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ENDOSCOPIC INTERVENTIONS AND OZONE THERAPY IN THE COMPLEX TREATMENT OF PATIENTS WITH MECHANICAL JAUNDICE AND CHOLANGITIS WITH CHOLEDOCHOLITHIASIS

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✓ ***Resume***

The study aimed to improve the treatment of patients with purulent cholangitis and mechanical jaundice caused by choledocholithiasis, through the use and treatment, including nasobillar ozone therapy.

Key words: ozone therapy, mechanical jaundice, choledocholithiasis, cholangitis

ЭНДОСКОПИЧЕСКИЕ ВМЕШАТЕЛЬСТВА И ОЗОНОТЕРАПИЯ В КОМПЛЕКСНОМ ЛЕЧЕНИИ БОЛЬНЫХ С МЕХАНИЧЕСКОЙ ЖЕЛТУХОЙ И ХОЛАНГИТОМ С ХОЛЕДОХОЛИТИАЗОМ

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✓ ***Резюме***

Целью исследования было улучшение лечения пациентов с гнойным холангитом и механической желтухой, вызванными холедохолитиазом, путем применения и лечения, включая назобиллярную озонотерапию.

Ключевые слова: озонотерапия, механическая желтуха, холедохолитиаз, холангит.

ХОЛЕДОХОЛИТИАЗ БИЛАН МЕХАНИК САРИҚЛИК ВА ХОЛАНГИТ БИЛАН ОҒРИГАН БЕМОРЛАРНИ КОМПЛЕКС ДАВОЛАШДА ЭНДОСКОПИК АРАЛАШУВЛАР ВА ОЗОН ТЕРАПИЯСИ

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✓ ***Резюме***

Тадқиқот холедохолитиаз туфайли келиб чиққан йирингли холангит ва механик сариқлик билан оғриган беморларни даволаш, шу жумладан назобиллар озон терапияси орқали даволашни яхшилашга қаратилган.

Калит сўзлар: озон терапияси, механик сариқлик, холедохолитиаз, холангит

Relevance

In recent years, there has been an increase in the incidence of cholelithiasis among young people and in men, although women still get sick much more often (about 2-6 times) (Zatevakhin II, Danilov IV) In 30-85% of patients, cholangitis develops against the background of choledocholithiasis(Galperin E.M. Rodinov V.V.).

One of the main directions in treating patients with obstructive jaundice and cholangitis caused by cholelithiasis is the decompression of the bile ducts. For this purpose, minimally invasive methods are used at the preoperative stage of treatment: endoscopic papillosphincterotomy, if necessary, lithoextraction and nasociliary drainage, percutaneous transhepaticcholangiostomy under ultrasound control.

However, the removal of biliary hypertension does not solve all the problems of treating patients with purulent cholangitis. It is also necessary to carry out complex antibacterial therapy, detoxification therapy, and correction of water-electrolyte disturbances. The biliary tract must be sanitized with

solutions of antiseptics, sorbents, and endobiliary ozone therapy. To study and endoscopic methods of diagnosing the cause of obstructive jaundice, determine the immune status in patients with obstructive jaundice and cholangitis.

Materials and methods

We analyzed the experience of complex diagnostics and treatment of 80 patients with cholelithiasis, complicated by obstructive jaundice and purulent cholangitis, who were treated at the Bukhara branch of the Republican Scientific Center for Emergency Medical Aid for the period from July 2019 to 2021. The leading group consisted of 54 patients treated at different stages of complex treatment, and endobillary ozone therapy was carried out. The comparison group included 26 patients treated traditionally (without the use of ozone therapy). The distribution of patients by age and sex is shown in Table 1.

Table 1
Distribution of patients by age and sex

Sex	**Total patients**		**Age in years**					
			31-40		**41-50**		**51-60 years and older**	
	Main group	Comparative group	Main group	Comparative group	Main group	Comparative group	Main group	Comparative group
Муж	24	10	8	3	10	4	3	3
Жен	30	16	7	4	20	8	3	4
Всего	54	26	15	7	30	12	9	7

We divided all patients into 4 groups, based on the history, clinical picture and predominant symptoms of cholelithiasis, while adhering to the clinical classification of choledocholithiasis proposed by V.V. Rodionov. in 1991

1. Icteric pain form (60.3% of patients from the main group and 65.3% from the comparison group)
2. Icteric-pancreatic 9.1% - the main group and 9.3% - the comparison group)
3. Icteric-cholecystitis 27.4% of patients from the main group - 16% - from the comparison group)
4. Icteric-painless (2.1% in the main group and 3.4% in the comparison group)

Table 2
The main clinical symptoms observed in the examined patients

№	**Clinical manifestations**	**Amount of patients**		**%**	
		Main group	Comparative group	Main group	Comparative group
1	Pain in the right hypochondrium and epigastrium	52	24	96,3	92,3
2	Nausea, vomiting	52	23	96,3	88,4
3	Fever up to 38^0C	47	20	87	77
4	Chills	38	16	70,3	61,5
5	Jaundice	54	26	100	100
6	Discoloration of urine, feces	54	26	100	100
	Total	54	26	100	100

To define the nature and cause of jaundice, we used the following instrumental diagnostic methods (Table 3)

The diagnostic accuracy of ultrasound in identifying the obstructive nature of jaundice was 95% (76 patients), stones of the extrahepatic bile ducts and the block's level were only 63.7% (51 patients).

Table 3
Methods for the diagnosis of cholelithiasis complicated by choledocholithiasis

Research method	Number of patients	
	Main group	Comparative group
Ultrasound procedure	54	26
Esophagogastroduodenoscopy	54	26
MRI cholangiography	54	26
ERPHG	50	21
EPST (papillosphincterotomy)	42	20
Nasobiliary drainage of hepaticocholedochus	10	5
Percutaneous transhepatic cholangiography (cholangiostomy)	6	3
Intraoperative cholangiography	6	4
Fibrocholedochocholangioscopy	28	10
Total	**304**	**141**

Results and discussion

ERPCH was always performed after esophagogastroduodenoscopy (EGFS), which was performed in all 80 patients. With EGDS, it was possible to identify the causes of extrahepatic obstruction of the bile ducts in 17 (21.2%) patients with impacted calculus in the mouth of the BDS and 5 (6.2%) of patients with a strangulated stone in the OBD (1-7).

The 80 patients, who underwent EGDS, 71 (88.7%) later, were combined with retrograde cholangiopancreatography (ERPCG). The experience of using ERPCH showed the high efficiency of the method in identifying the causes of obstructive jaundice, the level of obstruction of the bile ducts, and assessing the anatomical and functional state of the biliopancreatic system. Preampularhepaticoholedochus stones were detected in 44 patients (61.9%), retro- and supraduodenal bile duct stones - in 15 (21.1%) patients. In 10 (14%) patients with choledocholithiasis, it was possible to contrast the bile ducts above the occluding stone, and in 2 cases (2.8%), the OBD cannulation was not performed to the presence of the latter in the parapapillary diverticulum. In 62 patients (87.3%), endoscopic papillosphincterotomy (EPST) was performed using the standard (cannulation) technique.

After EPST, 55 patients (88.7%) underwent a successful mechanical extraction of common bile duct calculi by the endoscopic method using a Dormia basket through the biopsy canal of the duodenoscope. In 7 patients (11.2%), there were complications in the form of low-intensity bleeding from the mucous membrane of the OBD, in all cases stopped by diathermy coagulation. For decompression of the bile ducts, 15 patients (18.7%), after EPST and revision of the hepaticoholedochus with the Dormia basket, nasobillary drainage of the hepaticholedochus (NBD) was performed according to the standard technique. 9 patients (11.2%) underwent percutaneous transhepatic cholangiography and cholangiostomy (PTS). The reliability of this method for diagnosing choledocholithiasis was (95.4%). Intraoperative cholangiography was performed in 10 patients (12.5%). The indications for intraoperative cholangiography with probing of the bile ducts were: a comprehensive cystic duct with the presence of small stones in it (4 patients), small stones in the unexpanded extrahepatic bile ducts (3 patients), difficulties in interpreting the structure of the bile ducts in 93 patients).

We used interoperativefibrocholangioscopy (FHS) for diagnostic and therapeutic purposes in 38 patients (47.5%) with obstructive jaundice. Stones in the bile ducts were found in 21 patients (55.2%) - multiple, in 17 patients (44.7%) - single. With the help of endoscopic examination, it became possible to reveal large stones and small stones with a diameter of no more than 2-3 mm, as well as putty detritus.

Conclusion

Thus, summing up all of the above, we can conclude that in the diagnostic algorithm for searching for the causes of obstructive jaundice, EGDS with ERPHG, MRI-hCG, HCHG (HCHS), and intraoperative C.G. and FHS should be used. After establishing the cause of obstructive jaundice, cholangitis, and decompression of the biliary tract by using various therapeutic X-ray endoscopic minimally invasive techniques or cholecystectomy, choledochotomy with revision of the bile ducts and subsequent external drainage of the common bile duct for the treatment of patients with purulent

cholangitis, ozone therapy was used. An ozonized isotonic sodium chloride solution with an ozone content of 5 mg / l is used as an antiseptic. Ozonized physiological solution increases the transport of nutrients through the endothelium of microvessels to cells and tissues, increases the possibility of their participation in redox processes, translating cell respiration into aerobic conditions, and stimulates the immune-component cells of the lymph nodes to proliferate.

We used the following methods of endobiliary ozone therapy:

1) In the preoperative period after decompression of the biliary tract (NBD after EPST or CCS)

2) Intraoperative during FHS

3) In the postoperative period, through the external drainage left in the common bile duct at the end of the revision of the bile ducts.

Before the beginning of endobiliary ozone therapy and sanitation of the bile ducts and before each course, bile was taken in a volume of 5 ml with a syringe into a sterile test tube for enzyme-linked immunosorbent assay in order to determine the content of parietal IgA in it. Parietal immunoglobulin A in bile increased 2 times after each subsequent session of endobiliary ozone therapy. The effectiveness of the treatment performed using the methods of endobiliary ozone therapy was: the clinical picture of the patient's condition: indicators characterizing the severity of endotoxicosis (pulse, body temperature, intestinal paresis) (8-13). The detoxification effect of ozone therapy in general clinical and biochemical blood parameters occurred 7-8 days after treatment; in the leading group, the ESR decreased by times, and leukocytosis (less than 10 thousand), a decrease in the level of bilirubin 25.3-22.3% of the initial values, and the activity of the enzymes ALP, AST and ALT in the leading group decreased by 40.8–38.7%. Positive dynamics of changes in immunological blood parameters, the content of T - and B - lymphocytes increased during treatment in both groups of patients. Under the influence of ozone therapy, pains are observed, rapid and effective changes in the body of patients of the leading group, expressed in a decrease in endotoxicosis indicators by 2 - 3 times in a shorter time (14-22).

Thus, the complex use of ultrasound, duodenoscopy, MRI-hCG, ERPHG, TCHHG, and TCHHS in the preoperative period in 98.9% of cases allows to establish the cause and nature of jaundice, sanitation of the bile ducts with ozonized saline solution preoperatively, intraoperatively, and in the postoperative period through drainage in common gall duct within 3-6 days allows eliminating the phenomenon of purulent cholangitis in all patients not only due to mechanical washing of the lumen of the bile ducts from pus and fibrin but due to a decrease in the pathogenicity of bile and an improvement in its passage through the biliary tract, as well as due to an increase in the regional (local and general) immunity. Endobillary ozone therapy increases the body's defenses due to the entrainment of the populations of T- and B- lymphocytes in the blood 2 times, immunoglobulins of class A by 3-5 times. Correctly chosen therapeutic endoscopic methods, the use of preoperative X-ray endoscopic accommodations for decompression of the biliary tract according to indications, timely execution of the surgical aid with the inclusion of endobiliary ozone therapy techniques, a guarantee of the best results in the treatment of patients with obstructive jaundice and purulent cholangitis in choledocholithiasis.

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