MINISTRY OF HEALTH OF UKRAINE
NATIONAL O.O. BOHOMOLETS MEDICAL UNIVERSITY
DEPARTMENT OF PEDIATRICS №2

GUIDELINES
to practical (seminar) classes
FOR STUDENTS

Educational discipline Pediatrics with children's infectious diseases
Discipline "Health care"
Specialty 222 "Medicine"
Department of Pediatrics No. 2

APPROVED at the meeting of the Department of Pediatrics No. 2 from August 28 , 2023, protocol №1

Reviewed and approved by: Center for Pediatric Disciplines
from August 28 , 2023, protocol № 1

Lesson topic: Hemolytic disease of newborns. Hemorrhagic syndrome in newborn children.

Competencies:
- carry out an assessment of the general condition of a newborn and a child by making a reasoned decision according to existing algorithms and standard schemes, observing the relevant ethical and legal norms,
- distinguish and identify leading clinical symptoms and syndromes (anemic syndrome, jaundice, edematous syndrome, hemorrhagic syndrome); according to standard methods, using the previous data of the patient's history, the data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (hemolytic disease of newborns, hemorrhagic disease),
- based on the results of laboratory and instrumental studies, evaluate information regarding the diagnosis (general analysis of blood, urine, blood proteins, blood glucose, bilirubin and its fractions, neurosonography),
- to establish the final clinical diagnosis by making a reasoned decision and analyzing the obtained objective data of clinical and additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms,
- evaluate and monitor the child's development, provide recommendations on feeding and nutritional features ,
- determine tactics and provide medical assistance in emergency situations (anemia, hyperbilirubinemia , bleeding) in accordance with existing clinical protocols and treatment standards,
- perform medical manipulations (perform indirect heart massage, artificial respiration, install nasogastric and orogastric probes, restore airway patency).

Purpose: Formation of professional competences to achieve the program results of training on diagnosis, treatment and prevention of hemolytic disease of newborns, hemorrhagic syndrome in newborn children and their complications in children.

Equipment: a newborn baby dummy, a set for artificial lung ventilation and oxygen therapy, a neonatal stethoscope, a pulse oximeter, intraumbilical catheters, syringes, diapers , disposable gloves, hand sanitizer.

Lesson plan and organizational structure

The name of the stage	Description of the stage	Levels of assimilation	Time
Setting educational goals and motivation Control of the output equal knowledge , skills , abilities	Organizational issues. Test control Individual orally poll Frontal conversation Motivation training: Hemolytic disease of newborns (HDN) and hemorrhagic syndrome are among the life-threatening pathological conditions of a child that require emergency care. The prognosis of the disease depends on the timeliness of diagnosis and promptness in treatment. The complexity of establishing a	*	60 min

	diagnosis, the variety of reasons for the development of these conditions requires a doctor to have a clear knowledge of this problem. Children who have suffered severe forms of HDN have a high risk of damage to the hearing organs, delayed psychomotor and emotional development, extrapyramidal movement disorders, and reduced memory and intelligence. Most of these children suffer from anemia and are prone to acute infectious and allergic diseases. Entry level control knowledge (test control and oral survey): 1.A full-term boy has the 1st birth from the 3rd pregnancy mother with group blood B(III) by Rhesus-negative; during the primary inspection jaundice, pastiness, hepatosplenomegaly were noted. In the anamnesis mother: 2 medical abortions. Analysis result umbilical cord blood: group blood O(I) Rh-positive, general bilirubin 80 μmol /l at the expense indirect fractions . What is the examination method allows to confirm diagnosis: hemolytic disease of the newborn, rhesus conflict ? A. Level hemoglobin and erythrocyte B. Level transaminase **C. Coombs ' direct tes** D. Hourly increase bilirubin E. Analysis peripheral of blood with evaluation of a blood smear 2. At term newborn girls weight 3500 g from the 1st pregnancy, the 1st physiological birth, mother has 0(I) group Rh- positive blood. On the second day of life jaundice was appeared, indirect bilirubin after 24 hours after birth was 100 μmol /l, and after 48 hours – 240 μmol /l due to unconjugated fractions . Level hemoglobin - 140 g/ l, ALT - 48 units/l, AST - 55 units/l. Group of blood of child is A(II), rhesus negative. Which diagnosis is the most likely ? A. Physiological jaundice		

	B. Hemolytic disease of the newborn , ABO - conflict . C. Hemolytic disease, Rhesus conflict . D. Fetal hepatitis. E. Atresia biliary ways _ 3. In a premature baby newborn girls, weight 3100 g, from the 4th pregnancy the third birth, 35 weeks of gestation; mother with group O(I) blood Rhesus-negative affiliation. During the primary review newborn has severe condition: pallor skin, universal edema, hepatosplenomegaly , tachycardia . In the history of the mother: 2 medical abortions, the titer of anti - rhesus antibodies was 1: 1028. General bilirubin umbilical cord blood 35 μmol /l, hemoglobin – 85 g/l, blood group O(I), Rh-positive. What treatment method is shown in this case ? **A. Replacement blood transfusion** B. Phototherapy C. Infusion therapy D. Appointment phenobarbital E. Appointment enterosorbents 4. Newborn boy from the 1st uncomplicated pregnancy, the 1st physiological birth with gestational age of 37 weeks, on the 4th day of life she had repeated regurgitation of "coffee grounds", melena, which continued within 3 days. Her parents are healthy. During laboratory examination: level hemoglobin 150 g/l, quantity platelets - $300x10^9$/l, coagulation time 7-8 min , prothrombin time - 30s, activated partial thromboplastin time – 80 s, prothrombin time index - 40%, fibrinogen - 3.0 g/l, products degradation fibrin - 5 mg/l. Which most probable diagnosis ? A. Early hemorrhagic disease. **B. Classical hemorrhagic disease.** C. Late hemorrhagic disease. D. Hemophilia A. E. DIC syndrome. 5. Newborn girl from the 1st uncomplicated pregnancy, 1st physiological delivery was born		

	with gestational age 39 weeks , weight at birth - 2850 g. Evaluation according to the Apger scale 8-9 points. Mother is healthy. In the first day of a child's life melena appeared. What a study must be carried out for the purpose of differential diagnostics hemorrhagic disease and " swallowed " syndrome maternal blood "? **A. Apt's test.** B. Coagulogram . C. General urine analysis D. General analysis blood _ E. Biochemical analysis blood _		
The main stage Analysis of theoretical material Treatment of patients	Methods of skill formation: professional training, solutions to tests, typical problems a) demonstration of the thematic patient by the teacher; b) independent work - curation of newborn children (collection of anamnesis, objective observation, preparation of a preliminary diagnosis, preparation of an examination and treatment plan); c) clinical examination of the patient with the participation of the teacher. Differential diagnosis, evaluation of clinical data, results of laboratory and instrumental research, treatment; d) acquisition and practice of practical skills	** * **, *** *, **, *** **, ***	120 min
The final stage Control of the final level of training General evaluation of the student's educational activity Informing students about the topic of the next lesson	Skills control methods : individual control of practical skills skills and their results . Analysis and assessment results work _ *Control of the final level of training* (*situational problems*): 1. A premature baby, weight 3,100 g, from the 4th pregnancy, the 3rd birth at a gestation age 35 weeks; mother blood group O(I) and Rhesus-negative. During the initial examination severe condition of newborn was noted: severe pallor of the skin, universal edema, hepatosplenomegaly, tachycardia. In the history of the mother: 2 medical abortions, , anti-Rhesus antibody titer 1: 1028. Total bilirubin of umbilical cord blood 35 μmol /l,	* ,**	60 min

	hemoglobin – 85 g/l, blood group O(I), Rhesus-positive affiliation . Previous diagnosis? Tactics? Reply. HDN, Rhesus conflict, edematous form. Prematurity (GA - 34-35 weeks). Treatment: blood replacement, two-volume isovolumetric by erythrocyte mass group O(I) rhesus-negative belonging and plasma AB(IV) in a ratio of 2:1 in a total amount 2 x 85 x 3.1 = 500 ml. 2. A full-term boy from the 1st pregnancy, 1st delivery at 37 weeks' gestation, was born with a body weight of 3000 g, a height of 50 cm. Apgar score of 7-8 points. On the second day of life the child had vomit with blood, and a pink rim was found on the diaper around the feces. No pathology was detected on the part of the internal organs. What is the most likely diagnosis? Examination plan? Treatment? Reply. Hemorrhagic disease, classic variant. Treatment: vitamin K1 IV 10 mg/kg, fresh frozen plasma 10 ml/kg. The main principles of emergency care with bleeding of any etiology before establishing the cause of bleeding should include exactly these two points: parenteral administration of vitamin K and fresh frozen plasma of the appropriate blood group.		

* Introductory , ** reproducible , *** reconstructive , **** creative levels assimilation _

Literature:

1. Neonatology: textbook: in 3 volumes/ T.K. Znamenska , Y.G. Antipkin , M.L. Aryaev , etc .; under the editorship T.K. Znamenskaia - Lviv: T.V. Marchenko Publisher, 2020.- Volume 2.-p.371-455
3. Order of the Ministry of Health of Ukraine dated 04/27/2006 No. 255 "On approval clinical protocol of provision neonatological help children with jaundice newborns ". https://zakon.rada.gov.ua/rada/show/v0255282-06#Text
4. Basics of pediatrics according to Nelson: in 2 volumes. Volume 1 / Karen J. Marcdante , Robert M. Kligman ; translation of the 8th Eng. publication _ Scientific translation editors V.S. Berezenko , T.V. Rest Kyiv : VSV "Medicine", 2019. T 1. - p. 254 -262.
5. Nelson Textbook of Pediatrics, 2-Volume Set, 20th Edition, 2020 by Robert M. Kliegman , Bonita MD Stanton, Joseph St. Geme and Nina F Schor, 5315 p.

https://www.eu.elsevierhealth.com/nelson-textbook-of-pediatrics-2-volume-set-9781455775668.html
Informational resource
https://www.ncbi.nlm.nih.gov/books/NBK532930/

Questions for student self-preparation for practical training :

1. Risk factors of hemolytic disease of newborns and hemorrhagic syndrome of newborns.
2. Clinical variants and complications of hemolytic disease of newborns and hemorrhagic disease of newborns.
3. Methods of diagnostics of hemolytic disease of newborns and hemorrhagic disease of newborns.
4. Diagnostic criteria physiological and pathological jaundice.
5. Differential diagnosis hemorrhagic disorders in newborns.
6. Management tactics newborns children with hemolytic disease of newborns and hemorrhagic diseases of newborns.
7. Indications and technique conducting blood exchange transfusion.
8. Complications of blood exchange transfusion.
9. Methods prevention hemolytic diseases newborns.
10. Prevention hemorrhagic diseases newborns.

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