

Instrumental diagnosis of the choledochal cysts in children
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Инструментальная диагностика кист холедоха у детей
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Abstract: the article analyzes the before and intraoperative methods of diagnosis of the choledochal cysts. It is established that the right choice of operational tactics is carried out by computed tomography and intraoperative cholangiography in addition to the findings of echosonography.

Аннотация: в статье анализируются до и интраоперационные методы диагностики кист холедоха. Установлено, что правильный выбор оперативной тактики осуществляется по данным компьютерной томографии и интраоперационной холангиографии в дополнении к заключениям эхосонаграфии.

Keywords: cyst of the common bile duct, diagnostics, children.

Ключевые слова: киста холедоха, диагностика, дети.

The wide introduction of the modern high informative methods of diagnosis has resulted in essential improvement of diagnosis of the malformations of the biliary tract development in children and at the same time there was a growth of the prevalence rate of the choledochal cysts as well as connected with them pathological changes in the parenchyma of the liver. The modern methods of diagnosis allow before operation to specify character of a damage of the biliary tract and to determine the indications to surgical treatment. The new method of recognition of the choledochal cyst with use of laparoscopy is offered, transcuteaneous transhepatic cholangiography in combination with rentgenological control in the regimen of real time [3]. And there is information about use of intraoperative ultrasound investigations with tiny sterilized sensing elements [2]. One of the new methods of investigation is magneto-resonance cholangiography. The advantages of this method are lack of the radiation loading, non-invasiveness, possibility of visualization in the three-dimension image, absence of the age limitations and necessity of special training, as well as without use of contrast substances, that excludes an opportunity of occurrence of allergic reactions, ascending infection and development of reactive pancreatitis. Disadvantages of this method are its dearness and opportunity of its performance only in the centres having the appropriate equipment [1]. For last years the lethality has decreased due to introduction of the modern diagnostic methods and improvement of the surgical tactics. However the cirrhotic change of a liver increasing hyperbilirubinemia, the impairment of the coagulation system of blood, and also delayed diagnosis have the great importance at development of pre- and postoperative complications.

Thus, despite of the certain successes achieved in study of diagnosis and surgical treatment, there are many unsolved scientific and practical problems.

The purpose of research - choice of optimum diagnostic algorithm of research at choledochal cysts in children on the basis of the analysis of own supervision.

Materials and methods of research. In the clinical bases of the faculty of hospital children's surgery of Tashkent pediatric medical institute 75 patients (59 girls and 16 boys) were treated with choledochal cysts. The patients were performed a complex of clinical-laboratory and auxiliary methods of examination: ultrasonic (USI), endoscopic, computer tomography (CT), intraoperative cholangiography (IOC) and histomorphology of the operative material.

Results and their discussion. Out of 75 patients in 72 (96 %) the ultrasound investigation was performed. On the ultrasonic scanning of bodies in the abdominal cavity there were precisely examined a liver, extra- and intrahepatic biliary ducts, gallbladder and pancreatic gland. It is established, that there is no direct correlation between the sizes of cystic dilatation and age of the child. In most cases with the help of USI the form of dilatation was determined: fusiform, sacciform, cylindrical. At the fusiform dilatation of the hepaticocoledoch according to the USI data in some cases the gallbladder was significantly enlarged in sizes (22 supervisions), the walls were thickened up to 4-5mm, the contents was not homogeneous, the dense inclusions and concrements were visualised (in 2 patients). At significant sacciform dilatation of the ducts the gallbladder was reduced in the sizes (11 supervisions), its walls were thickened up to 3-4mm, as a rule, there is a rough deformation in the cervicoductal zone and the dense inclusions in the lumen (6 patients) are defined. Of 72 in 44 patients examined with echoscopy the cyst was false determined as hepatic echinococcosis, because echinococous cyst and

nonparasitic cyst imitate the choledochal cyst due to accumulation of liquid in them. However, the echinococcosis cysts were single or multiple, one or multilobular, thin and thick-walled. A method of ultrasound investigation also may give false negative result. The sensitivity of USI in diagnosis of cyst dilatation was 58,8%. For increase of accuracy of diagnosis of the cystic masses in a liver with the help of USI there was performed investigation of liver, gallbladder and biliary ducts at empty stomach before and after cholangiographic breakfast. Characteristic echoscopic signs of the choledochal cyst are change of the form, contour and reduction or increase of the sizes of the gallbladder and cyst. At the echinococcosis and true cysts of a liver these changes are not observed. From 75 children in 52 (69,3 %) USI was performed with cholangiographic breakfast. The investigation was carried out in dynamics: at empty stomach and after cholangiographic breakfast with definition of the sizes, contractile ability of the gallbladder and cystic masses. The children of the age above 3 years were received two raw egg yolks, and the children under 3 of age were used 12,5% solution of magnesium sulfate in a dose of 0,5-0,8 ml/kg of body mass. It has allowed us differentiation of this anomaly from parasitic and true cysts of a liver, and also to define a functional condition of a gallbladder, that in the further to solve the problem of preservation or removal of a gallbladder during operation. The sensitivity of the functional cholecystogram in diagnosis of cystic dilatations was 88-90 %. From 73 operated children in 53 (72,6 %) there was performed cholecystectomy, as in all these patients on USI there were revealed signs of chronic cholecystitis and expressed functional changes of the gallbladder, confirmed after operation by morphological researches of a body. As well as on the USI there was determined deformation of the gallbladder, concrements in the lumen of the organ or cysts. From 72 of studied patients in 9 (12,5 %) on USI there were defined multiple inclusions of various density in the lumen of the gallbladder (2), in a cavity of cyst (4) and simultaneously in the gallbladder and in the cavity of cyst (3), with the expressed acoustic path - in 7, and its absence in 2 patients. However, in 3 patients there were revealed bilious stones, but they were not found with use of USI in the preoperative period. The multiple stones revealed during operation in the dilated common biliary duct and presence of the collapsed fibrous-changed gallbladder without contents and concrements allows suggestion of the primary choledocholithiasis with formation of calculous cyst of the common bile duct.

In diagnosis of the choledochal cysts USI showed itself as rather informative method, but did not allow determination of the concrete anatomic variant of the cystic dilatation, because at oblique, and longitudinal slices the cyst changes its form and sizes. So the results of echosonography were confirmed by data of CT. The computed tomography helps to determine presence of dilatation and state of intrahepatic part of the biliary ducts. CT was used in 44 (58,7%) patients. It provided additional information to data of USI and confirmed completely data, received in sonographic investigation. Accuracy and specificity of research was 97-99 %. The application of magneto-resonance cholangiography (MRCP) with purpose of differentiated diagnosis is possible only at the specialized centres. We completely share opinions of the authors about high informativity and prospects of MRCP which seems to be more sensitive and specific for some forms of cystic transformation of the biliary ducts in children. The disadvantage of CT was absence of information about patency of the terminal choledochal part, interrelationships between common bile duct and pancreatic duct. There for we finished this investigation with IOC. It allowed revealing of the cystic dilatation of the extra- and intrahepatic biliary ducts, symmetry dilatation of the right and left biliary ducts, degree and length of their dilatation, patency of the terminal choledochal part. As well as more valuable information in IOC are obtained about variants of interrelations of the common bile duct and pancreatic duct. This technique was performed in 57 (78,1%) out of 73 patients operated. IOC was performed with contrast – urografini 76% from 10 to 30 ml in dependence of cyst sizes, diluted with physiological solution in the ratio 1:1 or 1:2. The X-ray pictures were made by portable X-ray installation, at the moment of artificial apnea and in the modes adopted according to age and constitution of the patient. After performance of a X-ray picture the contrast substance was evacuated by a method of aspiration. On the basis of IOC we divided the cystic dilatations into fusiform (11), spherical (16), cacciform (7), cylindrical (18) form of dilatation. And in 5 patients there was determined biliary-pancreatic cyst. This division allowed selection of the optimal method of the surgical treatment.

On the basis of analysis of the clinical material it was established that use of USI with cholangiographic breakfast additionally to CT and IOC allowed possibility timely to make correct diagnosis and to choose optimal operative tactics. On the basis of this there was shortening the hospital period for patients. Thus, in 8 patients, operated with false diagnosis of hepatic echinococcosis, and in 6 patients operation was ended by palliative method, that is, external drainage of the cyst. In the further they will be repeatedly operated in our clinic by radical method, but the technical difficulties, occurred during operation at the expense of massive adhesive process in the abdominal cavity reflected negatively postoperative period and patients were in the hospital for a long time.

Conclusions

The functional cholecystography was used for early diagnosis of the choledochal cysts, that is, USI with cholangiographic breakfast of the biliary ducts, because it plays important role in the differential diagnosis of the choledochal cyst with other cystic pathologies of the hepatoduodenal zone, as well as determines functional state of the gallbladder.

The correct choice of the operative technique was performed by the data of CT and IOC additionally to USI data. The results obtained allow determination of the level of resection of the biliary ducts, application of the biliodigestive anastomosis and to avoid complications both before and after surgery.

The early and correct diagnosis of the choledochal cyst as well as correct choice of the operative strategy allowed shortening of the staying of patient in the hospital.

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