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MICROSCOPIC AND BIOCHEMICAL BILE STRUCTURE IN ACUTE VIRAL HEPATITIS «C» CONVALESCENT CHILDREN

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ABSTRACT

We have revealed microscopic and biochemical disorders in the bile of children recovering from acute VHC, namely, the higher levels of mucus and cylindrical epithelium, leucocytoids and crystals that indicate the presence of inflammatory phenomena in the mucous membranes and contribute further to gallstone disease development.

Key words: viral hepatitis C, bile, cholesterol crystals, microliths, microscopic and biochemical structure of bile.

INTRODUCTION

In the Republic of Uzbekistan, viral hepatitis morbidity tends to decrease dynamically. In 2010, in comparison with 1990, the total viral hepatitis morbidity decreased in 8.2 times and made 107.7 against 882.0 per 100 thousand population. In 2010, in comparison with 2009, viral hepatitis decreased by 18.6 % [1, 2].

One of the problems related to viral diseases of the liver is development of dysfunctions of the bile excretory system after acute viral hepatitis [3, 4-8]. It necessitates application of laboratory methods of examination enabling to reveal

and correct the disorders of functions of the organs of the hepatobiliary system at early stages.

Thereupon, **the research objective** was: to study changes in the indicators of microscopic and biochemical structure of the bile of children recovering after acute viral hepatitis C (rVHC) with pathology of the biliary system.

Research materials and methods.

The clinical part of the research was conducted in the period from 2009 to 2015 at the Children Infections Unit of the 3rd-hospital of Tashkent Medical Academy, Tashkent-city consultative and diagnostic hepatologic centre at the 1st clinical infectious hospital, the hepatologic unit at the Scientific Research Institute for Virology and the children hepatitis unit at the Scientific Research Institute for Epidemiology, Microbiology and Infectious Diseases.

Thirty two rVHC children with pathology of the biliary system have been included in the research.

The indicators of 20 rVHC children without pathology of the biliary system were used for comparison; the control group consisted of ten apparently healthy children with similar indicators' values.

The diagnosis of viral hepatitis was made on the basis of Uzbekistan MoH's order No 5 of January, 5, 2012 "On measures on perfection of struggle against viral hepatitis in the country".

The biliary system pathology (reactive cholecystitis, cholangitis, residual hepatomegaly) was verified by the results of routine clinical tests, biochemical tests of blood, instrument examination methods (ultrasonic examination of the abdominal cavity, duodenal probing), microscopic and biochemical examinations of the bile structure.

The bile acids' spectrum was determined by thin-layer chromatography by A.I.Ivanova's method (1973). The analysis of bile biochemical structure included identification of such key bile components as bilirubin, cholesterol and bile acids with determination of the cholatocholesterol coefficient (HHC). Bilirubin in the bile was determined by Skakun N.P. (1982) method, its concentration (in mg %) was calculated by the gauging curve made with a bilirubin standard solution. The spectrum of bile acids was also determined in the bile.

Results of the research and discussion: Among rVHC children with the biliary system pathology, children at the age of 7 - 14 years prevailed (65.6 %).

The results of the bile microscopic structure analysis are presented in table 1.

Table 1

Microscopic structure of bile at children rVHC

Type	Apparently healthy (n=10)		rVHC with the GBS pathology (n=32)		rVHC with no GBS pathology (n=20)	
	Abs.	M+m	Abs	M+m	Abs	M+m
Portion A						
Mucous	-	-	26	81.3±6.8	3	15±7.9
Cylindrical epithelium	1	10±9.4	32	100	10	50±11.2
Leucocytes in the field of vision <10	1	10±9.4	-	-	9	45±11.2
Leucocytoids in the field of vision >10	-	-	32	100	11	55±11.1
Chiolesterol crystalls	-	-	23	71.8±7.9	3	15±7.9
Ca bilirubinate	-	-	25	78.1±7.3	2	10±6.7
Microliths	-	-	25	78.1±7.3	4	20±8.9
Portion B						
Mucous	-	-	24	75±7.6	3	15±7.9
Cylindrical epithelium	1	10±9.4	32	100	6	30±10.2
Leucocytes in the field of vision <10	1	10±9.4	-	-	3	15±7.9
Leucocytoids in the field of vision >10	-	-	32	100	17	85±7.9
Chiolesterol crystalls	-	-	27	84.4±6.4	5	25±9.6
Ca bilirubinate	-	-	27	84.4±6.4	5	25±9.6
Microliths	-	-	27	84.4±6.4	5	25±9.6
Portion C						
Mucous	-	-	20	62.5±8.5	2	10±6.7
Cylindrical epithelium	1	10±9.4	32	100	8	40±10.9
Leucocytes in the field of vision <10	1	10±9.4	-	-	4	20±8.9
Leucocytoids in the field of vision >10	-	-	32	100	16	80±8.9
Chiolesterol crystalls	-	-	22	68.7±8.1	7	35±10.6
Ca bilirubinate	-	-	14	43.7±8.7	4	20±8.9
Microliths	-	-	14	43.7±8.7	6	30±10.2

As Table 1 shows, children of the basic group have bile in all the bile portions (81.3 %, 75.0 %, 62.5 %, accordingly), that demonstrates the presence of inflammatory process.

In all children of the study group, all bile portions had cylindrical epithelium, as well as leucocytoids exceeding 10 in the field of vision that suggests development of the inflammatory phenomena in the BET mucus.

In rVHC children with BET pathology, crystals of cholesterol and calcium bilirubinate were found in all portions of bile in a high percentage of cases (71.8 %, 84.4 %, 68.7 %, accordingly). This indicates that in children of the basic group, the risk of development of gallstone disease (GSD) is high. High frequency of microlith identification (78.1 %, 84.4 % and 43.7 in portions of bile A, B and C%, accordingly) also proves to be true

Studying the biochemical structure of bile was the next investigation step. The results of the study are presented in table 2.

Table 2

Biochemical structure of bile in rVHC children

Indicators	**Bilirubib (mg%)**	**Cholesterol (mg%)**	**Bile acids (mg%)**	**HHC (cond. units)**	**GDC**	**GC**	**TD C**	**TC**
rVHC with pathology BET (n=32)	5.0±0.5*	90.0±6.5*	14.,0±11.0*	1.64±0.10*	32.4±0.8*	46.6±1.5*	7.7±0.2*	13.3±0.2*
rVHC with no pathology BET (n=20)	12.0±0.4*	50.0±4.0	222.0±10.5*	4.44±0.15*	46.0±1.8	27.4±1.4	18.7±0.6	7.9±0.5*
Apparently healthy (n=10)	14.5±0.5	46.8±3.5	254.0±9.8	5.4±0.10	49.2±2.5	26.7±1.3	20.0±0.8	4.1±0.4

Note: * significant against the values in healthy children ($p<0.05$)

As Table 2 shows, in children of the basic group, significant disorders of bile biochemical structure ($P<0.05$) in comparison with children of other groups were registered. For instance, due to impairment of bilirubin synthesis children of the

basic group demonstrated an expressed decrease in the level of bilirubin in bile (5.0±0.5 mg / %) and bile acids (148.0±11.0 mg of %) and, hence, an increase in the values of cholesterol (90.0 ± 6.5 mg / %) was registered. Thereof, a decrease in HHC was registered.

In addition, in children of the basic group, a significant decrease in bile acids value of GDC and TDC as well as an increase in GC and TC indicators were registered.

It is necessary to notice that in all indicators of bile acids, the ratio of conjugates of bile acids with glicine and taurine has made 3:1. It indicates that the principal value has not so much the type of conjugation with glicine or taurine, but rather the ratio of hydrophilic (GDC, TDC) and hydrophobic (GC and TC) bile acids.

C**onclusion**: Thus, we have revealed microscopic and biochemical disorders in the bile of children recovering from acute VHC, namely, the higher levels of mucus and cylindrical epithelium, leucocytoids and crystals that indicate the presence of inflammatory phenomena in the mucous membranes and contribute further to gallstone disease development. For instance, one more provoking factor of gallstone disease development was impairment of bilirubin synthesis which consequence was an increase in the cholesterol level, glycocholic and taurocholic acids. The revealed disorders dictate expediency of selection of corresponding therapeutic treatment to prevent the late consequences in the form of cholecystitis, gallstone disease, etc.

REFERENCES

1. Aljavi A.L., Daminov T.A., Dzhambekova G. S, System of screening of patients with diseases of the liver for GPs, 2011, No 1 – pp. 2-8;

2. Daminov T.O., Mavljanov I.R., Shukurov B.V. Viral hepatitis:// Infection, Immunity and Pharmacology. Tashkent-2004 – No 2-pp. 10-15

3. Minushkin O. N. Functional disorders of intestines and the bile excretory system. Medical approaches, spasmolytics selection. 2012- No 2-pp. 64-67.

4. Corazziari E. at al. Functional disorders of the biliary tract and pancreas//1999-Vol 45 (Suppl.2) P 1148-1154.

5. Apstein M.D., Carey M.C. Pathogenesis of cholesterol gallstones: a parsimonious hypothesis. Eur J Clin Invest 1996; 26: P 343-352.

6. Katsika D., Grjibovski A., Einarsson C., Lammert F., Lichtenstein P., Marschall H.U. Genetic and environmental influences on symptomatic gallstone disease: a Swedish study of 43141 twin pairs. Hepatology 2005; 41: 1138-1143.

7. Lammert F., Matern S. The genetic background of cholesterol gallstone formation: an inventory of human lithogenic genes. Curr Drug Targets Immune EndocrMetabolDisord 2005; 5: 163-170.

8. Lammert F., Miquel J.F., Gallstone disease: from genes to evidence-based therapy. J.Hepatol. 2008; 48 (Suppl. 1): S124-135.

9. F.Mamatmusaeva, L.Tuychiyev, Z.Nuruzova, N.Yodgorova, Z.Orinboyeva / Optimizing the treatment of biliary disease in children with viral hepatitis/ International Journal of Pharmaceutical Research /Oct-Dec 2020\ Vol 12/, Hindiston, Issue 4, pp. 536-541

10. Fotima Mamatmusaeva, Zuxra Nuruzova, Nodira Yodgorova, Ulugbek Abdullaev, Navruza Yuldosheva, Sobir Jumamuradov/ Biochemical Composition Of Bile In Children Of Convalescents Of Viral Hepatitis «A»// European Journal of Molecular & Clinical Medicine ISSN 2515-8260 Volume 07, Issue 08, 2020, P. 4385-4389

11. F.Mamatmusaeva, L.Tuychiyev, Z.Nuruzova, N.Yodgorova, Z.Fayzullayeva/ Microscopic composition of bile in children with convalescents of viral hepatitis “A” and “C”// Tematics journal of Microbiology ISSN 2277-2952, Hindiston Vol-5-Issue-3-2021 P. 51-58