APPLICATION OF NLS-DIAGNOSTICS AT EXTRAHEPATIC BILIARY DUCTS DISEASES

T.L. Guseva, Z.F. Khabibullina, U.S. Kharlamov

Advancement of medical technologies development presents new methods of diagnostics and treatment of a human’s organs and systems diseases. Introduction of NLS-diagnostics and treatment method into clinical practice cardinally eased detection of several diseases typical for hepatic-pancreaticoduodenal area (HPDA). Introduction of NLS-methods of biliary ducts screening during first hours after patients were delivered to hospital significantly decreased time of examination and number of complications at the following severe pathological processes: acute cholecystitis and mechanical jaundice. Nevertheless, due to some reasons, number of unsatisfactory results after primary operation on bile excretion system is 8% – 17% of patients.

Thereupon in the recent years the authors have developed algorithm of examination for patients suffering from HPDA organs diseases using NLS-method. NLS-graphy was carried out with «Metatron»-4025 system with «Metapathia GR Clinical» software with features of both two-dimensional and three-dimensional visualization of HPDA organs.

We carried out examination of 247 patients aged from 24 to 84 in 2006 – 2008. Number of male patients was 52, female – 195.

At the moment of delivery to hospital and later on we diagnosed chronic calculous cholecystitis (in 29 cases) and mechanical jaundice (34).

General clinical examinations of NLS patients were carried out in outpatient mode. Together with urine, blood analysis, biochemical researches and study of homeostasis system the following specific researches were also important: blood research for HIV virus, hepatitis B and C, tuberculosis and RW. Patients suffering from acute cholecystitis were subjected to these and other laboratory and instrumental checkups (ECG, x-ray of breast and other) in admission office of a hospital. According to results of NLS-examination we defined or updated tactics of the following treatment.

At this stage we defined indications and carried out drainage of gall bladder (20 cases) and biliary ducts (9) in 29 patients. 6 patients were subjected to biliary ducts drainage during laparoscopy. Decompression of bile excretory system after NLS-research and laparoscopy was carried out in patients suffering from acute cholecystitis and mechanical jaundice of unknown genesis. Later on, in 2 – 3 days, reasons of outflow from biliary ducts to duodenum disorder were defined more accurately by fistulocholangiography.

In order to evaluate condition of major duodenal papilla (MDP) in scheduled and some of emergency patients we carried out mandatory esophagogastroduodenoscopy and duodenoscopy. The study allowed us to diagnose reasons of mechanical jaundice development in 9 patients: postbulbar ulcer – in 1 patient, MDP cancer – in 2, indirect signs of duodenum cancer – in 3, strangulated stone in MDP – in 2, duodenum cancer – in 1. Besides we detected erosive-ulcerous affections, polyps of stomach and duodenum which affected tactics of main disease treatment.

26 patients who had jaundice in medical history or when after NLS-research or duodenoscopy reasons of choledochus dilatation remained unknown, we carried out...
magnetic resonance cholangiopancreatography (MRCP) or endoscopic retrograde cholangiopancreatography (ERCP). In 5 of these patients we carried out contrast CT due to difficulties in acquired results interpretation. The latter, together with NLS-research, proved to be quite valuable method of pre-operation study of biliary ducts anatomy, but not so accurate method of choledocholithiasis diagnosing. Sensitivity, specificity and accuracy of MRCP (14 cases) in diagnostics of choledocholithiasis were 87%, 90% and 97% correspondingly.

Afer detailed medical checkup due to chronic calculous cholecystitis we carried out laparoscopic cholecystectomy (LCE) in 108 patients. In 6 patients with chronic calculous cholecystitis we detected choledocholithiasis, combination of choledocholithiasis with stenosis of choledochus terminal part during the examination, it required endoscopic papillosphincterotomy (EPST) prior to LCE. In order to monitor results of performed NLS-research in patients, we carried out peroral cholangioscopy by means of duodenoscopes: IF-T30, FD-34W and «baby»-scopes: PF-24, FCP-9P manufactured by Olymus, Pentax (Japan) or repeated NLS-research.

Out of 13 patients with diagnosed by clinical and laboratory examination and NLS-research in admission office acute cholecystitis, 5 were subjected to laparoscopy and 2 to duodenoscopy. Drainage of gall bladder and biliary ducts was performed in 3 patients. The rest of patients were subjected to endoscopic (4) and standard cholecystectomy (8) according to indications. In 5 – 10 days patients who had been subjected to decompression drainage of gall bladder, were also administered to standard cholecystectomy. All patients subjected to drainage of gall bladder or performed operation, were thoroughly examined, according to indications 2 patients (choledocholithiasis – 1, stenosis of choledochus terminal part – 1) were studied with NLS-method.

Systematic study patients with postcholecystectomy syndrome (PCES) condition according to abovementioned algorithm made possible to identify reason of unsatisfactory results in patients previously subjected to cholecystectomy (26), cholecystectomy + choledochotomy with external drainage of common bile duct (2), cholecystectomy + choledochoduodenostomy – in 1 patient.

As a result of the study and identifying of pain syndrome reasons after primary operation, we detected various not properly corrected pathologic changes which required more than 25 endoscopic or surgical interventions.

Certain surgical interventions results study, according to clinical materials and references, proved that primary operation did not eliminate the reason of main organic affection of biliary ducts, which was the basis of clinical picture, required surgical operation.

Major part of researchers believe and our experience proves that frequent reason of primary operation unsatisfactory results are non-eliminated choledocholithiasis (30% – 64%), stenosis of choledochus terminal part (15% – 22%) or undetected chronic hepatitis, pancreatitis and other diseases of HPDA.

Reasons of abovementioned shortcomings in treatment of patients are:

a) absence of technical equipment necessary for disease reason identifying prior and during operation;

b) insufficient time for patient examination (peritonitis);

c) underestimation of choledochus terminal part pathology importance;

d) inadequate application of available diagnostic and treatment technologies;

e) insufficient experience of operating surgeon.

More difficult in diagnostics and treatment aspect were patients suffering from mechanical jaundice
During our work we successfully used method of spectral-entropy analysis (SEA) for evaluation of pathomorphological picture character in affection area. As a rule, prior to SEA we performed ultrasound research, fistulography and three-dimensional NLS-scanning, which allowed us to detect presence or absence of organic damages of intrahepatic biliary ducts.

According to our experience the advantage of NLS-research with SEA over radiodiagnostic methods is the following: absence of medical staff exposure to radiation; low price of NLS due to absence of X-ray TV unit. NLS-method, differing from CT, does not require use of radiation equipment and can be applied in patients with absolute intolerance to contrast enhancement, usually injected at CT.

**CONCLUSION**

1. Application of NLS-method increases diagnostics accuracy up to 89% – 98%, which positively affects results of operation treatment.

2. Application of new NLS-graphy method under control of chromocholangioscopy decreases or completely excludes x-ray radiation of patient, medical staff; it has significant social and economic importance.