

Features of the Course of Hyperbilirubinemia in Children Born with an Aggravating Obstetric History

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Abstract In recent years, there has been an increase in the incidence of neonatal hyperbilirubinemia, first of all, conjugation, as well as hemolytic disease of the newborn. Moreover, all are more often the problem of so-called lingering jaundice, detected in children older than 1 month, sounds life. Information on the role of various etiological factors contributing to the increase the frequency of neonatal hyperbilirubinemia is very scattered in the literature. By some data, this is facilitated by an increase in the number of premature babies, newborns with intrauterine growth retardation, with morpho-functional immaturity, acute or chronic hypoxia born from mothers with endocrine and other somatic pathology; according to other sources, an increase in the incidence of neonatal hyperbilirubinemia contributed to the introduction of vaccination against hepatitis B in the national immunization schedule the first day of life. Probably a certain contribution to the increase in the incidence of neonatal hyperbilirubinemia is caused by an increase in the number of children with intrauterine infections (previously total, hepatitis), an increase in the frequency of immunoconflict pregnancy, during pregnancy, medications affecting the maturation of the hepato-biliary system of the fetus, violations of the ecology of drinking water and nutrition of pregnant women.

Keywords Hyperbilirubinemia, Bilirubin, Immunoconflict pregnancy, Children born with an aggravating obstetric, Hepatitis, Dysbiocenosis

1. Introduction

Hyperbilirubinemia is a syndrome that develops due to the accumulation of excess the amount of bilirubin, characterized by an icteric color of the skin, mucous membranes and sclera. Jaundice is detected by examination, which should be done during the day or under fluorescent lamp. Best of all, icteric staining is found on the conjunctiva, the mucous membrane of the soft palate or lips.

Issues of etiopathogenesis and principles of diagnosis

1. Transient hyperbilirubinemia and physiological jaundice of newborns Transient an increase in the concentration of bilirubin in the blood in the first 3-4 days after birth is noted in almost all newborns. In about half of full-term and most in premature babies, this is accompanied by the development of jaundice. Visual appearance of jaundice observed at a bilirubin concentration from 68 to 137 $\mu\text{mol} / \text{l}$.

Reasons for a transient increase in the concentration of bilirubin in the blood after birth:

1. Increased the rate of bilirubin formation due to:

- a) Physiological polycythemia;
 - b) A shorter life span of erythrocytes containing fetal hemoglobin,
 - c) The catabolic orientation of metabolism, leading to the formation of bilirubin from non-erythrocyte sources (myoglobin, pyrroles, hepatic cytochrome, etc.);
2. The functional ability of the liver to eliminate bilirubin is reduced:
 - a) Reduced uptake of bilirubin by hepatocytes;
 - b) Decreased activity of glucuronyl transferase and other enzyme systems of hepatocytes (GTP activity increases by 50% during the first week, reaching adult levels only by 1-2 months of life);
 - c) Decreased excretion;
 3. Increased re-entry (recirculation) of indirect bilirubin from the intestine into blood due to:
 - a) High activity of the enzyme b-glucuronidase in the intestine;
 - b) The flow of part of the blood from the intestine through the venous (Aranian duct) into the lower hollow vein, bypassing the liver;
 - c) Transient intestinal dysbiocenosis.

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2. Materials and Methods

Adverse effect of pathological factors during early

neonatal adaptation increases the risk of developing and the severity of hyperbilirubinemia in newborns. An important task of a medical professional during the period of monitoring the state of health a newborn child is the delineation of physiological characteristics and pathological disorders of bilirubin metabolism.

Physiological jaundice is caused by a transient increase in concentration bilirubin in the blood, associated with the physiological characteristics of metabolism in the early neonatal period.

Clinical criteria:

Jaundice dynamics

- appears 24–36 hours after birth;
- grows during the first 3–4 days of life;
- begins to fade from the end of the first week of life;
- disappears in the second or third week of life.

Features of the clinical picture

- The skin has an orange tint;
- The general condition of the child is satisfactory;
- The size of the liver and spleen is not increased;
- Formal coloration of feces and urine.

Laboratory criteria:

- The concentration of bilirubin in the umbilical cord blood (at the moment of birth) is less than 51 μmol ;
- The concentration of hemoglobin in the umbilical cord blood is normal;

Modern principles of prevention and treatment

Management tactics

An important condition for the prevention and treatment of hyperbilirubinemia in newborns is to create optimal conditions for the early neonatal adaptation of the child. Wherein all healthy and relatively healthy newborn babies need an early (starting from the first hour of life) and regular breastfeeding. In cases contraindications to early attachment to the breast or excessive loss of the initial body weight by 3–4 days of life, newborns need to organize supplementary feeding with donor human milk or an adapted nutritional formula. Benefits of preventive (from 1 days of life) feeding or supplementing children with water or 5% glucose solution during the period relative hypogalactia is doubtful.

In all cases of illness of the newborn, care must be taken to maintain optimal body temperature, providing his body with a sufficient amount of fluid and nutrients, preventing metabolic disorders such as hypoglycemia, hypoalbuminemia, hypoxemia and acidosis.

To optimize the process of dynamic monitoring of newborn children in conditions of the maternity hospital among them, it is advisable to single out a high-risk group for hemolytic disease of the newborn (HDN), because it is with this disease that the most development of bilirubin encephalopathy is likely. This group includes newborns, having antigenic incompatibility with the mother's blood according to the AB0 system or Rh factor. When this, if the mother has any blood group and a negative Rh factor or

group 0 (I) Rh +, with the birth of a child is mandatory to take samples of umbilical cord blood for laboratory study of the concentration of total bilirubin and hemoglobin, as well as determine the blood group and Rh-factor of the child.

3. Result and Discussion

In cases of the presence of clinical signs of a severe form of hemolytic disease at the time childbirth in a woman with Rh-negative blood (pronounced pallor of the skin, icteric staining of the skin of the abdomen and umbilical cord, swelling of soft tissues, increase the size of the liver and spleen) shows an emergency exchange operation blood transfusion (BPK) without waiting for laboratory data. In this case, use a partial OPK technique, in which 45–90 ml / kg of the child's blood is replaced by a similar volume of donor erythrocyte mass of group 0 (1), Rh-negative.

In other cases, the tactics of managing such children depends on the results of the primary laboratory examination and dynamic observation.

Technique OPEC operation (on Daimond. A) OPEC operation performs a doctor with assistance-ta. The operator and the assistant before the start of the defective conducts preoperative treatment of hands on generally accepted methods, dress sterile bathrobes and gloves. b) Blood transfusion is carried out through a sterile polyethylene catheter (No. 6, 8, 10 - depending on the diameter of the vein), introduced after cutting off the upper part of the umbilical residue in the vein of the umbilical cord for a distance of 3–5 cm (In more detail, the technician setting the umbilical catheter is described in the relevant References). At the age of 4 days and / or the presence of contraindications to catheterization of the umbilical vein, the OPK operation is carried out through any other central vein, to which reliable and safe access can be provided. c) Venu Undermined catheter is introduced by a filled with saline containing 0.5–1 units / ml of heparin. d) The first portions of the blood obtained from the catheter are collected in 3 test tubes: to determine the blood type, to conduct a dough for biological compatibility, to determine the initial concentration of bilirubin. e) fractional portions of 10–20 ml (in deep and severely ill newborns - at 5–10 ml) slowly remove the child's blood and replace it with alternately erythromass and a donor plasma in equivalence e) after administration of every 100 ml of donor blood components for hypocalcemia prophylaxis it is necessary to introduce 1–2 ml of a 10% solution of calcium gluconate or 0.5 ml of a 10% calcium chloride solution, pre-divorced in 5–10 ml 10% g) after the replacement of two volumes of the child's circulating blood, the operation is completed. The average duration of the operation is 1.5–2.5 hours, depending on the body weight of the child. A faster and slower operation may adversely affect the overall state of the newborn. h) Before the end of the operation, blood is re-carried out to a dry tube for the control determination of the bilirubin level. And) at the very end of the operation in the umbilical catheter, an antibiotic of a wide range of action

(half of the daily dose) is introduced. K) If there is a long umbilical residue, silk ligature is superimposed on it, and in its absence - a sterile gulling bandage impregnated with hemostatic solution or a hemostatic sponge. The zone around the umbilical wound is treated with alcohol. As a result of the operation (taking into account blood taken to the study), the total volume of the introduced components of donor blood should be equal to the total volume of the child's derived blood. The unconditional effectiveness of the conducted OPK is evidenced by more than a 2-hook decrease in the bilirubin concentration by the end of the operation. In the postoperative period, there are monitoring of vital functions of the child's body and continue to carry out supporting, foreground and phototherapy.

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