FUNCTIONAL DISORDERS OF THE BILIARY TRACT IN CHILDREN: CLINICO-PATHOGENETIC CORRELATIONS, DIAGNOSTIC INFORMATIVENESS, AND EFFECTIVENESS OF COMPLEX THERAPY

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Abstract. *The aim of the study was to investigate the clinical manifestations, diagnostic value of various methods, and the effectiveness of complex therapy in children with functional disorders of the biliary tract (FDBT). The study included 68 patients aged 6–15 years diagnosed with gallbladder dysfunction or sphincter of Oddi dysfunction. The main clinical manifestations were abdominal pain syndrome (61%), dyspeptic disorders (47%), astheno-neurotic symptoms (32%), and autonomic dysfunction (18%). The most informative diagnostic method was the ultrasound cholecystokinetic test, with a sensitivity of 72%, which exceeded that of standard ultrasonography (38%). Treatment included dietary therapy, pharmacological agents (antispasmodics, cholekinetics, ursodeoxycholic acid), and physiotherapeutic methods. After 3 months, stable clinical improvement was observed in 79% of patients, with the highest effectiveness achieved through complex therapy (86%). The results emphasize the importance of early diagnosis and a comprehensive therapeutic approach in children with FDBT.*

Keywords: *children; gastroenterology; biliary tract; gallbladder dysfunction; sphincter of Oddi; diagnosis; complex therapy.*

1. Introduction

Functional disorders of the biliary tract (FDBT) in children represent one of the most relevant problems in pediatric gastroenterology. According to epidemiological studies, the prevalence of FDBT in childhood reaches 15–20%, and among patients of gastroenterological departments their frequency is up to 30% [1,2]. FDBT are characterized by impaired motility of the gallbladder and or sphincter of Oddi in the absence of morphological changes in the liver and biliary system.

In children, these disorders are often associated with features of autonomic regulation, dietary factors, psycho-emotional stress, and hereditary predisposition [3]. Changes in lipid metabolism and concomitant gastrointestinal diseases (gastroduodenitis, dysbiosis, functional dyspepsia) also play an important role, enhancing the discoordination of the biliary system [4].

The clinical manifestations of FDBT in children are diverse and nonspecific. The most common symptoms include abdominal pain syndrome, dyspeptic disorders, astheno-neurotic and autonomic manifestations. Such heterogeneity of symptoms complicates timely diagnosis and requires the use of instrumental diagnostic methods. Currently, the

"gold standard" for verification of FDBT in children is the ultrasound cholecystokinetic test, which allows objective assessment of gallbladder motility disorders [5]. However, the issue of comparative diagnostic informativeness of different methods remains relevant.

Treatment of FDBT in children requires a comprehensive approach including dietary therapy, pharmacological and non-pharmacological methods, which determines the need to search for optimal therapeutic regimens and to evaluate their effectiveness over time.

2. Aim of the study

To investigate clinico-pathogenetic correlations, diagnostic informativeness of different methods, and the results of complex therapy in children with functional disorders of the biliary tract.

3.Materials and Methods

The study included anamnesis data, clinical and laboratory examinations, abdominal ultrasound, ultrasound cholecystokinetic test, and in some patients, duodenal intubation.

4. Results

A total of 68 children aged 6–15 years were examined: 42 with gallbladder dysfunction (24 with hypokinetic and 18 with hyperkinetic form), and 26 with sphincter of Oddi dysfunction. A database of clinical manifestations of the disease was formed, including data obtained from medical history: congenital anomalies of the gallbladder and bile ducts, previous infections, and other factors. Dysfunction of the central nervous system was of major importance. In 34% of children, a history of chronic gastroduodenitis was identified; 17% had previous infections, and 11% had congenital anomalies. Prognostic factors in the development of CNS dysfunction included the immaturity and underdevelopment of the nervous system characteristic of childhood, as well as genetically determined high excitability and lability.Disorders of the nervous system characterized by impaired tone of its autonomic component (peripheral nervous system) and muscular weakness. Along this pathway, autonomic neurosis is present, leading to discoordination of contractions of the gallbladder and its sphincter apparatus.The following investigations are recommended: biochemical blood analysis; stool examination for occult blood; abdominal ultrasound examination..Abdominal pain syndrome was detected in 61% of children (paroxysmal in 34%, constant dull pain in 27%). Dyspeptic symptoms were observed in 47% (nausea – 28%, bitter taste in the mouth – 21%, unstable stool – 19%).Astheno-neurotic manifestations occurred in 32%, and autonomic disorders in 18%.

In children with the hypokinetic form, dyspeptic complaints were more frequent (62% versus 28% in the hyperkinetic form, $p<0.05$). In the hyperkinetic form, pronounced pain syndrome prevailed (78% versus 54%, $p<0.05$).

According to instrumental methods, standard ultrasound detected motility disorders in 26 patients (38%), while the ultrasound cholecystokinetic test revealed abnormalities in 49 patients (72%), including 83% in the hypokinetic and 67% in the hyperkinetic form. Duodenal intubation (performed in 15 children) confirmed disorders in 73%. Biochemical changes (elevated bilirubin and transaminases up to 1.5 times the normal range) were found

in 8 children (12%), mainly in those with combined gastrointestinal pathology.The liver was within normal size, with variability ranging from 1.5–2.0 cm to 2.0–2.5 cm below the costal margin. Minimal enlargement was observed mainly in cases of biliary dyskinesia, while the maximum enlargement was found in patients with chronic cholecystocholangitis and anomalies of the gallbladder and bile ducts.

In 70% of the observed patients, liver palpation was sensitive, and the edge was rounded.

The treatment of biliary tract dysfunction in pediatric patients is based on a comprehensive approach. Particular attention was paid to normalizing the body's protective mechanisms through restoring a proper daily regimen and nutrition, as well as reducing allergic sensitization. Elimination of hypovitaminosis and intestinal dysbiosis was also addressed. A significant role in therapy was assigned to regulation of physical activity (limitation of physical exertion during exacerbations, mandatory daytime rest), maintenance of a positive emotional background, and adherence to a gentle diet.

The liver size was within normal limits, with variability from 1.5–2.0 cm to 2.0–2.5 cm below the costal margin. Minimal enlargement was mainly detected in patients with biliary tract dyskinesia, whereas the greatest enlargement was observed in patients with chronic cholecystocholangitis and congenital anomalies of the gallbladder and biliary tract.

In 70% of the observed patients, liver palpation was tender; the edge was rounded, the surface smooth, and the consistency soft. In the remaining 30% of children suffering from cholecystocholangitis and anomalies of the gallbladder and biliary tract, the liver was not only enlarged but also somewhat firm, with moderately painful edges on palpation, accompanied by complaints of dyspeptic disorders. Complaints characteristic of astheno-vegetative syndrome were also present, including headaches, irritability, and weakness.

5. Treatment

In the hyperkinetic form, antispasmodics and diet were prescribed; in the hypokinetic form – cholekinetics, ursodeoxycholic acid, and therapeutic physical exercises; in sphincter of Oddi dysfunction – antispasmodics, ursodeoxycholic acid, and mineral waters. Additionally, physiotherapy procedures (tubage, electrophoresis) were used. After 3 months, positive clinical dynamics were observed in 79% of patients, and in 86% with therapy.

6. Conclusions

Functional disorders of the biliary tract in children are characterized by polymorphism of clinical manifestations, with abdominal pain and dyspeptic disorders being the leading symptoms. The ultrasound cholecystokinetic test demonstrated the highest diagnostic informativeness compared to standard ultrasound and can be considered the method of choice in pediatric gastroenterology. The use of co therapy, including dietary recommendations, pharmacological treatment, and physiotherapy, provides a significant clinical effect and reduces the risk of chronic disease progression.

References

1.Vorobyeva N.V., Belyaeva I.A. Functional disorders of the biliary tract in children: modern approaches to diagnosis and therapy. Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2021;31(4):56–62.

2.Hyams J.S., Di Lorenzo C., Saps M. Functional gastrointestinal disorders in children and adolescents. Gastroenterology. 2016;150(6):1456–1468.

3.Ivanova O.A., Lapina T.L. Clinical and diagnostic significance of the ultrasound cholecystokinetic test in children. Pediatric Gastroenterology. 2020;18(2):33–39.

4.Rasquin A., Di Lorenzo C., Forbes D., et al. Childhood functional gastrointestinal disorders: Rome IV criteria. Gastroenterology. 2016;150(6):1456–1468.

5.Riegard E., Berman R., Robert M., Kligman H., Hoe B., Jenson. Nelson Textbook of Pediatrics / Reed, Elsevier. Moscow, 2005.

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