International Journal of Pediatrics and Genetics
Vol. 2 No. 6 (2024)
ISSN: 2995-5483

The Incidence of Congenital Cytomegalovirus Hepatitis in Children Under 1 Year of Age

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Abstract: The article discusses congenital cytomegalovirus hepatitis, their incidence in the pediatric population, etiology, classification, mechanism of development, clinical and laboratory changes, as well as the causes of death.

Key words: children under 1 year old, cytomegalovirus, congenital hepatitis, jaundice.

Relevance. Congenital hepatitis is a group of diseases consisting of particles of different composition and properties resulting from the intrauterine exposure of pathogenic factors to the fetal liver. The clinic of this pathology can manifest itself in cholestatic syndrome, hepatosplenomegaly, lag in psychophysical development, neurological symptoms. Laboratory diagnostics is based on determining the level of AlAT, AsAT, bilirubin, alkaline phosphatase, HBs- HBe- HBc antigens, polymerase chain reaction, ELISA. The complex of treatment includes etiotropic therapy, correction of diet and water-electrolyte balance. If necessary, pathogenetic pharmacotherapy, surgical correction or liver transplantation are performed. The leading role in the etiology of congenital hepatitis in children is played by viral infections from the TORCH group: cytomegalovirus, hepatitis B and human herpes simplex viruses, ECHO, rubella. Bacterial and parasitic diseases suffered during pregnancy can also cause the development of this group of pathologies: syphilis, listeriosis, tuberculosis, toxoplasmosis. Risk factors on the part of the mother include uncontrolled intake of medications with hepatotoxic properties, alcohol, tobacco products, and narcotic substances. On the part of the child, hereditary enzymopathies can provoke the development of congenital hepatitis in children: cystic fibrosis, galactosemia, deficiency of α1-antitrypsin and tyrosine. Quite often, the exact etiology cannot be determined. In this case, the diagnosis of idiopathic congenital hepatitis is established.

Congenital cytomegalovirus infection (HCMVI) is one of the most common in the structure of intrauterine infections and occurs in 0.4–3.5% of newborns in the world. The disease can occur both asymptomatically and in severe form with a 10-30% mortality rate. The most common consequences for survivors are mental retardation, seizures, cerebral palsy, delayed psychomotor development and speech, learning difficulties, and optic nerve atrophy. The frequency of hypertension, according to various authors, varies significantly due to the variety of approaches to the diagnosis of diseases in which jaundice is noted. The frequency of intrauterine viral infection ranges from 0.4 to 22.3%. Cases accompanied by jaundice occur with a frequency of 1:5000-1:10000 births. The newborn period. In 30-50% of cases, infection of the child occurs in utero, during childbirth or the postpartum period. With insufficient immunity, the cytomegalovirus process may manifest in the form of acute or chronic hepatitis. The mechanism of infection in congenital hepatitis in children is based on the transplacental (vertical) transmission of viral or infectious agents from mother to child or their intranatal aspiration together with amniotic fluid. Less often, infection occurs when the skin and mucous membranes of a child come into contact with infected birth canal. The development of congenital hepatitis in the prenatal period usually occurs in the third trimester. The risk of infection of

a child in the first half of pregnancy with acute hepatitis B or C is up to 10%. The impact of TORCH infections on the fetus in the I-II trimester can lead to spontaneous abortion.

The pathogenesis of congenital hepatitis in children is based on cholestatic syndrome in addition to structural changes in hepatocytes (balloon or vacuole dystrophy, etc.). Its main morphological manifestation is the inhibition of cytoplasm by bile pigments and the formation of bile clots in the initial sections of the intrahepatic passages. Also, with congenital hepatitis in children, hypo- or aplasia of the extrahepatic parts of the biliary tract is possible, which further exacerbates cholestasis.

Classification of HCV - by etiology: viral hepatitis B, C, D, G,mixed hepatitis, cryptogenic; according to the time of infection: antenatal, perinatal, postnatal; by course: acute, chronic; by severity of course: moderate-severe, severe, fulminant forms. The clinical forms correspond to the time of infection: congenital fetal hepatitis, perinatal viral hepatitis, postnatal viral hepatitis. Complications: hemorrhagic syndrome, PH, relapses and exacerbations, acute hepatodystrophy, formation of atresia of the pancreas, damage to other organs and systems. According to various authors, 10% of children may have a full recovery. In 15%, the disease progresses rapidly and leads to death. 45% of children die later through the formation of cirrhosis of the liver. When systematizing the clinical forms of the disease, the peculiarities of the course, the severity of symptoms and the time of infection are taken into account. This approach is optimal for choosing treatment and predicting the outcome of cytomegalovirus hepatitis. When isolating mild, moderate and rarely severe variants of pathology, they are based on the severity of clinical symptoms and the degree of morphological changes. The classification criteria are: the dynamics of hepatitis development. There are acute and chronic liver damage. Acute hepatitis of cytomegalovirus genesis is characterized by the manifestation of intoxication syndrome with the rapid development of hepatomegaly, jaundice and pain, pronounced changes in laboratory parameters. Chronic variants may be primary or the outcome of acute ones, fibrotic cirrhotic changes prevail.

CMV hepatitis can be congenital and acquired. A significant number of cases of the disease in children are caused by intrauterine infection. In almost 100% of patients, congenital pathology is represented by a primary chronic process with a risk of outcome to cirrhosis of the liver. Up to 59% of cases of acquired forms of hepatitis occur in the form of an acutely manifested infection with a high probability of complete reverse development.

The timing of the symptoms of congenital hepatitis in children, as well as its clinical characteristics, depend on the etiology. Hepatitis, which is diagnosed in the first three months of a child's life, refers to congenital (neonatal), in some cases they may be caused by postnatal infection with blood transfusion and its components or other iatrogenic interventions (injections, catheters, etc.).

The idiopathic form develops during the first 2-10 days of a child's life. The main manifestations are jaundice of the sclera, mucous membranes and skin. The intensity can vary for several days, after which the skin acquires a greenish tint. Also, idiopathic congenital hepatitis in children may be accompanied by a violation of the general condition (lethargy, apathy), body weight deficiency and its slow increase, hepatosplenomegaly of varying severity, abdominal enlargement, ascites, frequent vomiting. From the very first days, urine acquires a dark or "brick" color, after 2-3 weeks it becomes acolic feces. In severe cases of congenital hepatitis, neurological disorders are observed in children – decreased reflex tone, sluggish paresis, impaired swallowing and sucking. Seizures and meningeal symptoms are less common. The duration of the disease ranges from 14 days to 3 months. Congenital hepatitis caused by HBV virus has a similar clinical picture, but it debuts at 2-3 months of life.

The aim was to establish the etiological structure of congenital hepatitis and the importance of clinical and laboratory criteria for liver damage caused by various pathogens.

Research methods. 53 children of the first year of life with high blood pressure were under our supervision. In most cases, the diagnosis of HCV was established after birth and confirmed upon hospitalization in the children's hospital of the Bukhara region, where they underwent etiopathogenetic and symptomatic therapy. Some children were discharged with positive dynamics of

clinical and laboratory parameters. The biochemical study included the determination of the level of: alanine aminotransferase (AlAT), aspartate aminotransferase (AsAT), bilirubin with fractions, alkaline phosphatase (alkaline phosphatase), total protein. The identification of infections included in the TORCH syndrome, as well as viral hepatitis B and C, was carried out using serodiagnostics. Ultrasound examination was performed to determine the structure of liver tissue.

The results of the study and their discussion. We hospitalized and treated 53 sick children with congenital hepatitis in 2020-2023. Girls made up 29 of them (55%), boys – 24 (45%). Of all 53 patients, children under 1 year old accounted for 44 (83%), and 9 (17%) under 2 years old. Infants were 10 (18.8%), 1 month – 10 (18.8%), 2 months – 11 (20.7%), 3 months – 13 (24.5%). The number of sick children from 1 to 2 years old is 9 (17%). Children with a clinical diagnosis of congenital hepatitis 18 –34%), with hepatitis associated with TORCH (CMV) infection – 35 (66%). According to the mothers, the patients' complaints and clinical manifestations were as follows: jaundice of the skin 53 (100%), jaundice+bleeding in 22 (41.5%), bloating – 30 (56.6%), hepatomegaly – 46 (86.7%), splenomegaly – 6 (11.3%), pronounced collateral network- 13 (24.5%).

Laboratory: ALT, AST were increased in 48 cases (90.5%), ALT, AST were normal in 5 (9.4%), bilirubin was increased in 42 –79%), bilirubin was normal in 13 (24.5%), thymol test was increased in 22 (41.5%), normal – in 31 (58.4%), VSC is elongated – in 26 (49%), VSC is not present – in 27 (51%), ELISA (CMV) – in 53 (100%), positive CMV in 41 (79%), CMV+ HSV in 12 (21%), the analysis for HBsAg was taken in all patients, the response was negative. Ultrasound examination of the liver was performed in all patients (100%), where diffuse changes in liver tissue were detected.

Fatal outcome was observed in 33 (62%) patients with congenital hepatitis under 1 year of age, mainly 1-4 months of age from hemorrhagic syndrome.

Conclusions.

1. Congenital cytomegalovirus hepatitis has become increasingly registered. The frequency of their occurrence is 1:5000-1:1000.
2. Male and female occur with the same frequency (girls 29 (55%), boys – 24 (45%).)
3. Children under 1 year of age get sick more often - 44 (83%).
4. Clinical and laboratory manifestations: jaundice skin, hemorrhages, bloating, hepatomegaly, increased transaminases, lengthening or absence of blood clotting time, positive ELISA for CMV, changes in liver tissue on ultrasound examination.
5. Death in 62% of cases in children under 1 year of age.

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