To investigate the pulmonary system (percussion, bronchophony).</p> <p>7.To conduct lungs auscultation.</p> <p>8.To investigate the system of digestion.</p>	<p>appearance of murmurs and additional III, IV tones.</p> <p>To pay attention on features of percussion and auscultation in neonates</p> <p>Pay attention to changes in neonates</p>
2	To formulate the preliminary diagnosis.	<p>1.To formulate the preliminary diagnosis</p> <p>2.To substantiate all components of preliminary diagnosis based on complaints,anamnesis, and examinations.</p>	To formulate the based on modern classification preliminary diagnosis of natal injuries and to substantiate each component of it.
3	To evaluate the parameters of additional laboratory investigations.	<p>1.To evaluate the blood count data.</p> <p>2. To evaluate the biochemistry data.</p> <p>3.To evaluate the screening of sera for all components of the TORCH-complex</p>	<p>To pay attention to signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate.</p> <p>Pay attention to cholesterol, lipids, bilirubin, calcium and glucose levels, detection of pathogen-specific IgM and IgG.</p>
4	To understand the data of additional and laboratory investigation	To understand the data of ultrasound, X-ray and MRI diagnostics.	To pay special attention to the normal parameters of ultrasound, X-ray and MRI diagnostics in diseases in newborn period.
5.	To conduct differential diagnosis.	1.Consistently to find the common signs in complaints,life and disease anamnesis, data of	Special attention must be paid to differential diagnosis among the intrauterine

		<p>examination, data of laboratory and instrumental investigations in patient and in similar states.</p> <p>2.To find differences between complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods of research and in similar nosology.</p> <p>3.On the basis of found out differences to exclude similar diseases from the list of credible diagnoses.</p> <p>4. To conduct differential diagnostics according to the above mentioned algorithm among all of nosologies are having the similar signs, among other nervous system diseases in newborn period.</p> <p>5.Taking into account the impossibility to exclude the diagnosis of natal injuries from the list of credible diagnoses to draw a conclusion about most probability of such diagnosis.</p>	<p>hypoxia and asphyxia in newborn period, intrauterine infections and neonatal infections, congenital hypothyroidism.</p>
6	To formulate the concluding	<p>1. To formulate the concluding clinical diagnosis.</p> <p>2. Basing on preliminary diag-</p>	<p>Being based on modern classification of natal injuries to formulate a</p>

	clinical diagnosis.	nosis, additional investigations data, conducted differential diagnosis to substantiate all elements of concluding clinical diagnosis.	diagnosis, complications of disease and presence of concomitant diseases.
7	To prescribe treatment for patients.	1.To prescribe non medicinal treatment  2.To prescribe the medicinal treatment.	To specify the regimen and detailed diet according to the disease.  Taking into account age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal treatment in accordance to the standards of natal injuries therapy.

**Materials of the medical support for the students' self training:  
a reference chart for organization of students' independent work with  
educational literature.**

Tasks	Instructions
To study the etiology and pathogenesis of natal injuries in children.Be able to detect syndromes in dependence of natal trauma period.	To enumerate basic etiologic factors, select the key links of natal injuries pathogenesis.
To study clinical manifestations of natal	To establish the symptoms and gather



injuries in children.	it to clinical syndromes are enable to put the credible diagnosis of natal injuries
To study diagnostic criteria of natal injuries	To make the flow diagram of disease
To study the additional methods of research (laboratory, instrumental)	To work out a plan of patient investigation.
To study the changes in additional investigational methods which are pathognomonic for natal injuries.	To enumerate the basic diagnostic criteria of natal injuries according to the data of additional investigational methods.
To conduct differential diagnostics, s to establish a concluding diagnosis	To substantiate the basic components of diagnosis in accordance with the modern classification, and to conduct a differential diagnosis.
To prescribe the individual toiletry to patient with the natal injuries. . To be able to render the first aid in emergency in birth trauma.	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient state, stage of disease, presence of complications and concomitant diseases.

## THE RECOMMENDED LITERATURE

### **Basic:**

1. Nelson Essentials of Pediatrics, fifth edition, Copyright © 2007 / edited by Richard E. Behrman, Robert M. Kliegman, Ann M. Arvin; senior editor, Waldo E. - Section XII.
2. Rudolph's Pediatrics, 21<sup>st</sup> Edition. Chapter 2, Chapter 25.9 .
3. Key Topics in Neonatology. Richard H. Mupanemunda, Michael Watkinson, BIOS Scientific Publishers Limited, 1999, p.21-25.

### **Additional:**

1. Martin: Fanaroff and Martin's Neonatal-Perinatal Medicine, 8th ed., Copyright © 2006 Chapters 25, 26, 27, 28, 38.
2. Аряєв М.Л. Неонатологія. - Київ: «АДЕФ-Україна», 2006. - 754 с.
3. Шабалов Н.П. Неонатология. Том I - Санкт-Петербург, 2006г.
4. Неонатологія. Навчальний посібник для практичних занять зі студентами медичних факультетів вищих навчальних медичних закладів / Волосовець О.П., Безруков Л.О. та інш. - Чернівці, 2000. - С. 203 - 214.

## **TOPIC: RESPIRATORY DISTRESS SYNDROME, PNEUMOPATHIES AND PNEUMONIAS IN NEONATES.**

Classification of respiratory distress syndrome, pneumopathies and pneumonias in neonates. Etiology, pathogenesis, clinical presentation, diagnostics, differential diagnostics, treatment, prophylaxis of respiratory distress syndrome, pneumopathies and pneumonias in neonates. Prophylaxis. Prognosis.

### **I. Actuality of the theme.**

The knowledge of respiratory distress syndrome, pneumopathies and pneumonias manifestations in neonates allows conducting in due time diagnostics, differential diagnostics, medical treatment and prophylaxis. Enormous strides have been made in understanding the pathophysiology of respiratory distress syndrome (RDS) and more particularly the role of surfactant in its cause. Nevertheless, RDS, formerly referred to as hyaline membrane disease, remains a dominant clinical problem encountered among preterm infants. The greatly improved outcome in RDS can be attributed primarily to the introduction of pharmacologic acceleration of pulmonary maturity and the development of surfactant replacement therapy. Because more of the sickest, most immature infants are surviving, the incidence of complications in the survivors of RDS remains significant. These include intracranial hemorrhage, patent ductus arteriosus (PDA), pulmonary hemorrhage, sepsis, and bronchopulmonary dysplasia (BPD), as discussed in Part 4 and elsewhere. It is often impossible to determine whether these disorders are the sequelae of RDS, of its treatment, or of the underlying prematurity. In this section the clinical features and evaluation of infants with RDS are discussed, and therapeutic approaches other than assisted ventilation are outlined

#### **Concrete purposes:**

1. To determine the etiologic and pathogenetic factors in RDS, pneumopathies and pneumonias in neonates.
2. To classify and analyse the typical clinical manifestation of RDS, pneumopathies and pneumonias in neonates.

3. To determine the features of RDS, pneumopathies and pneumonias for newborns and put a preliminary clinical diagnosis. To conduct differential diagnostics.
4. To make the plan of examination and analyse the information about laboratory and instrumental data in the classic course of RDS, pneumopathies and pneumonias in neonates.
5. To demonstrate skills of treatment, rehabilitation and prophylaxis in of RDS, pneumopathies and pneumonias in neonates.
6. To diagnose and render an urgent help in RDS, pneumopathies and pneumonias in neonates.
7. To determine the prognosis for life in RDS, pneumopathies and pneumonias in neonates.
8. To demonstrate the skills of medical specialist's moral and deontological principles and principles of professional subordination in pediatrics.

## **II. Classes (pointing of planned mastering level)**

### **1. A student must have a conception (familiarize): $\alpha 1$**

- The place of RDS, pneumopathies and pneumonias in neonates in the structure of diseases in newborn period.
- Statistical information in relation to morbidity, frequency of complications, lethality, the nearest and remote prognosis in patients with RDS, pneumopathies and pneumonias ;
- The history of scientific studying and the contribution of domestic scientists;

### **2. A student must know (master): $\alpha 2$**

- causes of RDS, pneumopathies and pneumonias in newborn period;
- key links of RDS, pneumopathies and pneumonias in newborn period;
  - key links of the nervous system, respiratory system and cardiovascular system diseases pathogenesis in newborn period ;
- classification of RDS, pneumopathies and pneumonias in neonates ;
- classical clinical manifestation of RDS, pneumopathies and pneumonias in neonates;

- clinical syndromes in dependence of RDS, pneumopathies and pneumonias in neonates period ;
- classification of respiratory system and cardiovascular system development anomalies ;
- laboratory and instrumental diagnosis of RDS, pneumopathies and pneumonias in neonates ;
- complications of RDS, pneumopathies and pneumonias in neonates;
- treatment principles of RDS, pneumopathies and pneumonias in neonates.

### **3. A student must master: α3**

#### **Skills:**

- Collection of complaints and anamnesis of disease;
- Examination of patient with natal injuries and revealing the main symptoms and syndromes;.
- To formulate and substantiate the preliminary diagnosis;
- Determination of laboratory and instrumental inspection plan of patient's examination (according to diagnostics' standards);

#### **Abilities:**

- To interpret the results of laboratory and instrumental tests.
- To conduct differential diagnosis among RDS, pneumopathies and pneumonias and other nervous system, respiratory system and cardiovascular system diseases in newborn period.
- To give recommendations in relation to the patient's regimen and diet with the RDS, pneumopathies and pneumonias, taking into account the stage of the disease, severity of the state and concomitant pathology;
- To complete the treatment plan in RDS, pneumopathies and pneumonias according to standards taking into account the stage of the disease, complications and concomitant pathology.
- To give the first aid in extreme situations in newborn with the RDS, pneumopathies and pneumonias.

- To realize the life prognosis of patients with the RDS, pneumopathies and pneumonias.

### **III. Aims of personality development (educative aims):**

- A student must learn to adhere rules of behaviour and principles of medical etiquette and deontology, to develop bedside manner;
- Be able to set a psychological contact with a patient and his family;
- To master the sense of professional responsibility for a timely and adequate medicare.
- 

### **Questions for self-control**

1. Name the main causes of RDS and features of surfactant?
2. Point out the classification of RDS and pneumonias in neonates.
3. What the main clinical manifestations of RDS?
4. Silverman's score?
5. Define diagnostic and differential diagnostic measures in RDS and pneumonias in neonates.
6. What is the tactics of respiratory therapy in RDS?
7. What are the main consequences of RDS in later periods of childhood and their prophylaxis ?
8. Especialities of antibacterial therapy of pneumonias in neonates in dependence of mature level and causal agent.

## **The primary control tests**

1. For the newborns RDS of any parentage is typically everything except for:
  - A. Hypothermia
  - B. Unemotional cry or its absence
  - C. Hyperreflexia
  - D. Essential losses of initial body weight
  - E. Regurgitation
  
2. For hyaline membranes is characteristically:
  - A. State is more frequent in newborns with weight of 1000 – 1500g
  - B. It is observed in mortinatuses.
  - C. Insufficient of surfactant synthesis
  - D. Meets more frequent, if a mother had bleeding for a day to premature births
  - E. Correct everything except for is observed in mortinatuses
  
3. Intensive therapy of hyaline membranes includes:
  - A. CPAP-therapy
  - B. Additional ventilation of lungs by indications
  - C. Prescribing of surfactant by indication
  - D. All except for CPAP therapy
  - E. All listed above
  
4. Surfactant is damaged with:
  - A. Hyperventilation
  - B. The washed erythrocytes
  - C. Artificial ventilation of lungs
  - D. Viruses
  - E. Correct everything except for the washed erythrocytes
  
5. Newborn child with a gestational term of 32 weeks and with weight at birth of 1700 g, Apgar score is 5-7-8 points, in age of 2 hours the dyspnea of breath and

expiration grants, appeared. In auscultation are wheezes in lungs. What is the most reliable reason of these symptoms?:

- A. Persistent pulmonary hypertension..
- B. Transient tachypnoe of newborns.
- C. Congenital anomaly of lungs
- D. RDS.
- E. Syndrome of meconium aspiration.

6. In a premature newborn child with age of 6 hours a respiratory distress-syndrome is clinically diagnosed. What from listed below is the principal reason of this syndrome development?

- A. Natal trauma
- B. Deficit of surfactant
- C. Delay of fetal pulmonary liquid
- D. Intranatal infection
- E. Syndrome of meconium aspiration.

7. Child of 3 days was born with weight 2200 g. In 3 hours after birth the respiratory disorders as a dyspnea appeared, retractions of a xiphoid process and of intercostal spaces, pits under a breast, attacks of apnoe. In auscultation the loosened breathing. What more likely is the reason of respiratory disorders?

- A. Syndrome of aspiration
- B. Intrauterine pneumonia
- C. Intracranial trauma
- D. Pneumonia.
- E. Hyaline membranes

8. Child from 4 pregnancy that proceeded with underlying gestosis of 1 and 2 halves.. A mother has diabetes mellitus and hyperplasia of thyroid gland of 2-3 degree. A child was born in a term 32 weeks of gestation. Apgar score 5-6 points, Silverman score-is 5 points. In a few hours after birth the subsequent worsening of



state due to decreasing of respiratory insufficiency admitted. In a next day the Silverman score is 8 - 10 points. What is the diagnosis?

- A. Hyaline membranes
- B. Postnatal pneumonia
- C. Congenital pneumonia
- D. Syndrome of meconium aspiration.
- E. Neonatal hypothyroidism.

9. Woman with the term of pregnancy of 34 weeks, hospitalized in a maternity hospital with the threat of pregnancy breaking caused by gestosis and anemia. What preparation needs to prescribe for pregnant in 3 days prior to delivery with the purpose of SDR prophylaxis?

- A. noradrenalin
- B. adrenalin
- C. thyroxin
- D. estrogens
- E. dexamethasone

10. Intranatal pneumonias develop as a rule:

- A. in an antenatal period
- B. on a background of urogenital infection of pregnant
- C. as a result of viral hematogenous infection of fetus
- D. All answers are correct
- E. All are correct except for as a result of viral hematogenous infection of fetus.

11. For determination of lungs maturity can be used:

- A. Test of Clemens
- B. phenolic test
- C. foamy test using an aspirate of gastric content
- D. lecithin / sphingomyelin quotient in investigation of amniotic fluid
- E. All answers are correct

12. Hypoxia in hyaline membranes caused by:

- A. Shunting of a blood through an oval window and ductus arteriosus from right to left
- B. Infringement of bronchuses permeability
- C. All answers are correct
- D. Correct all except for alveolar hypoventilation
- E. Alveolar hypoventilation

13. A mother delivers a neonate with meconium staining and Apgar scores of 3 at 1 and 5 min of life. She had no prenatal care and the delivery was by emergency cesarean section for severe fetal bradycardia. Which of the following sequelae could be expected to develop in this intubated neonate with respiratory distress?

- a. Sustained rise in pulmonary arterial pressure
- b. Hyperactive bowel sounds
- c. Microcephaly with micrognathia
- d. Cataracts
- e. Thrombocytosis

14. A 3-day-old infant born at 32 weeks' gestation and weighing 1700g (3 lb, 12 oz) has three episodes of apnea, each lasting 20 to 25 s and occurring after a feeding. During these episodes, the heart rate drops from 140 to 100 beats per min, and the child remains motionless; between episodes, however, the child displays normal activity. Blood sugar is 50 mg/dL and serum calcium is normal. The child's apneic periods most likely are

- a. Due to an immature respiratory center
- b. A part of periodic breathing
- c. Secondary to hypoglycemia
- d. Manifestations of seizures
- e. Evidence of underlying pulmonary disease

15. An infant of uncertain dates is born via emergent cesarean section. Birth weight

was 1075g. The infant has poor respiratory effort and Immediate intubation and ventilation were successful. She has been extubated for 2 weeks and still requires oxygen to maintain her saturation above 93%. Her chest radiograph now reveals patchy, fluffy infiltrates with areas of lucency. She requires daily diuretic treatment.

What is the diagnosis?

- A. Bronchopulmonary dysplasia
- B. Respiratory distress syndrome (hyaline membrane disease)
- C. Pulmonary interstitial emphysema
- D. Bronchiolitis
- E. Transient tachypnea of the newborn

16. A newborn infant develops respiratory distress immediately after birth. His abdomen is scaphoid. No breath sounds are heard on the left side of his chest, but they are audible on the right. Immediate intubation is successful with little or no improvement in clinical status. The most likely explanation for this infant's condition is

- a. Pneumonia
- b. Cyanotic heart disease
- c. Diaphragmatic hernia
- d. Choanal atresia
- e. Pneumothorax

17. A term, 4200-g female infant is delivered via cesarean section because of cephalopelvic disproportion. The amniotic fluid was clear, and the infant cried almost immediately after birth. Within the first 15 min of life, however, the infant's respiratory rate increased to 80 breaths per min, and she began to have intermittent grunting respirations. The infant was transferred to the level 2 nursery and was noted to have an oxygen saturation of 94%. The chest radiograph showed fluid in the fissure, overaeration, and prominent pulmonary vascular markings. The most likely diagnosis in this infant is

- a. Diaphragmatic hernia

- b. Meconium aspiration
- c. Pneumonia
- d. Idiopathic respiratory distress syndrome
- e. Transient tachypnea of the newborn

18. A previously healthy full-term infant has several episodes of duskiess and apnea during the second day of life. Diagnostic considerations should include which of the following?

- a. Hemolytic anemia
- b. Congenital heart disease
- c. Idiopathic apnea
- d. Harlequin syndrome
- e. Hyperglycemia

19. An infant of uncertain dates is born via emergent cesarean section after the mother was critically injured in a motor vehicle accident. Birth weight was 1075g. The infant has poor respiratory effort and you begin bag-mask ventilation but find it extremely difficult to cause chest wall movement. A chest radiograph reveals diffuse whiteout of both lungs, with an occasional air bronchogram. What is the diagnosis?

- A. Bronchopulmonary dysplasia
- B. Respiratory distress syndrome (hyaline membrane disease)
- C. Pulmonary interstitial emphysema
- D. Bronchiolitis
- E. Transient tachypnea of the newborn

20. A term infant delivered via scheduled cesarean section develops, at 15 min of age, tachypnea, grunting, flaring, and retractions. A chest radiograph reveals well-aerated lungs with fluid in the fissure on the right, prominent pulmonary vascular markings, and flat diaphragms. The child is mildly hypoxic on room air with 89% oxygen saturation. Over the next 6 h she improves and no longer requires oxygen. What is the diagnosis?

- A. Bronchopulmonary dysplasia
- B. Respiratory distress syndrome (hyaline membrane disease)
- C. Meconium aspiration
- D. Transient tachypnea of the newborn
- E. Bacterial pneumonia

## **SITUATIONAL TASKS**

### **Situational Task 1**

1-day-old infant who was born by a difficult forceps delivery is alert and active and immediately develops tachypnea with cyanosis. She improves somewhat on oxygen but has predominantly thoracic breathing movements, and the chest x-ray, which appears to have been taken inadvertently at expiration, seems normal.

1. What procedure is most likely to provide a specific etiologic diagnosis ?
2. What tests are confirmed the suspected diagnosis injury to the phrenic nerve ?

### **Situational Task 2**

A 3-day-old infant born at 32 weeks' gestation and weighing 1700 g (3 lb, 12 oz) has three episodes of apnea, each lasting 20 to 25 s and occurring after a feeding. During these episodes, the heart rate drops from 140 to 100 beats per min, and the child remains motionless; between episodes, however, the child displays normal activity. Blood sugar is 50 mg/dL and serum calcium is normal.

1. What diagnosis the child's apneic periods are most likely indicates?
2. Why this diagnosis is most likely indicates?
3. Conduct differential diagnostics.

### **Situational Task 3**

After an uneventful labor and delivery, an infant is born at 32 weeks' gestation weighing 1500 g (3 lb, 5 oz). Respiratory difficulty develops immediately after birth and increases in intensity thereafter. The child's mother (now gravida 3, para 2102) previously lost an infant because of hyaline membrane disease. At 6 h of age, the child's respiratory rate is 60 breaths per min. Examination reveals grunting, intercostal retraction, nasal flaring, and marked cyanosis in room air.

1. What diagnosis is most likely indicates?
2. Why this diagnosis is most likely indicates?
3. What physiologic abnormalities compatible with these data include?

### **Situational Task 4**

A newborn infant develops respiratory distress immediately after birth.

His abdomen is scaphoid. No breath sounds are heard on the left side of his chest, but they are audible on the right and bowel sounds are heard in the chest. Immediate intubation is successful with little or no improvement in clinical status.

1. The is most likely explanation for this infant's condition?
2. What procedure is most likely to provide a specific etiologic diagnosis ?
3. Conduct differential diagnostics.

### **Situational Task 5**

A term, 4200-g female infant is delivered via cesarean section because of cephalopelvic disproportion. The amniotic fluid was clear, and the infant cried almost immediately after birth. Within the first 15 min of life, however, the infant's respiratory rate increased to 80 breaths per min, and she began to have intermittent grunting respirations. The infant was transferred to the level 2 nursery and was noted to have an oxygen saturation of 94%. The chest radiograph showed fluid in the fissure, overaeration, and prominent pulmonary vascular markings.

1. What is most likely diagnosis in this infant?
2. Conduct differential diagnostics.
3. Prescribe treatment for patient.

### Methodical materials for the class basic stage supporting.

A professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming .

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct examination of the patient with RDS, pneumopathies and pneumonias.	<p>1.To conduct the complaints and disease anamnesis.</p> <p>2.To gather thoroughly the patient's life anamnesis.</p> <p>3.To conduct examination of the patient.</p> <p>4.To investigate cardiovascular system of the patient (palpation, percussion).</p>	<p>To pay attention to features of disease course, underlying factors, concomitant diseases etc.</p> <p>To establish the risk factors which can cause the development of disease.</p> <p>To assess patient general condition, position in bed, color and humidity of skin and mucose, presence of neck veins and extremities' swelling.</p> <p>To pay a regard to rhythm of pulse, it tension and size on both hands, apex shove, it properties, margins of absolute and relative cardiac dullness, it changes, HR(tachi-or bradycardia, extrasystole), BP.</p>
		5.To conduct of the heart and of the main vessels	To pay regard to heart tones weakening or



		<p>auscultation.</p> <p>6.To investigate the pulmonary system (percussion, bronchophony).</p> <p>7.To conduct lungs auscultation.</p> <p>8.To investigate the system of digestion.</p>	<p>amplifying, appearance of murmurs and additional III, IV tones.</p> <p>To pay attention to features of percussion and auscultation in neonates</p> <p>Pay attention to changes in neonates</p>
2	To formulate the preliminary diagnosis.	<p>1.To formulate the preliminary diagnosis</p> <p>2.To substantiate all components of preliminary diagnosis based on complaints,anamnesis, and examinations.</p>	To formulate the based on modern classification preliminary diagnosis of RDS, pneumopathies and pneumonias and to substantiate each component of it.
3	To evaluate the parameters of additional laboratory investigations.	<p>1.To evaluate the blood count data.</p> <p>2. To evaluate the biochemistry data.</p> <p>3.To evaluate the screening of sera for all components of the TORCH-complex</p>	<p>To pay attention to signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate.</p> <p>Pay attention to cholesterol, lipids, bilirubin, calcium and glucose levels, detection of pathogen-specific IgM and IgG.</p>
4	To understand the data of additional and laboratory investigation.	To understand the data of ultrasound, X-ray and MRI diagnostics.	To pay special attention to the normal parameters of ultrasound, X-ray and MRI diagnostics in diseases in newborn period.
5.	To conduct	1.Consistently to find the com-	Special attention must be

	<p>differential diagnosis.</p>	<p>mon signs in complaints, life and disease anamnesis, data of examination, data of laboratory and instrumental investigations in patient and in similar states.</p> <p>2. To find differences between complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods of research and in similar nosology.</p> <p>3. On the basis of found out differences to exclude similar diseases from the list of credible diagnoses.</p> <p>4. To conduct differential diagnostics according to the above mentioned algorithm among all of nosologies are having the similar signs, among nervous system, respiratory system and cardiovascular system diseases in newborn period.</p> <p>5. Taking into account the impossibility to exclude the diagnosis of RDS, pneumopathies and pneumonias from the list of credible diagnoses to draw a</p>	<p>paid to differential diagnosis among the natal injuries, intrauterine hypoxia and asphyxia in newborn period, intrauterine infections and neonatal infections, among nervous system, respiratory system and cardiovascular system diseases in newborn period.</p>
--	--------------------------------	--	--

		conclusion about most probability of such diagnosis.	
6	To formulate the concluding clinical diagnosis.	<p>1.To formulate the concluding clinical diagnosis.</p> <p>2.Basing on preliminary diagnosis, additional investigations data, conducted differential diagnosis to substantiate all elements of concluding clinical diagnosis.</p>	Being based on modern classification of RDS, pneumopathies and pneumonias to formulate a diagnosis, complications of disease and presence of concomitant diseases.
7	To prescribe treatment for patients.	<p>1.To prescribe non medicinal treatment</p> <p>2.To prescribe the medicinal treatment.</p>	<p>To specify the regimen and detailed diet according to the disease.</p> <p>Taking into account age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal treatment in accordance to the standards of RDS, pneumopathies and pneumonias therapy.</p>

**Materials of the medical support for the students' self training:  
a reference chart for organization of students' independent work with  
educational literature.**

Tasks	Instructions
To study the etiology and pathogenesis of RDS, pneumopathies and pneumonias in children.	To enumerate basic etiologic factors, select the key links of RDS, pneumopathies and pneumonias pathogenesis.
To study clinical manifestations RDS, pneumopathies and pneumonias in children.	To establish the symptoms and gather it to clinical syndromes are enable to put the credible diagnosis of natal injuries
To study diagnostic criteria of RDS, pneumopathies and pneumonias	To make the flow diagram of disease
To study the additional methods of research (laboratory, instrumental)	To work out a plan of patient investigation.
To study the changes in additional investigational methods which are pathognomonic for RDS, pneumopathies and pneumonias .	To enumerate the basic diagnostic criteria of RDS, pneumopathies and pneumonias according to the data of additional investigational methods.
To conduct differential diagnostics, s to establish a concluding diagnosis	To substantiate the basic components of diagnosis in accordance with the modern classification, and to conduct a differential diagnosis.
To prescribe the individual holiatry to patient with the RDS, pneumopathies and pneumonias. To be able to render the first aid in emergency in RDS, pneumopathies and pneumonias .	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient state, stage of disease, presence of complications and concomitant diseases.

## THE RECOMMENDED LITERATURE

### Basic:

1. Nelson Essentials of Pediatrics, fifth edition, Copyright © 2007 / edited by Richard E. Behrman, Robert M. Kliegman, Ann M. Arvin; senior editor, Waldo E. - Section XII.
2. Rudolph's Pediatrics, 21<sup>st</sup> Edition. [Chapter 2](#) .
3. Key Topics in Neonatology. Richard H. Mupanemunda, Michael Watkinson, BIOS Scientific Publishers Limited, 1999, p.38 - 46.

### Additional:

1. Martin: Fanaroff and Martin's Neonatal-Perinatal Medicine, 8th ed., Copyright © 2006 [Chapters 25, 26, 28 , 42, 43](#) .
2. Аряєв М.Л. Неонатологія. - Київ: «АДЕФ-Україна.», 2006. - 754 с
3. Шабалов Н.П. Неонатологія. Том I - Санкт-Петербург, 2006г.
4. Неонатологія. Навчальний посібник для практичних занять зі студентами медичних факультетів вищих навчальних медичних закладів / Волосовець О.П., Безруков Л.О. та інш. - Чернівці, 2000.

## **TOPIC: HEMOLYTIC AND HEMORRHAGIC DISEASES OF NEWBORN.**

Etiology. Pathogenesis. Classification. Clinical presentation. Diagnostics. Differential diagnostics. Treatment. Prophylaxis. Prognosis.

### **I. Actuality of the topic.**

Jaundice is one of symptoms are observed in most of children of newborn period. According to the literature almost in 65% of children jaundice was observed in the first week of life. In 90-95% it is a manifestation of physiological hyperbilirubinemia. The necessity to be able differentiate jaundices in dependence of their etiopathogenesis is caused by possibilities for physical inability or even leads to death, having different levels of hyperbilirubinaemia. More often among jaundices (up to 2,8 % of cases) there is hemolytic disease of newborns with lethality of 0,1 %-1 % till this time, despite the modern treatment methods. Hemolytic diseases of newborn to be characterized by intensive increase of indirect bilirubin, what can lead to damage central nervous system, organic damages, lethal outcome or durable disability. In case of depression of homeostasis bleeding can to be manifestation by hypocoagulation (hemorrhagic disease) or hypercoagulation, that is DIC-syndrome. Community of clinical signs of both this per se contrary diseases complicates ascertainment of clinical diagnosis and treatment tactic, which determine result of medication.

### **II. Classes (pointing of planned mastering level)**

1. A student must know (to familiarize):  $\alpha 1$

- the place of thyroid diseases in the structure of hemolytic and hemorrhagic diseases in structure of newborn infants diseases;
- statistical information in relation to morbidity, frequencies of complications, lethality, the nearest and remote prognosis in newborns with hemolytic and hemorrhagic diseases;
- history of scientific study and payment of domestic scientists;

## 2. A student must know: $\alpha 2$

- Anatomic and physiological features of hematopoietic in fetus and newborn infant, blood system in infants;
- Main etiologic factors of hemolytic and hemorrhagic diseases development;
- Clinical and diagnostic criteria of hemolytic and hemorrhagic diseases in newborns;
- Principles of complex treatment of hemolytic and hemorrhagic diseases in newborns;
- Complications of phototherapy;
- Prophylactic methods of hemolytic and hemorrhagic diseases in newborns and rehabilitation measures after the diseases ending.

## 3. A student must master: $\alpha 3$

### Skills:

- Collection of complaints and anamnesis of disease;
- Examination of newborn infant with hemolytic and hemorrhagic diseases and revealing the main symptoms and syndromes;
- To formulate and substantiate the preliminary diagnosis;
- Determination of laboratory and instrumental inspection plan of patient investigation (to obedience of diagnostics standards);
- Giving the first aid in case of serious course of disease with further evaluation its efficiency.

## 4. Abilities:

- to evaluate condition of newborn;
- to interpret the result of laboratory and instrumental tests;
- to conduct differential diagnosis among diseases with the same clinic;
- to formulate and substantiate the clinical diagnosis according the classification;
- to determine increase of bilirubin by the hour;
- to be able to order blood for blood transfusion operation;
- to conduct determination of blood group and Rh-factor;
- to conduct diagnostic compatibility blood tests;

- to conduct phototherapy;
- to complete the treatment plan in inflammatory disease according to standards taking into account the stage of disease;
- to render the first aid in extreme situation and exigent state;
- to prescribe recipes according to the treatment.

### **Questions for elementary level of knowledge control**

1. To determine conception of jaundices in newborn.
2. To point out main features of bilirubins metabolism in newborns, risk factors, which help progress of jaundices in newborn?
3. What are etiology and pathogenesis of hemolytic disease of newborn?
4. Classification of hemolytic disease of newborn.
5. What are the clinic manifestations of different types of hemolytic disease of newborn?
6. What are the diagnostic principles of hemolytic disease? Conduct differential diagnostic of jaundices in newborn.
7. What is the first aid in case of hemolytic disease of newborn?
8. To prescribe treatment, prophylactic and rehabilitation measures to patient.
9. Determine conception of hemorrhagic syndrome in newborn.
10. Point at the main features of homeostasis in newborn, which can help to development of hemorrhagic disease in newborn.
11. What are etiology and pathogenesis of hemorrhagic disease of newborn?
12. What is the clinic of hemorrhagic disease?
13. What are the diagnostic principles of hemorrhagic disease? Conduct differential diagnostic of hemorrhagic syndrome in newborn.
14. What is the first aid in case of hemorrhagic disease of newborn?
15. To prescribe treatment, prophylactic and rehabilitation measures to patient



### Examples of tests and tasks:

1. New-born child from a mother with the complicated obstetric anamnesis, from third pregnancy, first delivery. At birth a skin is rose. The Hb of blood is 160 g/l, RBC - 4,6 g/l. Bilirubin of blood from the umbilical vein is 60  $\mu\text{mol/l}$ . Blood type of mother is (I) Rh (-), of the child is (I) Rh (+). The icterus of skin appeared after 6 hours; bilirubin of blood is 116  $\mu\text{mol/l}$ , unconjugated. Diagnosis: Icteric - anemic form of Rh-conflict. Define the tactic of medical treatment.

- A. Enterosorbents
- B. Light-therapy
- C. Exchange blood transfusion
- D. Light-therapy + liquid infusion
- E. Membrane stabilizing preparation.

2. In worn child of one week of age, that was born with the weight 3400g, length 51cm, an icterus has appeared in the first days and increased due to indirect fraction of bilirubin. Hepatic enzymes are normal. Blood type of mother is II Rh -positive, of the child is 0(I) Rh- positive. What pathology is more likely in this case?

- A. Biliary atresia
- B. Fetal hepatitis
- C. Hemolytic disease of newborns
- D. Conjugated icterus.
- E. Crigler-Najjar syndrome

3. New-born child, gestational age 36 weeks, at birth the weight is 2400g, length 51cm. A child is excited, tremor of extremities does not suck, dispnoe, gepatosplenomegalia. At the end of the first day the icterus of skin and mucosas has appeared, on the second day the rash on a skin and vesicules in the region of chest. What is your initial diagnosis?

- A. Hemolytic disease of newborns

- B. Physiological jaundice of newborns
- C. Hypoxic- ischemic CNS injury
- D. Intrauterine infection
- E. Biliary atresia.

4. In a newborn girl that was born in term, second delivery, weight 3500g, Apgar score 8-8 points, the icterus has appeared in first day of life. Indirect bilirubin in a blood is 57mcmol/l, after 6 hours is 100 mcmol/l. Choose the correct method of medical treatment.

- A. Exchange blood transfusion
- B. Prescribing of Phenobarbital
- C. Light-therapy
- D. Liquid infusion
- E. Enterosorbent

5. In newborn child with hemolytic disease induced by Rh – conflict the blood type is 0 (I) Rh (+), in mother is (II) Rh(-). What blood must be poured during the operation of exchange blood transfusion?

- A. (II) Rh (-)
- B. O (I) Rh (+)
- C. A (II) Rh (+)
- D. A (I) Rh (-)
- E. B (III) Rh (-)

6. In newborn child in age of one day there was an icterus. Common bilirubin in blood serum is 144mcmol/l, indirect bilirubin is 130 mcmol/l. Coumbs test is positive. Child from the first pregnancy. A mother has blood type 0(I) Rh(-). What was the likely cause of jaundice?

- A. Biliary atresia
- B. The rhesus conflict
- C. ABO-incompatibility

D. Physiological jaundice

E. Fetal hepatitis

7. Worn newborn child from the first pregnancy and first delivery. Mother's blood type is (I) Rh (+), child's is (II) Rh (+). An icterus increases progressively after 2 days of life. Liver +3cm, spleen +1cm. Bilirubin of blood to 3 days of life consists 250  $\mu\text{mol/l}$ , unconjugated is 240  $\mu\text{mol/l}$ . Direct test of Coombs is low positive, Hb 160-160 g/l, RBC. -  $4,5 \times 10^{12}/\text{l}$ , Ht 0,55. What is the probable diagnosis?

A. ABO-conflict

B. Physiologic jaundice

C. Jaundice of mother milk

D. Conjugated icterus

E. Fetal hepatitis

8. Child in the age of 10 days was born in full term with weight 3000g. Apgar score is 8-9 points. From the first day an icterus of skin visible, liver +3,5cm. spleen is on the edge of costal arc. Color of urine and feces are not changed. In this time Coombs test is positive, hemoglobin 130 g/l, reticulocytes is 4, 6%, common bilirubin is 300  $\mu\text{mol/l}$ , and indirect fraction is - 288  $\mu\text{mol/l}$ , transaminases: ALT - 0, 28, AST - 0, 26. During medical treatment the state of child became better, intensity of icterus diminished. Up to 9 days of life icterus acquired greenish color, urine became dark, feces white. In ultrasound cholic channels and gall-bladder scanned clear. Establish the diagnosis:

A. Biliary atresia

B. Fetal hepatitis

C. Jaundice of Crigler-Najjar

D. Intrahepatic cholestasis

E. Physiologic jaundice

9. Child was born in term, with gestational age of 40 weeks and weight of 3000g. Apgar score 7-8 points. Mother's blood is AB (IV) Rh (-). Child's is (III) Rh(+). An

icterus appeared in the first day. Common bilirubin is 200  $\mu\text{mol/l}$ , indirect fraction is 190  $\mu\text{mol/l}$ , direct is 10  $\mu\text{mol/l}$ , Hb-160 g/l, reticulocytes 4,4%. Liver +4cm, spleen + 1,5cm. Urine is light, feces are painted. Coombs test is positive. Establish the diagnosis:

- A. Physiologic jaundice
- B. Hemorrhagic illness of newborns
- C. Fetal hepatitis
- D. Crigler-Nayyar syndrome
- E. Hemolytic disease of newborns

10. Child was born healthy with weight 3500g, length 51cm, Apgar score 8 points. A woman has the first non complicated pregnancy, delivery in term. Mother's blood is (I) Rh (-), father's is (II) Rh (+), child's is (I) Rh (+). What method of prophylaxis of Rh-conflict needs to be appointed for puerpera?

- A. It does not need prophylaxis
- B. Vitamines
- C. Anti-Rh- immunoglobulin
- D. Antihistaminic preparations
- E. Enterosorbents

11. Child after delivery have following clinical data: icterus, pallor, splenohepatomegalia. Blood type is (III) Rh (+); Hb in blood 150 g/l, RBC is  $4,2 \cdot 10^{12}/l$ , reticulocytes 9 %. Bilirubin of blood is 58  $\mu\text{mol/l}$ , unconjugated. Mother's blood is (III) Rh (-), titer of anti- Rh-antibodies during pregnancy are 1:128; 1:256. What test more reliable will help to define the tactic of treatment?

- A. Increasing of bilirubin per hour
- B. Clinical supervision
- C. Routine blood test
- D. Proteinogramme
- E. Level of hepatospecific enzymes

12. A worn child, Apgar score 6 points. Pale, hemorrhages on a skin, general edema: liver +6cm, spleen +4cm. Mother's blood is (I) Rh (-), child's is (I) Rh (+). The Hb in umbilical cord blood 70 g/l, RBC.  $1,5 \cdot 10^{12}/l$  reticulocytes 15%; normoblastes is 70 per 100 leucocytes, in a peripheral blood there is eritroblastes. Bilirubin at birth is 58  $\mu\text{mol}/l$ , unconjugated. Woman has abortions in her anamnesis. What the most reliable diagnosis?

- A. Sepsis of newborns
- B. Congenital leucosis
- C. Rhesus conflict, edematic form
- D. Fetal hepatitis
- E. Hereditary hemolytic anemia

13. Worn newborn after the normal pregnancy and physiologic delivery. On a 4 day of life there is severe icterus of skin and mucoses, liver +1 cm, a spleen not palpated. Reflexes and tone of muscles are not broken, child active. Hb 170 g/l, RBC.  $5,1 \cdot 10^{12}$ , Ht-0,58. Blood type of mother (III) Rh (+), child (III) Rh (+). Bilirubin of blood 430  $\mu\text{mol}/l$ , unconjugated is 420  $\mu\text{mol}/l$ . What is the most reliable diagnosis?

- A. Hepatitis
- B. Conjugated icterus
- C. ABO-conflict
- D. Physiologic icterus
- E. Syndrome of cholestasis

14. Child 2 days. In the end of first day of life an icterus of skin has appeared, a liver was enlarged to 3,5sm. Child is enough active, reflexes and muscular tone are not broken. bilirubin of blood 170  $\mu\text{mol}/l$ , unconjugated, Hb 150 g/l, RBC  $-4,7$ , Ht-0,5. Define the tactic of medical treatment.

- A. Hemotransfusion
- B. Exchange blood transfusion
- C. Extracorporal hemosorbtion

D. Light-therapy

E. Hemotransfusion + membranestabilizing preparations

15. In worn child after the first pregnancy, difficult confinements, there was. Cephalohematoma. An icterus appeared on 2 day of life, on 3 day-admitted the changing in neurological state: nystagmus, Grefe Symptom. Urine is yellow, excrements yellow. Blood type of mother (II)Rh-, child's (II)Rh+. On the third day Hb 200 g/l, RBC.- $6,1 \times 10^{10}$ , bilirubin –in the blood-58 mcmol/l due to unbinding fraction, Ht-0,57. How to explain the jaundice in child?

A. Biliary atresia

B. Fetal hepatitis

C. Cranial- natal trauma

D. Hematolytic disease of newborns

E. Physiologic icterus

16. In newborn, two days of life to the end of the first day an icterus appeared. In clinical examination an- icterus of skin and sclera admitted. A live under edge of costal arc on 4 cm, spleen on 2 cm. Mother's blood type is- (0) the Rh+ child's II Rh(+). In routine blood test the reticulocytosis 15 ‰, RBC  $2,8 \times 10^{12}$  /l, hemoglobin 120 g/l, bilirubin of umbilical blood is 78 mcmol /l, after 8 hour is-190 mcmol /l. Choose the method of medical treatment:

A. Exchange blood transfusion

B. Prescribing of phenobarbital

C. Light -therapy

D. Liquid infusion

E. Intra-gastral dropping linfusion

17. A new-born child has the diagnosed physiologic icterus. For this state characteristically are:

A. Repeated increasing of icterus intensity after the period of its reduction or disappearance

- B. Appearance of icterus during 1 day of life
- C. Duration of icterus more than 10 days
- D. Level of indirect bilirubin more than 205  $\mu\text{mol/l}$
- E. Appearance of the yellow skin colouring on a 2-3 day of life

18. In anamnesis of woman the previous child had hemolytic disease of newborn; abortions, medical abortions. Now woman have VII pregnancy with 16 weeks of gestational age, threat of pregnancy, breaking (II) Rh (-), titer of anti-Rh-antibodies 1:512. Specific prophylaxis of Rh-conflict was not conducted. What method of antenatal medical treatment of Rh-conflict most expediently to prescribe?

- A. Hepatotropic medicines and vitamins
- B. Plasmaferesis
- C. Enterosorbents
- D. Dimedrol
- E. Infusions of glucose

19. Child, 21 day of life, was born on a 38-39 week of gestational age, from 5th pregnancy, 2- delivery, with weight 2480g, length 51cm. On 7th months of pregnancy in a mother the marker of viral hepatitis V revealed. To the end of 1 day of life in child admitted an icterus with gradually increased intensity. To the 7 day of life there is the rise of liver specific enzymes activity was noted, that persists presently. Cardiac tones are muffled, moderate tachicardia. Hepatosplenomegalia. What are the late complications can be observed in child?

- A. Respiratory infections
- B. Diabetes mellitus
- C. Cirrhosis of liver
- D. Leucosis
- E. Elastofibrosis

20. Newborn child is in the newborn pathology department with the icteric form of hemolytic disease caused by immune ABO conflict between mother and fetus. With what purpose to this child prescribed the carbolen?

- A. Strengthening of hepatocytes transferase activity
- B. Breaking of intestinal-hepatic cycle of bilirubin
- C. Compacting of hematoencephalic barrier
- D. Stabilization of erythrocyte membranes
- E. Stimulation of bile secretion



## Tasks

1. A newborn is noted to be quite jaundiced at 3 days of age. Which of the following factors is associated with an increased risk of neurologic damage in a jaundiced newborn?
2. A primiparous woman whose blood type is O positive gives birth at term to an infant who has A-positive blood and a hematocrit of 55%. A serum bilirubin level obtained at 36 h of age is 12 mg/dL. Which of the following laboratory findings would be characteristic of ABO hemolytic disease?
3. You are speaking to a couple who are expecting their first baby in about 2 weeks. They are concerned about the safety of childhood immunizations and also about “unneeded” medications given to newborns in the hospital. They ask about the purpose of the routine administration of intramuscular vitamin K. You explain to them about hemorrhagic disease of the newborn, stating that the untreated baby can manifest
4. You are called to the normal newborn nursery to see a baby who was noted to be mildly jaundiced and has a total serum bilirubin concentration of 12 mg/dL at 48 h of age. The baby is a 3500-g boy who was born at term to a 27-year-old O-positive, Coombs-test-negative primigravida 2 h after membranes ruptured. There were no prenatal complications, and the mother had regular prenatal care. Breast-feeding has been well tolerated, and the baby’s vitals have been normal. The most appropriate additional diagnostic studies to evaluate the cause of this infant’s jaundice are
5. Since you are a new intern, you ordered all of the diagnostic studies you could think of instead of just the ones your senior resident told you were most appropriate. The nurse calls to inform you that the infant’s studies are back. Both the mother and baby have O-positive blood. The baby’s direct serum bilirubin is 0.2 mg/dL, with a repeat total serum bilirubin of 11.8 mg/dL. Urine bilirubin is positive. The mother’s

white count is 13,000/L with a differential of 50% polymorphonuclear cells, 45% lymphocytes, and 5% monocytes. The hemoglobin is 17 g/dL, and the platelet count is 278,000/L. Reticulocyte count is 1.5%. The peripheral smear does not show fragments or abnormal cell shapes. Blood cultures are pending in the laboratory. Liver enzymes and liver ultrasound are normal. G6PD levels and osmotic fragility testing are normal. The most likely diagnosis in this infant is.

**Methodical materials to support basic stage class.**

Professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming .

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct examination of newborn infant with hemorrhagic disease.	1. To conduct the complaints and disease and obstetric anamnesis gathering.  2. To conduct examination of the patient.	Pay attention to features of disease course, underlying factors, concomitant diseases etc.  To establish the availability of risk factors which facilitate disease occurrence.  To assess patient general condition, position in bed, color and humidity of skin and mucose, presence of hemorrhages and bruises on the skin, and extremities swelling.  To pay a regard to presence of haemorrhages, bleeding from mucouses,

			umbilical wound, nasal bleedings, melena and cephalohematomas, internal hematomas, lung bleedings, so on.
		3. To investigate cardiovascular system of the patient (palpation, percussion).	To pay a regard to rhythm of pulse, its tension and size on both hands, apex shape, its properties, margins of absolute and relative cardiac dullness, its changes, HR (tachi- or bradycardia, extrasystole), BP.
		4. To conduct heart and main vessels auscultation.	To pay regard to heart tones weakening or amplifying, appearance of murmurs and additional III, IV tones.
		5. To investigate the pulmonary system	To pay attention to features of percussion and auscultation.
		6. To conduct lungs auscultation.	Presence of apneustic breath, character of vesicles during the auscultation.
		7. To investigate the system of digestion.	Presence of emesis, belches, swellings, fast decline of weight, signs of enterocolitis or peritonitis. Presence of edemas,

			<p>anuria.</p> <p>Signs of depression or hypoexcitability, cramps.</p>
2	To formulate the initial diagnosis.	<p>1.To formulate the preliminary diagnosis</p> <p>2. To substantiate all components of preliminary diagnosis based on complaints, anamnesis, and examinations.</p>	To formulate the initial diagnosis of hemolytic or hemorrhagic disease and to substantiate each component of it, based on modern classification
3	To evaluate the parameters of additional laboratory tests.	<p>1. To evaluate the blood count data.</p> <p>2. To conduct Apt's test in the presence of melena.</p> <p>3.To evaluate the bleeding time, clotting time, platelete count, clot retraction, platelet aggregation tests( using activators), thrombin time, prothrombin index, APTT (Activated Partial Thromboplastin Time), ACT, fibrinogen, tests to assessing the fibrinolytic</p>	<p>To pay attention to signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate.</p> <p>To pay attention to bleeding time, clotting time, platelete count, clot retraction, platelet aggregation tests( using activators), thrombin time, prothrombin index, APTT (Activated Partial Thromboplastin Time), ACT, fibrinogen, tests to assessing the fibrinolytic</p>

		<p>mechanisms.</p> <p>4.To evaluate the results of instrumental patients examination.</p>	<p>mechanisms.</p> <p>To pay attention on US of internals and brain, ECG, X-ray of chest organs.</p>
4.	To conduct differential diagnosis.	<p>1.Consistently to find out the common signs in complaints, life and disease anamnesis, data of examination, data of laboratory and instrumental tests in patient and in similar states.</p> <p>2.To find the differences among complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods of examination and in similar nosology.</p> <p>3. On the basis of find out differences for excluding similar diseases from the list of probable diagnoses.</p> <p>4. To conduct differential diagnostics according to the above</p>	<p>Special attention must be paid to differential diagnosis among the syndrome of “mothers’ swallowed blood”, intranatal infections, respiratory distress syndrome in premature, thrombopenia, inherited coagulopathy, jaundice, natal trauma.</p>

		<p>mentioned algorithm among all nosologies are having the similar signs, among other diseases.</p> <p>5. Taking into account the impossibility to exclude the diagnosis of haemorrhagic disease from the list of probable diagnoses to draw a conclusion about most probability of such diagnosis.</p>	
5.	To formulate the final clinical diagnosis.	<p>To formulate the final clinical diagnosis.</p> <p>Based on initial diagnosis, additional investigations data, conducted differential diagnosis to substantiate all elements of the final clinical diagnosis.</p>	<p>Being based on modern classification of hemorrhagic diseases to formulate the final clinical diagnosis, complications of disease and presence of concomitant diseases.</p>

6.	To prescribe treatment for patients.	<p>1.To prescribe not medicinal treatment</p> <p>2.To prescribe the medicinal treatment.</p>	<p>Expressly to specify the regimen and detalized nutrition according to clinic and status of newborn.</p> <p>Taking into account gestational age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal treatment in accordance to the standards of hemorrhagic diseases therapy.</p>
----	--------------------------------------	--	--

**Materials of the medical support for students' self preparation: a reference chart for organization of students' independent work with educational literature.**

Tasks	Instructions
To study the etiology of hemolytic and hemorrhagic diseases in newborn infants.	To enumerate basic etiologic factors of diseases hemolytic and hemorrhagic diseases in newborns.
To study pathogenesis of hemolytic and hemorrhagic diseases in newborns.	To separate out the main pathogenic links of hemolytic and hemorrhagic diseases in newborns.
To study clinical manifestations of hemolytic and hemorrhagic diseases in newborns.	To select clinical symptoms, which can prove the probable diagnosis of hemolytic and hemorrhagic disease in newborn.

To study diagnostic criteria of hemolytic and hemorrhagic diseases in newborns.	To make a structural scheme of disease.
To study additional investigate methods(laboratory and instrumental)	To make a plan of investigation the patient with hemolytic and hemorrhagic disease.
To study pathognomic changes of additional investigative methods	To recapitulate the main diagnostic criteria of hemolytic and hemorrhagic diseases according to the data of additional investigative methods
To conduct differential diagnostics, to establish a concluding diagnosis	To substantiate the basic components of diagnosis in accordance to modern classification, and to conduct a differential diagnosis.
To prescribe individual complex treatment to the newborn patient with hemolytic and hemorrhagic diseases.	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient' state, the presence of complications and concomitant diseases.

### **Basic literature:**

- 1.Nelson Textbook of Pediatrics, ed 16.2000.
- 2.Сміян І.С. Лекції з педіатрії. – Тернопіль, «Підручники і посібники», 2006 – С. 151-177.
- 3.Сміян І.С. Педіатрія (цикл лекцій). - Тернопіль, „Укрмедкнига”, 1999. - С. 179-216.
- 4.Аряєв М.Л. Неонатологія . Київ, «Адеф-Україна», 2003. – С. 515-550.
- 5.Неонатологія: навч.посібник / зп ред. П.С. Мощича, О.Г. Сулими,. – к.: Вища школа, 2004. – С. 130-165.
- 6.Госпітальна педіатрія / за ред. І.С.Сміяна, В.Г. Майданика - Тернопіль-Київ, 1997. - С. 4-75.



**Additional literature:**

1. Шабалов Н.П. Неонатология. Т.П. - Санкт-Петербург, «Специальная литература», 1997. - U.110-123., 65-81.
2. Неонатология:Руководство / под ред. В.В. Гаврюшова, К.А.Сотниковой. - Л. Медицина, 19а5. - С. 112-124.

## **TOPIC: INTRAUTERINE INFECTIONS OF NEWBORNS (TORCH-INFECTIONS).**

Classification, etiology, pathogenesis. Clinic. Diagnostics. Differential diagnostics, treatment. Prophylaxis, prognosis.

### **I. Actuality of the theme.**

Intranatal infections are the group of diseases at which an infection originates from a mother in ante- and intranatal period of fetus development. For today it one of important problems of modern perinatology, neonatology and paediatrics in general - through wide distribution, high lethality and unfavourable medical-sotsial consequences. In the structure of perinatal death the rate of intranatal infection makes to 65 %. Polymorphic of clinical signs, absence of patognomonic symptoms makes difficult the timely diagnostics of intrauterine infections.

Inrtanatal infections - one of leading reasons of neonatal and child's morbidity, death rate and disability. intranatal infections predetermine inmaturing of pregnancy, premature births, stillborn, congenital defects of development of central nervous system, cardiovessel system, system of digestion of child. A baby can give birth with the unspecific clinical displays of infection, that in the case of absence of etiologic diagnostics considerably complicates treatment and determines an unfavorable prognosis for a subsequent health and development of child. Among reasons of perinatal death rate the intranatal infection are 25-30%, from data of A.V.Zinserling even to 68-70%.

### **II. Classes (with pointing of studies planned mastering level )**

A student must know (to familiarize with):  $\alpha 1$

- the place of intranatal infections in the structure of perinatal pathology.
- statistical information in relation to morbidity, frequency of complications origin, lethality, the nearest and longterm prognosis of patients with intanatal infections;
- history of scientific study and payment of domestic scientists;

A student must know ( master):  $\alpha 2$

- etiology of intranatal infections;
  - key etiologic factors and factors of risk of perinatal infections;
- key links of pathogenesis of intranatal infections;
- classification and able to conduct the analysis of clinical picture of perinatal infectious diseases in newborn: intranatal infection, local and generalised infection;
  - complication of intranatal infections;-
  - principles of treatment of intranatal infections ;

## 2. A student must master: α3

### Skills:

- Collection of complaints and anamnesis of disease;
- Examination of patient with thyroid diseases and revealing the main symptoms and syndromes.
  - To formulate and substantiate the preliminary diagnosis;
  - Determination of laboratory and instrumental plan of patient examination (in obedience of diagnostics standards);

### Abilities:

- To determine the features of perinatal infectious diseases of newborn (intrauterine infection, local and generalised infection) and put a previous diagnosis;
- to work out a plan of inspection at the perinatal infectious diseases of newborn (intranatal infection, local and generalised infection)
- to interpret the results of laboratory and instrumental researches;
- to conduct differential diagnostics of intranatal infections;
  - To give recommendations in relation to the regimen and diet of a patient with intranatal infections, the general state and concomitant pathology;
- To work out a plan of treatment for patient with intranatal infections (in obedience to the standards of treatment) taking into account the stage of disease, presence of complications and concomitant pathology;
  - To give urgent help in extreme situations and at the urgent states;
  - To carry out the prognosis of life at the perinatal infectious diseases of newborn;

### III. Aims of personality development (educative aims):

- A student must demonstrate the domain of medical specialist moral-deontologic principles and principles of professional deference to the rank in neonatology
- A student must learn to adhere to the rules of behaviour and principles of medical etiquette and deontology to develop bedside manner in patients with intrauterine infections;
- to lay hands on ability to set a psychological contact with a patient and his family;
- to master sense of professional responsibility for a timely and adequate medicare

#### Methodical materials to support class basic stage supporting

Professional algorithm of patients management implementation (reference chart) for the practical skills and abilities forming.

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct of patient examination with intrauterine infection.	1.To conduct the complaints and disease anamnesis gathering.  2.To conduct the complaints and disease anamnesis gathering.  3. To conduct patient clinical examination	Pay attention to features of disease course , underlying factors, concomitant diseases etc.  To establish the availability of risk factors which facilitate disease occurrence  To assess patient general condition, position in the bed, colour and wetness of skin and mucous,

		4. Investigate the cardiovascular system of the patient (palpation, percussion).	neurologic state.. To pay a regard to rhythm of pulse, its tension and size on both hands, apex shift, its properties, margins of absolute and relative cardiac dullness, its changes, HR (tachi- or bradycardia, extrasystoly), BP.
		5. To conduct heart and of main vessels auscultation.  6. To investigate the pulmonary system (percussion, bronchophony).  7. To conduct the lungs auscultation  8. To investigate the system of digestion.	To pay regard to heart tones weakening or amplifying, appearance of murmurs and additional III, IV tones.  To pay attention to features of percussion and auscultation in children of different age.  To reveal the changes in auscultation.  To pay attention to the signs of intoxication.
2	To formulate the preliminary diagnosis.	1. To formulate the preliminary diagnosis. 2. To substantiate all components of preliminary diagnosis based on complaints, anamnesis, and examinations.	Based on modern classification to formulate the preliminary diagnosis of and to substantiate each component of it.
3	To evaluate the parameters of additional	1. To evaluate the blood count data.	To pay attention to presence of leucocytosis, shifting of formula, increasing of SR,

	laboratory investigations.	<p>2.To interpret the immunoassay data</p> <p>3. To asses the PCR outcomes.</p>	<p>anaemia.</p> <p>To pay attention to presence in mother's and child blood of elevated Ig G and Ig M against intrauterine infection agents.</p> <p>To pay attention to agents presence in the urine, blood and liquor of the patient.</p>
4	To understand the data of additional and laboratory investigation.	<p>To interpret the data of:</p> <ol style="list-style-type: none"> <li>1. Chest X-ray.</li> <li>2. Neurosonography.</li> <li>3. Liver ultrasound</li> <li>4. urinary tract ultrasound</li> <li>5. Doppler heart ultrasound.</li> </ol>	To pay attention to the ultrasound signs of intrauterine infections on NSG, Doppler of heart.
5.	To conduct differential diagnosis.	<ol style="list-style-type: none"> <li>1.Consistently to find the common signs in complaints, life and disease anamnesis, data of examination, data of laboratory and instrumental investiagtions in patient and in similar states.</li> <li>2.To find differences between complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods of research and in similar nosology.</li> <li>3. On the basis of found out differences to exclude similar</li> </ol>	Special attention must be paid to differential diagnosis among the birth trauma, infectious diseases, HIV.

		<p>diseases from the list of probable diagnoses.</p> <p>4.To conduct differential diagnostics according to the above mentioned algorithm among all of nosologies are having the similar signs included with intranatal infections.</p> <p>5. Taking into account the impossibility to exclude the diagnosis of intranatal infection from the list of probable diagnoses to draw a conclusion about most probability of such diagnosis.</p>	
6	To formulate the final clinical diagnosis.	<p>To formulate the final clinical diagnosis.</p> <p>Based on initial diagnosis, additional investigations data, conducted differential diagnosis to substantiate all elements of concluding clinical diagnosis.</p>	Being based on modern classification of leukemias to formulate a diagnosis, complications of disease and presence of concomitant diseases.
7.	To prescribe treatment for patient.	<p>1.To prescribe not medicinal treatment</p> <p>2. To prescribe the medicinal treatment.</p>	<p>Expressly to specify the regimen and detailed diet according to a disease.</p> <p>Taking into account age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal</p>

			treatment in accordance to the standards of intrauterine infections therapy.
--	--	--	--

## **MATERIAL FOR THE CONTROL AND MEDICAL PROVIDING OF THE CLASS**

### **Control materials for the preparatory stage of class.**

A question for the control of knowledge, skills and abilities level:

1. Etiology and pathogenesis of intrauterine infections.
2. Risk factors of intrauterine infections.
3. Clinical signs of CMV infection.
4. Clinical signs of congenital toxoplasmosis.
5. Clinical signs of rubella.
6. Clinical signs of HSV infection.
7. Clinical signs of listeriosis..
8. Clinical signs of chlamidial and micoplasma infection.
9. Ethiothropic treatment and principles of prophylaxis of intranatal infection.



## THE TESTS:

1. The mother of a 7-day-old infant has developed chickenpox. Which of the following is the most appropriate measure?
  - a. Isolate the infant from the mother
  - b. Hospitalize the infant in the isolation ward
  - c. Administer acyclovir to the infant
  - d. Administer varicella-zoster immunoglobulin to the infant
  - e. Advise the mother to continue regular well-baby care for the infant
  
2. The signs and symptoms of meningitis in an infant can be different than those in an adult. Which of the signs and symptoms of meningitis listed below is more helpful in an adult patient than in a 4-month-old?
  - a. Lethargy
  - b. Jaundice
  - c. Vomiting
  - d. Brudzinski's sign
  - e. Hypothermia
  
3. A 2-year-old boy is being followed for congenital cytomegalovirus (CMV) infection. He is deaf and developmentally delayed. The child's mother informs you that she has just become pregnant and is concerned that the new baby will be infected. Which of the following is true?
  - a. The mother has antibodies to CMV that are passed to the fetus
  - b. The mother's infection cannot become reactivated
  - c. The likelihood that the new baby will become clinically ill is approximately 80%
  - d. Termination of pregnancy is advised
  - e. The new infant should be isolated from the older child

4. As you are about to step out of a newly delivered mother's room, she mentions that she wants to breast-feed her healthy infant, but that her obstetrician was concerned about one of the medicines she was taking. Which of the woman's medicines, listed below, is clearly contraindicated in breast-feeding?

- a. Ibuprofen as needed for pain or fever
- b. Labetolol for her chronic hypertension
- c. Lithium for her bipolar disorder
- d. Carbamazepine for her seizure disorder
- e. Acyclovir for her HSV outbreak

5. A 19-year-old primiparous woman develops toxemia in her last trimester of pregnancy and during the course of her labor is treated with magnesium sulfate. At 38 weeks' gestation, she delivers a 2100-g infant with Apgar scores of 1 at 1 min and at 5 at 5 min. Laboratory studies at 18 h of age reveal a hematocrit of 79%, platelet count of 100,000/ $\mu$ L, glucose 38 mg/dL, magnesium 2.5 meq/L, and calcium 8.7 mg/dL. Soon after, this the infant has a generalized convulsion. The most likely cause of the infant's seizure is

- a. Polycythemia
- b. Hypoglycemia
- c. Hypocalcemia
- d. Hypermagnesemia
- e. Thrombocytopenia

6. A term infant is born to a known HIV-positive mother. She has been taking antiretroviral medications for the weeks prior to the delivery of her infant. Routine management of the healthy infant should include

- a. Admission to the neonatal intensive care unit for close cardiovascular monitoring
- b. HIV ELISA on the infant to determine if congenital infection has occurred
- c. A course of zidovudine for the infant
- d. Chest radiographs to evaluate for congenital *Pneumocystis carinii*

e. Administration of IVIG to the baby to decrease the risk of perinatal HIV infection

7. You are advised by the obstetrician that the mother of a baby he has delivered is a carrier of hepatitis B surface antigen (HBsAg-positive). The most appropriate action in managing this infant would be to

- a. Screen the infant for HBsAg
- b. Isolate the infant for enteric transmission
- c. Screen the mother for hepatitis B “e” antigen (HBeAg)
- d. Administer hepatitis B immune globulin and hepatitis B vaccine to the infant
- e. Do nothing because transplacentally acquired antibody will prevent infection in the infant

8. The infant presented with hepatosplenomegaly, anemia, persistent rhinitis, and a maculopapular rash. The most likely diagnosis for this child is

- a. Toxoplasmosis
- b. Glycogen storage disease
- c. Congenital hypothyroidism
- d. Congenital syphilis
- e. Cytomegalovirus disease

9. For the intrauterine infection the followings results of blood cord investigation. Are characteristic :

- A. the level of immunoglobulin M is increased.
- B. the level of immunoglobulin G is reduced;
- C. the level of general albumin is reduced;
- D. the level of immunoglobulin M is reduced;
- E. all answers are correct;

10. For treatment of CMV encephalitis could be applied:

- A. gentamicin;
- B. cephodox;

- C. Acyclovir;
- D. nothing of mentioned above;
- E. all marked preparations.

11. In child in 3 week of life a cerebral type of intranatally acquired herpes was established with manifestations of fever, convulsive syndrome.,changes in cerebrospinal liquor. The dose of zavirax is :

- A. 1 mg/kg per day
- B. 5 1 mg/kg per day
- C. 10 mg/kg per day
- D. 20 mg/kg per day
- E. 100 mg/kg per day

12. In child in 3 week of life a cerebral type of intranatally acquired herpes was established with manifestations of fever, convulsive syndrome changes in cerebrospinal liquor. What preparations must be prescribed as a causal treatment?

- B. novobiocin
- C. flemoxin
- D laferon
- E. valtrex

13. Child., was born in 37 week of gestation with weight 2800 g. In 3 day of life jaundice appeared. In 4 day the manifestation of conjunctivitis were added. In NSG the moderate internal hydrocephaly. - Survey of ophthalmologist:-bilateral cataract. The method of IFA in blood serum a diagnostic titer of low avidity of anti-Rubella Ig G antibodies was registered. In complex of therapy it is necessary to include:

- A. hyperimmune gamma globulin
- B. glukcocorticoids
- C. antibiotics
- D. desagregants
- E antioxidant

14. In child in 3 week of life a cerebral type of intranatally acquired herpes was established with manifestations of fever, convulsive syndrome, changes in cerebrospinal liquor. What preparations must be prescribed as a causal treatment?

- B. novobiocin
- C. flemoxin
- D laferon
- E. Valtrex

15. Child., 1 day of life, after 3 worn pregnancy. .Weight is 3100 g.,l ength 51 cm. Reflexes of neonates invoked. but quickly exhausted. Skin clear In lungs and heart auscultation without changes. In 7 month of pregnancy in mother the marker of hepatitis B virus was detected. For prophylaxis of hepatitis to the child need to prescribe a standard immunoglobulin in doses: as follows:

- A. 2-3 mg per kg
- B. 1 mg per kg
- C. 10 mg per kg
- D. 10 mg per kg
- E. 0,5 mg per kg

16. In child, 25 day of life is the congenital herpes infection with dominating CNS injury as a hydrocephalic hypertensive syndrome, intrauterine hypotrophy and the fetal hepatitis, there is an immunodeficiency.

What preparation must be prescribed as immunomodulation?

- A. extract of eleuterococcy
- B. decaris
- C. cimeven
- D. .cicloferon
- E chloridin

17. A prematurely born child on the tenth day of life presented the interstitial pneumonia, conjunctivitis. What infection is susoected?:

- A. gonococcus;
- B. listeriosis
- C. CMV infection;
- D. syphilis;
- E. chlamidial infection.

18. For the congenital toksoplasmosis is characteristically all, except for:

- A. icteruses;
- B. hepatosplenomegaly;
- C. eosinophilia
- D. cerebral calcification;
- E. pneumonias

19. In prematurely born child from the mother experienced the mild unconfirmed diseases in 7-8 weeks of gestation the Greg triade observed (microcephaly, CHD, cataract). What agent is most likely the cause of this conditions?

- A. CMV;
- B. Rubella;
- C. Enterovirus;
- Д. listeria;
- E. Micoplasma

20. For the intrauterine CMV infection are characteristic all listed below, except for:

- A. jaunduce;
- B. hepatoslenomegaly
- S. carditis;
- D. hematogenous osteomyelitiss;
- E. Meningoencephalitis.

## **Situational tasks:**

### **Task 1**

Premature child, after II pregnancy, II delivery, at 33-34 weeks of gestation, was born with weight 2100 g, length - 41cm. Apgar score 5-6 points. From the anamnesis reported that first pregnancy ceased with abortion. Current pregnancy with threatened to abortion, toxicosis of first and second half of pregnancy, several times during the pregnancy the body temperature increased. The woman is from rural area, keeps domestic cat and dog. After delivery the condition is severe. The clinical signs of perinatal CNS injury and hydrocephaly are present. Answer the following questions:

1. To determine the risk factors of this state development.
2. What is the preliminary diagnosis?
3. What specific clinical signs of intranatal infection in the child?
4. Whether there is specific therapy and what kind of it is indicated in this case?

### **Task 2**

Premature child from the first pregnancy. Was born in the term of 34-35 weeks of gestation with weight of 2400 g, height is 47 cm. After delivery general condition severe: the signs of perinatal – hypoxic ischemic CNS injury, irritability, tremor of extremities, hepatosplenomegaly, at the end of first day of life the hyperbilirubinemia. At third day of life the skin rash appears with separate vesicles clumping on the chest. Mother of the child is ill with genital herpes.

Give the following answers:

1. To enumerate the intranatal infection with signs mentioned above.
2. What laboratory investigation could support the diagnosis?
3. Specify the preliminary diagnosis..
4. What kind of specific therapy must be prescribed?

### **Task 3.**

Child's age is 21 days old. Stay in hospital. From the anamnesis: reported about complicated course of pregnancy during the first trimester. At 24 weeks of gestation the body temperature increased without symptoms of viral infection. Women didn't treated and once been tested for intranatal infection. The increased Ig G to toxoplasmosis detected – 290 IU/ml, Ig M is negative. Delivery at 37 weeks of gestation. Weight 2450 g, height 48cm. at the end of the first day of life the jaundice appears. At third day was transferred to neonatology department because of worsening in general condition. The signs of irritation, regurgitation, poor sucking. In examination: pallor of skin, decreased subcutaneous fat, hydrocephalic head, sagittal suture is open to 0,8 cm., bulging and pulsatile big fontanel, dimensions is 3x3 cm muscle tone in adductors. Spleen +1 cm, liver +3 cm.

Questions:

1. What disease is more likely?
2. What additional investigation could confirm the diagnosis?
3. What are the paths of transmission?
4. What specialists must exam the child?
5. What are the treatment principles of the disease?

#### **Task 4**

Girl S, 3 days old. From the 5 pregnancy, first delivery. Previous pregnancies ceased by abortions at early stages. Mother had punctulate rash in her face, trunk and extremities is accompanied by body temperature rising during the 2 days at 7-8 week of gestation. There was pain in the nape. In the city where a woman lived there was the epidemy of german measles. Apgar score is 6-7 points. Weight after birth is 2170g., height is 43cm. In examination: Multiply stigmas admitted, severe condition due to RDS, CNS depression. Skin pallor, petechial rash. In the lungs weakened breathing. In heart auscultation the hard murmur is heard. Liver + 3 cm, spleen + 1,5 cm. are dense in palpation. Blood count: Blood count: Hb 125 g/l, erh.:  $3,5 \times 10^{12}/l$ , thromb.  $45 \times 10^9/l$ , leucocytes  $7,1 \times 10^9/l$ , bands- 6 %, s-49 %, eos.- 1 %, lymph. – 32 %, mon. – 12 %, SSR – 4 mm/hour.



Questions:

1. What disease is more likely in this case?
2. What additional investigation must be conducted in this case?
3. What are the signs of classic Gregg tirade?
4. What signs could be revealed in ophthalmologic examination?.
5. What signs could be revealed in Doppler heart ultrasound?

### **Task 5**

Child D, 15 days old. Was born in term, with weight correspondent to gestation. At 2 day of life the resistant jaundice appears. then, the conjunctivitis with relapsed course occurs. Blood count is unchanged. Mother have chlamidial colpitis.

Questions:

1. In suspicion to chlamidia infection what type of antibodies must be detect to confirm the diagnosis?
2. What investigations must be conducted in this case?
3. What are the main signs of chlamidial infection?
4. What are the main principles of therapy?

**VII. Materials of the medical support for the students independent preparation: a reference chart for organization of students independent work with educational literature.**

Tasks	Instructions
To study the etiology and pathogenesis of intranatal infections	To enumerate basic etiologic factors of intranatal infections
To study the pathogenesis of intranatal infections dependent of the agent.	To select the key links of pathogenesis in intrauterine infections.
To study clinical signs of CMV, toxoplasmosis, HSV, herpes, rubella, clamidial, micoplasmial infectons, congenital syphilis.	To detect the symptoms, to group it in syndromes that allows to establish probable diagnosis of intrauterine infection.
To study diagnostic criteria of intrauterine infections.	To compose the structural scheme of disease.
To study the additional methods of research (laboratory, instrumental)	To work out a plan of patient investigation.
To study the changes in additional investigational methods are pathognomonic for lintranatal infections.	To enumerate the basic diagnostic criteria of intrauterine infections. according to the data of additional investigational methods.
To conduct differential diagnostics, to establish a concluding diagnosis	To substantiate the basic components of diagnosis in accordance to modern classification, and to conduct a differential diagnosis.
To prescribe individual complex treatment for patients with intrauterine infections.	To make the prescribing chart specifying the regimen, diet, medicinal treatment, taking into account the age, severity of patient state, stage of

	disease, presence of complications and concomitant diseases.
--	--

## LITERATURE:

### Main literature:

- 1.Дитячі хвороби. За ред. В.М. Сідельникова, В.В.Бережного. К.:Здоров'я, 1999.-734 с.
- 2.Медицина дитинства. За редакцією П.С. Мощича. - К.Здоров'я, 1994. -Т. 1-4.- 2350 с.
- 3.Майданник В.Г. Педиатрия. Учебник (2-е издание, испр. и доп.) Харьков: Фолио, 2002. - 1125 с.
- 4.Шабалов Н.П. Детские болезни. Учебник.-Питер-Ком, С-Пб., 2002.-1080 с.
- 5.Nelson textbook 18<sup>th</sup> Edition by Robert M. Kliegman, MD, Richard E. Behrman, MD, Hal B. Jenson, MD and Bonita F. Stanton, MD. : SAUNDERS EDITION.

### Additional literature:

- 1.Резник Б.Я., Зубаренко А.В. Практическая гематология детского возраста. - К.: Здоровье, 1989. -400 с.
- 2..Майданник В.Г., Майданник И.В. Справочник современных лекарственных средств. - М.: АСТ; Харьков: Фолио, 2005. - 1024 с.
3. Накази МОЗ України «Про удосконалення амбулаторно-поліклінічної допомоги дітям в Україні», «Про удосконалення організації медичної допомоги дітям підліткового віку», та по протоколах за спеціальностями «педіатрія» та ін. МОЗ України. - Київ, 2005. - 414 с
- 4.Хертл М. Дифференциальная диагностика в педиатрии. - М.Медицина, 1990.-1064 с
- 5.Ситуаційні завдання з педіатрії / За ред. чл.-кор. АМН України, проф. В.Г. Майданника. - К., 2006. - 204 с.

## **TOPIC: BACTERIAL INFECTIONS IN NEWBORN INFANTS.**

Classification of bacterial infections in newborn Etiology, pathogenesis, clinical presentation, diagnostics, differential diagnostics, treatment, prophylaxis of inflammatory disease of skin and subcutaneous connective tissue, inflammatory disease of umbilical cord, umbilical wound and omphalic vessels in newborn infants. Neonatal sepsis: classification, etiology, pathogenesis, clinical presentation, diagnostics, differential diagnostics, treatment, prophylaxis, prognosis.

### **The amount of studying hours – 4 academic hours**

#### **I. Actuality of the topic.**

Neonatal sepsis, sepsis neonatorum, and neonatal septicemia are terms that have been used to describe the systemic response to infection in the newborn infant. There is little agreement on the proper use of the term, i.e., whether it should be restricted to bacterial infections, positive blood cultures, or severity of illness. Currently, there is considerable discussion of the appropriate definition of sepsis in the critical care literature. The incidence of neonatal sepsis varies according to definition from 1–4/1,000 live births in developed countries with considerable fluctuation over time and geographic location. Hospital-to-hospital variability in incidence may be related to rates of prematurity, prenatal care, conduct of labor, and environmental conditions in nurseries. Attack rates of neonatal sepsis increase significantly in low-birthweight infants and in the presence of maternal (obstetric) risk factors or signs of chorioamnionitis such as prolonged rupture of membranes (>18 hr), maternal intrapartum fever (>37.5°C), maternal leukocytosis (>18,000), uterine tenderness, and fetal tachycardia (>180 beats/min).

Host risk factors include male sex, developmental or congenital immune defects, galactosemia (*Escherichia coli*), administration of intramuscular iron (*E. coli*), congenital anomalies (urinary tract, asplenia, myelomeningocele, sinus tracts), omphalitis, and twinning (especially the second twin of an infected twin). Prematurity

is a risk factor for both early-onset and late-onset sepsis. That is why the early diagnosis is very important.

## **II. Classes (pointing of planned mastering level)**

1. A student must know : 1

- the place of bacterial infections in the structure of diseases of neonatal period;
- statistical information in relation to morbidity, frequencies of complications, lethality, the nearest and remote prognosis;

2. A student must know:  $\alpha 2$

- risk factors of beginning and pathogenesis of septic diseases in newborn infants;
- clinical classification of inflammatory diseases of newborn infant;
- classic clinical manifestation of septic diseases of newborn infant;
- links of prenatal sepsis;
- features of septic course in full-term and premature infant;
- classic clinical manifestation of septic shock;
- laboratory and instrumental diagnosis of inflammatory diseases in newborn infants;
- treatment principles of inflammatory diseases in newborn infants;
- main measures of inflammatory diseases prophylaxis in newborn;
- organization of dispensary observation of newborn infants, who was ill with sepsis.

3. A student must master:  $\alpha 3$

Skills:

- Examination of newborn infant with septic diseases and revealing the main symptoms and syndromes.
- To evaluate character of rash on newborns skin and mucous cover;
- To form the scheme of diagnostically search;
- To formulate and substantiate the initial diagnosis;
- Determination of laboratory and instrumental plan of a patient's examination (according to diagnostics standards);

- To give the first aid in DIC-syndrome.

#### 4. Abilities:

-evaluating condition of newborn's health;

-collection of complaints and anamnesis of disease;

-interpreting results of laboratory and instrumental tests;

-to complete treatment plan in inflammatory disease according to standards taking into account the stage of disease;

-to render the first aid in extreme situations and exigent states;

-to prescribe medication according the treatment.

### **Questions for elementary level of knowledge control**

1. Which of physiological features of newborn infants helps to development of septic diseases in it?
2. Etiology of pyoinflammatory diseases of skin and hypodermic tissue.
3. Clinical course of inflectional diseases of skin and hypodermic tissue (pemphigus, exfoliative dermatitis, phlegmon of newborn, mastitis of newborn, catarrhal and festering omphalitis, candidosis of skin).
4. Clinical manifestation of inflammatory diseases of umbilical wound.
5. Principles of local pyoinflammatory diseases' treatment.
6. To count risk factors of newborn sepsis' development
7. To count the main clinic form of sepsis.
8. Features of sepsis' course in newborn.
9. Features of sepsis' course in premature newborn.
10. Which clinic manifestations of immunologic insufficiency in patients with sepsis?
11. Diagnostic criteria of sepsis and means of laboratory investigation.
12. Differential diagnostic between immunodeficiency disorders, intranatal infections, genetic defects of metabolism, pathology of endocrine system.
13. To invite principles of treatment of sepsis in newborn.
14. Principles of prophylaxis of pyoseptic diseases in newborn infants.
15. Dispensary observation at infants, who was ill with sepsis.

### Examples of tests and tasks:

1. Child 5 days of life, take place the hyperemia, the infiltration of umbilical wound, purulent discharge from umbilical wound, the umbilical vein is palpated as tension bar. Follows symptoms appeared during the next day of life: stiff neck, tonic abduction of eye globes, retraction of the big fontanel, pulsation of an angle of a mouth, refusal of meal, cerebral scream. In the routine blood test is leucotsytosis, deviation to the left, acceleration of a blood sedimentation rate. In a bacterial sowing from umbilical wound the st. aureus allocated. Establish the preliminary diagnosis:

A Hypoxia CNS injury , acute period, hypertensive hydrocephalic syndrome, convulsive syndrome, severe course

B. Purulent omphalitis. Thrombophlebitis of an umbilical vein

C. Subarachnoid hemorrhage. Purulent omphalitis

D. Postnatal staphylococcal umbilical sepsis. Septicopyemia. Purulent omphalitis. Purulent meningitis. Thrombophlebitis of umbilical vein.

E The complicated purulent meningitis.

2. Child 5 days of life, take place the hyperemia, the infiltration of umbilical wound, purulent discharge from umbilical wound, the umbilical vein is palpated as tension bar. Follows symptoms appeared during the next day of life: stiff neck, tonic abduction of eye globes, retraction of the big fontanel, pulsation of an angle of a mouth, refusal of meal, cerebral scream. In the routine blood test is leucotsytosis, deviation to the left, increased rate of blood sedimentation. In a bacterial sowing from umbilical wound the st.aureus found. What test allows diagnosing purulent meningitis?

A Lumbar puncture

B. The developed analysis of a blood

C. Neurosonography

D. Bacteriological blood analysis

E. Echo - encephalography



3. Child 5 days of life, take place the hyperemia, the infiltration of umbilical wound, purulent discharge from umbilical wound, the umbilical vein is palpated as tension bar. Follows symptoms appeared during the next day of life: stiff neck, tonic abduction of eye globes, retraction of the big fontanel, pulsation of an angle of a mouth, refusal of meal, cerebral scream. In the routine blood test is leucotsytosis, deviation to the left, acceleration of a blood sedimentation rate. In a bacterial sowing from umbilical wound the S.aureus found. Name the most comprehensible variant of debut antibacterial therapy

- A. Cefazolin, azlocillin
- B. Ampiox, gentamicin
- C. Oxacillin, gentamicin
- D. Cefazolin
- E. Oxacillin, rovamycin

4. Child 5 days of life, take place the hyperemia, the infiltration of umbilical wound, purulent discharge from umbilical wound, the umbilical vein is palpated as tension bar.. Follows symptoms appeared during the next day of life: stiff neck, tonic abduction of eye globes, retraction of the big fontanel, pulsation of an angle of a mouth, refusal of meal, cerebral scream. In the routine blood test is leucotsytosis, deviation to the left, increased rate of blood sedimentation. In a bacterial sowing from umbilical wound the st.aureus found. Select an adequate dosage of antibiotics indicated in this case

- A. Oxacillin 100 mg/kg; gentamicin 3 mg/kg
- B. Oxacillin 150; mg/kg, gentamicin 3 mg/kg
- C. Oxacillin 100; mg/kg , gentamicin 5 mg/kg
- D Oxacillin 150 mg/kg; gentamicin 5 mg/kg
- E. Oxacillin 100 mg/kg; gentamcin 7 mg/kg

5. In newborn child, 1 day of life, was born in 37 week of gestational age with weight 1800g an absence of a physiological erythema, marbling and paleness of skin has appear, hepatoslenomegaly. RDS of III degree, convulsive readiness, protrusion

of the big fontanel, stiff neck, purulent conjunctivitis. The acute salpingo-oophoritis is diagnosed for mother in 3 trimester of pregnancy. Establish the preliminary diagnosis:

- A. Antenatal sepsis: Septicopyemia. Purulent meningitis. Pneumonia. Purulent conjunctivitis.
- B. Natal trauma of CNS. Purulent conjunctivitis
- C. Intrauterine infection. Conjunctivitis
- D. Pneumopathy.. RDS III. Intrauterine oligotrophy
- E. Intranatal sepsis. Hematosepsis

6. In newborn of five days of life in examination the hyperesthesia, the compelled pose is taped with restriction of movement in the upper right extremity, pain in a palpation of t right brachium, edema of the right humeral joint, right sided oppression of Moro reflex, loss of appetite, flaccidity, hypodynamia, paleness of skin,. In routine blood test the hyperleucocytosis, neutrophilosis, anemia admitted.

What disease do similar signs characterize?

- A. Kerer paralysis
- B. Epiphyseal osteomyelitis
- C. Paralysis of Duchen-Erb
- D. Fracture of a humeral bone
- E. Traumatic epiphisiolysis of humeral bone.

7. In child of 6 day of life who was born in 35 weeks of gestational age with weight 2100 the vesiculopustulosis diagnosed. On 7 day of life on background of umbilical wound physiological wetting the infiltration and hyperemia of umbilical ring has appeared. On the 19 day of life the cuticularization of umbilical wound has not stepped. From this day signs of intoxication accrue, oppression of CNS. In bacterial crop the st.aureus found. Select an optimal antibiotic:

- A. Rovamcin
- B. Ampicillin
- C. Oxacillin

D. Gentamicin

E. Carbenicillin

8. In child of 6 day of life who was born in 35 weeks of gestational age with weight 2100 the vesiculopustulosis diagnosed. On 7 day of life on background of umbilical wound physiological wetting the infiltration and hyperemia of umbilical ring has appeared. On 19 day of life the cuticularization of umbilical wound has not stepped. From this day signs of intoxication accrue, oppression of CNS. In bacterial crop the st.aureus found. Select an optimal immunopreparation

A .Antistaphilococcal immunoglobulin

B. Native plasma

C. Thymalin

D. Levamisol

E . Immunoglobulin human

9. In a child of 8 days of life on the right breech the purple - and cyanotic spot with dimensions of 3x5 cm occur, protruding above the surface of skin, dense and painful by a touch. According to mother information child became languid, sucks badly, belching, has a fever. What is the probable diagnosis?

A. Pseudofurunculosis of Figner

B. Adiponecrosis

C. Exfoliative dermatitis of Ritter

D. Postinjectional abscess

E. Phlegmon of newborn.

10. In a child of 8 days of life on the right breech the purple - and cyanotic spot with dimensions of 3x5 cm occur, protruding above the surface of skin, dense and painful by touch. According to mother information child became languid, sucks badly, belching, has a fever. What volume of antibacterial therapy needs to be administrated?

A. 2 antibiotics in therapeutically doses

- B. 1 antibiotic in therapeutical dose
- C. 1 antibiotic in maximal dose
- D. 2 antibiotics in maximal dose
- E. There is no necessity in administration of antibiotics

11. In a child of 8 days of life on the right breech the purple - and cyanotic spot with dimensions of 3x5 cm occur, protruding above the surface of skin, dense and painful by touch. According to mother information the child became languid, sucks badly, belching, has a fever. Determine the range of topical therapy

- A. Disclosing of a wound by alternating cuts within the limits of healthy tissues
- B. Application of bandages with hypertonic salt solutions
- C. Application the bandages with ointment of Vishnevsky
- D .Disclosing by one cut
- E. Using of UHV

12. In newborn of 5 day of life a vesicles on the skin of abdomen and extremities filled with serous and purulent liquid has appeared. The general state of the child has not changed Establish the diagnosis:

- A. Syphilitic pemphigus
- B. Pemphigus of newborns, the malignant form
- C. Exfoliative dermatitis of Ritter
- D. Pemphigus of newborn. Simple form
- E. Physiological ecdysis

13. In newborn of 5 day of life a vesicles on the skin of abdomen and extremities filled with serous and purulent liquid has appeared. The general state of the child has not changed. Prescribe the treatment:

- A. Immunotherapy, topical therapy
- B. Antibiotic, topical therapy
- C. 2 antibiotics, topical therapy
- D. General UVI of skin

E. Topical therapy, general UVI of skin

14. In newborn of 5 day of life a vesicles on the skin of abdomen and extremities filled with serous and purulent liquid has appeared. The general state of the child has not changed. What etiology of these rashes?

- A. Streptococcus
- B. St.aureus
- C Treponema pallidum
- D. Herpes simplex virus
- E. Listerias

15. In newborn of 14 day of life the infiltration and hyperemia of umbilical ring can be seen, serous and purulent allocations from umbilical wound. Administration of antibiotic during the 7 days and the intensive lavage of umbilical wound with using of 3 % solution of Hydrogeni peroxide, 70 % medical alcohol, 5 % solution of a potassium permanganate were ineffective. Name the most probable diagnosis.

- A. Umdilical sepsis
- B. Incomplete umbilical fistula, purulent omphalitis
- C. Complete umbilical fistula, purulent omphalitis
- D Purulent omphalitis
- E. Complete urinary fistula, purulent omphalitis

16. In newborn of 14 day of life the infiltration and hyperemia of umbilical ring admitted, serous and purulent allocations from umbilical wound. Administration of antibiotic during the 7 days and the intensive lavage of umbilical wound with using of 3 % solution of Hydrogenium peroxide, 70 % medical alcohol, 5 % solution of a potassium permanganate were ineffective. What is the further tactics?

- A Intensifying of topical therapy
- B.Continuation of prescribed therapy
- C. Intensifying of antibacterial therapy
- D .Changing of antibiotics

E. Consultation of surgeon

17. In newborn with weight 1900g, the signs of an intoxication take place., RDS III, anemia, thrombocytopenia, leucocytosis with deviation to the left, on X-ray the pneumonia with fine centers. What variant of pneumonia course is expected?

- A. Lingering
- B. Acute
- C. Chronic
- D. Fulminant
- E. Subacute

18. In newborn with weight 1900 g, the signs of intoxication take place, RDS III, anemia, thrombocytopenia, leucocytosis with deviation to the left, on X-ray the pneumonia with fine centers. Select an optimal variant of treatment:

- A. 1 antibiotic, immunostimulators, liquid infusion, physiotherapy
- B. 2 antibiotics, respiratory therapy, physiotherapy
- C. 2 antibiotics, passive immunotherapy, respiratory therapy, liquid infusion, physiotherapy
- D. immunotherapy, respiratory therapy, liquid infusion
- E. 2 antibiotics, respiratory therapy, passive immunotherapy.

19. In newborn with weight 1900 g, the signs of intoxication are taking place, RDS III, anemia, thrombocytopenia, leucocytosis with deviation to the left, on X-ray the pneumonia with fine centers. What parameters will define the necessary volume of respiratory therapy?

- A. Gas blood test, pH of blood
- B. Silverman score
- C. Dowence score
- D. Frequency of respiration
- E. Color of skin

20. In newborn child of 3 days of life due to hyperbilirubinemia the catheter in an umbilical vein is fixed. The catheter functioned during the 2 days. To the 6 day of life the signs of colenteritis found. To the 8 day the pneumonia diagnosed, to the 10 day the purulent meningitis. Classify sepsis by the entrance hiluses:

- A. Pulmonary
- B. Umbilical
- C. Cryptogenic
- D. Intestinal
- E. Iatrogenic

### **Tasks.**

1. A 1-month-old is noted to have eosinophilia, during a routine-screening. Other blood data is normal. Which of the following most commonly causes increased eosinophilia in the peripheral blood smear?

2. In newborn of 5 day of life a vesicles on the skin of abdomen and extremities filled with serous and purulent liquid has appeared. The general state of the child has not changed. Thrombocytopenia, leucocytosis with deviation to the left anemia is taking place.

What etiology of these rashes?

Prescribe the treatment to the patient

3. Newborn child was hospitalized with mothers complaints at worsening of appetite, brings up, limpness, one-time temperature increase, weeping of umbilical wound during last few days. Bacterial inoculation from the umbilical wound is: st.aureus, st.epidermalis. Blood data is normal.

Determine diagnosis.

What is pathogenesis of infant's illness?

4. In newborn of 8 days of life with hypothermia the signs of spotted rash occurred (Candida detected). Then, the pneumonia with impoverished auscultative signs and the rich mucopurulent sputum was diagnosed. The sclera and icterity of skin takes place. In the routine urine analysis the erhythrocyturia, cylindruria, leukocyturia, proteinuria detected.

Determine diagnosis.

Prescribe the treatment to this patient.

5. Newborn 6 days of life, take place the hyperemia, the infiltration of umbilical wound, purulent discharge from umbilical wound, the umbilical vein is palpated as tension bar. Follows symptoms appeared during the next day of life: stiff neck, tonic



abduction of eye globes, retraction of the big fontanel, pulsation of an angle of a mouth, refusal of meal, cerebral scream. In the routine blood test is leucotsytosis, deviation to the left, acceleration of a blood sedimentation rate. In a bacterial sowing from umbilical wound the st.aureus allocated.

Establish the preliminary diagnosis.

Prescribe etiotropic causal? treatment.

### **Methodical materials to support basic stage class.**

Professional algorithm of patient's management for practical skills and abilities forming.

№	Task	Sequence of implementation	Remarks and warnings related to self-control
1	To conduct examination of newborn infant with septic disease.	<p>1. To conduct gathering of complaints and disease and obstetric anamnesis.</p> <p>2. To conduct patient's examination.</p>	<p>Pay attention to features of disease course, underlying factors, concomitant diseases etc.</p> <p>To establish the availability of risk factors which facilitate the disease occurrence.</p> <p>To assess patient general condition, position in bed, color and humidity of skin and mucous, presence of hemorrhages and pyoinflammatory components on the skin, and extremities swelling.</p> <p>To pay a regard to presence of</p>

		<p>3. To investigate cardiovascular system of the patient (palpation, percussion).</p> <p>4. To investigate the pulmonary system (percussion, bronchophony). To conduct lungs auscultation.</p> <p>5. To investigate the system of digestion.</p> <p>6. To investigate the urinary tracts.</p>	<p>hemorrhages, bleeding from mucous, umbilical wound, nasal bleedings, and melena and so on.</p> <p>To pay a regard to rhythm of pulse, it tension and size on both hands, apex shove, it properties, margins of absolute and relative cardiac dullness, it changes, HR (tachi-or bradycardia, extrasystole), BP.</p> <p>To pay regard to heart tones weakening or amplifying, appearance of murmurs and additional III, IV tones.</p> <p>To pay attention to features of percussion and auscultation.</p> <p>Presence of apneustic breath, character of wheezes during the auscultation.</p> <p>Presence of emesis, belches, swellings, fast decline of weight, signs of enterocolitis or</p>
--	--	--	---

		7. To investigate the nervous system.	peritonitis. Presence of edemas, anuria. Signs of depression or hyperexcitability, cramps.
2	To formulate the initial diagnosis.	1.To formulate the initial diagnosis 2. To substantiate all the components of preliminary diagnosis based on complaints, anamnesis, and examinations.	Taking the classification as a starting point to formulate the initial diagnosis of pyoinflammatory disease and to substantiate each component of it.
3	To evaluate the parameters of additional laboratory investigations.	1. To evaluate the blood count data. 2. To conduct Apt's test in the presents of melena. 3. To evaluate the bleeding time, clotting time, platelet count, clot retraction, platelet aggregation tests( using activators), thrombin time, prothrombin index, APTT( Activated Partial Thromboplastin Time), ACT, fibrinogen, tests to assess the fibrinolytic	To pay attention to the signs of anemia, leucocytosis, changing of formula, elevation of sedimentation rate. To pay attention to bleeding time, clotting time, platelet count, clot retraction, platelet aggregation tests( using activators), thrombin time, prpthrombin index, APTT( Activated Partial Thromboplastin Time), ACT, fibrinogen, tests to assess the fibrinolytic

		<p>mechanism.</p> <p>4. To evaluate the results of bacterial investigation.</p> <p>5. To evaluate the results of instrumental patient's investigation.</p>	<p>mechanism.</p> <p>To pay attention to the US of internals and brain, to ECG and X-ray of thoracic organs.</p>
4.	To conduct differential diagnosis.	<p>1. Consistently to find out common signs in complaints, life and disease anamnesis, the data of examination, data of laboratory and instrumental tests in patient and in similar states.</p> <p>2. To find differences among complaints, information of life and disease anamnesis, examination data, information about the laboratory and instrumental methods in similar nosology.</p> <p>3. To find out the differences to exclude similar diseases from the list of probable diagnoses.</p> <p>4. To conduct differential diagnostics accor-</p>	<p>Special attention must be paid to differential diagnosis among the intranatal infections, respiratory distress syndrome in premature, thrombopenia, inherited coagulopathy, jaundice, and natal trauma.</p>

		<p>ding to the above mentioned algorithm among all of nosologies are having the similar signs, among other pyoinflammatory diseases.</p> <p>5. Taking into account the impossibility to exclude the diagnosis of pyoinflammatory disease from the list of probable diagnoses to draw a conclusion about most probability of such diagnosis.</p>	
5.	To formulate the final clinical diagnosis.	<ol style="list-style-type: none"> <li>1. To formulate the final clinical diagnosis</li> <li>2. Based on initial diagnosis, additional investigations data, conducted differential diagnosis to substantiate all elements of the final clinical diagnosis.</li> </ol>	Being based on modern classification of pyoinflammatory diseases to formulate a concluding clinical diagnosis, complications of disease and presence of concomitant diseases.
6.	To prescribe treatment for patients.	<ol style="list-style-type: none"> <li>1. To prescribe not medicinal treatment</li> <li>2. To prescribe the medicinal treatment.</li> </ol>	<p>Expressly to specify the regimen and detailed nutrition according to pyoinflammatory disease.</p> <p>Taking into account</p>

			gestational age, severity of patient state, the stage of disease, the presence of complications and concomitant pathology, to prescribe modern medicinal treatment in accordance to the standards of pyoinflammatory diseases therapy.
--	--	--	--

**Materials of the medical support for students' self preparation: a reference chart for organization of students' independent work with educational literature.**

Tasks	Instructions
To study the etiology, epidemiology and risk factors of pyoinflammatory diseases in newborn infants.	<ul style="list-style-type: none"> <li>- To enumerate basic etiologic factors of pyoinflammatory diseases in newborn infant;</li> <li>- Epidemiological links of pyoinflammatory diseases in newborn infant;</li> <li>- Features of immunologic reactions in newborn infant;</li> <li>- Risk factors of inflammatory pathology in newborn infant.</li> </ul>

<p>To study clinical manifestations of skins and subcutaneous fats diseases in newborn infant.</p>	<p>o select clinical symptoms, which can prove the probable diagnosis of pemphigus, exfoliative dermatitis, and phlegmon of newborn, mastitis of newborn, catarrhal and festering omphalitis.</p>
<p>To study etiology, links of pathogenesis, pathomorphology of sepsis in newborns.</p>	<ul style="list-style-type: none"> <li>- etiology, features of causal organism, its dependency on infections period;</li> <li>- pathogenetic changes in sepsis;</li> <li>- risk factors of neonatal sepsis;</li> <li>- pathomorphology of sepsis.</li> </ul>
<p>To study clinic criteria of sepsis</p>	<ul style="list-style-type: none"> <li>- characteristic of early and late sepsis;</li> <li>- clinical manifestation of sepsis;</li> <li>- clinical manifestation of septikopyemia with characteristic of festering focus, features of clinic, questions of differential diagnostic of hematogenous osteomyelitis, neonatal meningitis.</li> </ul>
<p>To study the main complications of sepsis</p>	<ul style="list-style-type: none"> <li>- septic shock;</li> <li>- characteristic features</li> </ul>
<p>To study diagnostic criteria of sepsis</p>	<p>To make investigational plan of newborn with sepsis</p>
<p>To study pathognomic changes of additional investigative methods</p>	<p>To recapitulate the main diagnostical criteria of sepsis according to the data of additional investigational methods</p>
<p>To conduct differential diagnostics, to establish a concluding diagnosis</p>	<p>To substantiate the basic components of diagnosis in accordance to modern classification, and to conduct a differential diagnosis.</p>

<p>To study main signs of neonatal sepsis' treatment.</p>	<ul style="list-style-type: none"> <li>a) ensuring of hemorrhagic stability and tissues oxygenation;</li> <li>b) antibacterial therapy, starting scheme of antibacterial therapy;</li> <li>c) modulation of microorganisms reactivity;</li> <li>d) anticoagulant therapy; local treatment of festering seats.</li> </ul>
<p>To study the main questions of prophylaxis of pyoinflammatory diseases and sepsis in newborn infants</p>	<p>Prophylactic measures in prenatal and natal periods</p>
<p>To study methods of dispensary observations at newborn infants , which were endured sepsis</p>	<p>Observations of experts, divisional pediatrics, terms of grafting.</p>



## THE RECOMMENDED LITERATURE

Baker CJ: Immunization to prevent group B streptococcal disease: Victories and vexations. *J Infect Dis* 161:917, 1990.

Boyer KM, Gotoff SP: Prevention of early-onset neonatal group B streptococcal disease with selective intrapartum chemoprophylaxis. *N Engl J Med* 314:1665, 1986.

Boyer KM, Gotoff SP: Antimicrobial prophylaxis of neonatal group B streptococcal sepsis. *Clin Perinatol* 15:831, 1988.

Boyer KM, Klegerman ME, Gotoff SP: Development of IgM antibody to group B streptococcus type III in human infants. *J Infect Dis* 165:1049, 1992.

Cabal LA, Siassi B, Cristofani C, et al: Cardiovascular changes in infants with b{beta}-hemolytic streptococcus sepsis. *Crit Care Med* 18:715, 1990.

Dillon HC, Khare S, Gray BM: Group B streptococcal carriage and disease: A 6-year prospective study. *J Pediatr* 110:31, 1987.

Givner LB: Human immunoglobulins for intravenous use: Comparison of available preparations for group B streptococcal antibody levels, opsonic activity, and efficacy in animal models. *Pediatrics* 86:955, 1990.

Gray BM, Pritchard DG, Dillon HC: Seroepidemiology of group B streptococcus type III colonization at delivery. *J Infect Dis* 159:1139, 1989.

Martin TR, Rubens CE, Wilson CB: Lung antibacterial defense mechanisms in infant and adult rats: Implications for the pathogenesis of group B streptococcal infections in the neonatal lung. *J Infect Dis* 157:91, 1988.

Payne NR, Burke BA, Day DL, et al: Correlation of clinical and pathologic findings in early onset neonatal group B streptococcal infection with disease severity and prediction of outcome. *Pediatr Infect Dis J* 7:836, 1988.

Sanchez PJ, Siegel JD, Cushion NB, et al: Significance of a positive urine group B streptococcal latex agglutination test in neonates. *J. Pediatr* 116:601, 1990.

Siegel JD, McCracken GHJ, Threlkeld N, et al: Single dose penicillin prophylaxis against neonatal group B streptococcal infections: A controlled trial in 18,738 newborn infants. *N Engl J Med* 303:769, 1980.

Walker CK, Crombleholme WR, Ohm-Smith MJ, et al: Comparison of rapid tests for detection of group B streptococcal colonization. *Am J Perinatol* 9:304, 1992.

Weisman LE, Stoll BJ, Cruess DF, et al: Early-onset group B streptococcal sepsis: A current assessment. *J Pediatr* 121:428, 1992.

Yagupsky P, Menegus MS, Powell KR: The changing spectrum of group B streptococcal disease in infants: An eleven-year experience in a tertiary care hospital. *Pediatr Infect Dis J* 10:801, 1991.

**НАВЧАЛЬНО-МЕТОДИЧНЕ ВИДАННЯ**

**ЛЕЖЕНКО ГЕННАДІЙ ОЛЕКСАНДРОВИЧ**

**РЕЗНІЧЕНКО ЮРІЙ ГРИГОРОВИЧ**

**ПАШКОВА ОЛЕНА ЄГОРІВНА**

**ГИРЯ ОЛЕНА МАКСИМІВНА**

**КАМЕНЩИК АНДРІЙ ВОЛОДИМИРОВИЧ**

**ЛЕБЕДИНЕЦЬ ОЛЕКСАНДРА МИКОЛАЇВНА**

**ВРУБЛЕВСЬКА СВІТЛАНА ВОЛОДИМИРІВНА**

**ГЛАДУН КАТЕРИНА ВАЛЕРІЇВНА**

**СИДОРОВА ІРИНА ВОЛОДИМИРІВНА**

**НЕОНАТОЛОГІЯ**

**(збірник тестів та ситуаційних завдань для самостійної роботи  
англомовних студентів V курсу медичного факультету)**

**На англійській мові**

**NEONATOLOGY**

**(The collection of Test Tasks on hospital pediatrics for the  
5 th year English-speaking students of medical faculty)**

Віддруковано з готового оригінал-макета авторів

