

13. Lomonaco R, Bril F, Portillo-Sanchez P. Metabolic impact of nonalcoholic steatohepatitis in obese patients with type 2 diabetes. *Diabetes Care*. 2016; 39: 632-8. DOI: 10.2337/dc15-1876.
14. Kumar R, Mohan S. Non-alcoholic fatty liver disease in lean subjects: characteristics and implications. *J Clin Transl Hepatol*. 2017; 5(3): 216-23.
15. LaBrecque Douglas, Abbas Zaigham, Anania Frank. World Gastroenterology Organisation Global Guidelines: Nonalcoholic Fatty Liver Disease and Nonalcoholic Steatohepatitis. *J Clin. Gastroenterol*. 2014; 48 (6):467-73.
16. Mechanick JL. Global dimensions of diabetes: information and synthesis. *Ann. Glob. Health*. 2015; 1:6:733-4. DOI: <http://dx.doi.org/10.1016/j.aogh.2015.12.015>.
17. Rinella ME. Nonalcoholic fatty liver disease: a systematic review. *JAMA*. 2015; 313:2263-73. doi: 10.1001/jama.2015.5370.
18. Stål P. Liver fibrosis in non-alcoholic fatty liver disease - diagnostic challenge with prognostic significance. *World J Gastroenterol*. 2015; 21(39): 11077-87. doi:10.3748/wjg.v21.i39.11077.
19. Standards of Medical Care in Diabetes. American Diabetes Association (ADA). *Diabetes Care*. 2017; 40(1): P. 75-98.
20. Ucar F, Sezer S, Ginis Z. APRI, the FIB-4 score, and Forn's index have noninvasive diagnostic value for liver fibrosis in patients with chronic hepatitis B. *Eur. J. Gastroenterol. Hepatol*. 2013; 25:1076-1081.
21. Yin Z, Zou J, Li Q. Diagnostic value of FIB-4 for liver fibrosis in patients with hepatitis B: a meta-analysis of diagnostic test. *Oncotarget* 2017; 8(14):22944-53. doi: 10.18632/oncotarget.14430.

## Реферати

### ОПРЕДЕЛЕНИЕ ПРОГРЕССИРОВАНИЯ ФИБРОЗА ПЕЧЕНИ У БОЛЬНЫХ САХАРНЫМ ДИАБЕТОМ 2 ТИПА НА ФОНЕ НЕАЛКОГОЛЬНОЙ ЖИРОВОЙ БОЛЕЗНИ ПЕЧЕНИ

Павловский С.А., Вирстюк Н. Г.

По результатам оценки показателей эластографии печени и индекса фиброза-4 (FIB-4) и фиброза при неалкогольной жировой болезни печени (НАЖБП) – (NFS) выявлено более высокую степень фиброза при наличии неалкогольного стеатогепатита (НАСГ) сравнительно со стеатогепатозом (НАЖГ). Установлено, что присутствие сахарного диабета (СД) 2-го типа содействует прогрессированию фиброза печени у больных НАЖБП как на стадии НАЖГ, так и на стадии НАСГ по показателям величины скорости сдвиговой волны и индексов FIB-4 и NFS. У больных НАЖГ при наличии СД 2-го типа низкая степень фиброза (F0, F1, F2) определялась у 24 (52,17%) пациентов, высокая (F3, F4) – у 22 (47,83%) пациентов; у больных НАСГ без СД – у 11 (32,35%) и у 23 (67,65%) соответственно. Определение жесткости печени методом эластографии, расчет индексов FIB-4 и NFS содействует раннему выявлению фибротических изменений паренхимы печени, что, в целом, обуславливает целесообразность включения этих методов в протокол обследования больных СД 2-го типа, сочетанного с НАЖБП.

**Ключевые слова:** неалкогольная жировая болезнь печени, сахарный диабет 2-го типа, эластография.

Статья надійшла 30.12.2017 р.

### DETERMINATION OF FIBER DEVELOPMENT OF LIVER IN PATIENTS WITH TYPE 2 DIABETES MELLITUS ASSOCIATED WITH NON-ALCOHOL FATTY LIVER DISEASE

Pavlovskiy S. A., Virstyuk N. G.

According to the results of evaluation of liver elastography and index of fibrosis-4 (FIB-4) and fibrosis score in non-alcoholic fatty liver disease (NAFLD) - (NFS), a higher degree of fibrosis was found in the presence of non-alcoholic steatohepatitis (NASH) compared with steatohepatosis (NAGH). It was found that the presence of type 2 diabetes mellitus (diabetes mellitus) contributes to the progression of liver fibrosis in patients with liver inflammatory bowel disease both at the stage of NAFLD and at the stage of NASH by the values of the velocity of the shear wave and the indices of FIB-4 and NFS. In patients with NAFLD in the presence of type 2 diabetes, low fibrosis (F0, F1, F2) was observed in 24 (52.17%) patients, high (F3, F4) in 22 (47.83%) patients; in patients with NASH without diabetes - in 11 (32.35%) and 23 (67.65%) respectively. Determination of stiffness of the liver by the method of elastography, the calculation of indices FIB-4 and NFS contributes to the early detection of fibrotic changes in the parenchyma of the liver, which, in general, makes the expediency of incorporating these methods into the protocol for the examination of patients with diabetes 2-type, combined with NAFLD.

**Key words:** non-alcoholic fatty liver disease, type 2 diabetes mellitus, elastography.

Рецензент Скрипник І.М.

DOI 10.26724 / 2079-8334-2018-1-63-64-69

UDC 616.37-002-06-089

V.I. Pylypchuk

SHEI "Ivano-Frankivsk National Medical University", Ivano-Frankivsk

### THE USE OF WHIPPLE OPERATION IN PATIENTS WITH COMPLICATED FORMS OF CHRONIC PANCREATITIS

During the period of 2011-2017, 170 patients with complicated forms of CP were operated on in the Department of General Surgery of the Ivano-Frankivsk Regional Clinical Hospital. In 11 out of 170 patients (6.5%) the method of the surgical choice was the Whipple operation (the main group). The immediate and long-term outcomes of this operation were compared with the similar results in 61 out of 170 patients (35.9%) who were applied duodenum-saving resection operations (the comparison group). In patients with CP, in whom it was impossible to exclude malignant process in the pancreatic head, the Whipple operation should be considered as the operation of choice. The analysis of the immediate and long-term outcomes of the Whipple operation in patients with complicated forms of CP shows that this intervention is effective, gives a stable clinical effect. Patients undergoing pancreatic-duodenal resection because of CP, the level of early postoperative complications, long-term consequences and life quality indicators do not significantly differ from similar figures after duodenum-preserving surgical interventions.

**Key words:** chronic pancreatitis, Whipple operation, pancreatic enteroanastomosis, biliary hypertension, chronic duodenal obstruction.

The morbidity of chronic pancreatitis (CP) in the world is 3.1-8 cases, in European countries it is 4-8 cases, and the prevalence is accounted for 25 cases per 100,000 of population [1]. Over the past thirty years,

the number of patients with CP doubled [2; 3]. The growth of morbidity with CP-related carcinoma of the pancreatic gland is registered; the 20-year-history of CP increases the risk of pancreatic cancer (PC) by 5 times. Nowadays, PC occurs approximately in 5% of patients with CP, the study of genetic peculiarities of CP and cancer of the pancreatic gland will allow finding a closer relationship between these two diseases [4; 5].

In complicated chronic "head" pancreatitis and inability to exclude fully the cancerous damage of the pancreatic head in the surgical treatment of the patients with CP from the last century the pancreatoduodenal resection proposed by Whipple in 1935 for the treatment of the patients by periampullar tumors is used [6]. Some surgeons treat Whipple's operation of choice in CP, especially in its complications [7]. In many European and American centers in surgical treatment of CP the Whipple's operation is used more often, as the operations of Frey and Beger cannot eliminate all the main complications of CP [8; 9; 10]. The frequency of postoperative complications after the Whipple operation (pancreatic fistula, intra-abdominal abscess, delayed evacuation from the stomach, severe nutritional insufficiency) in the leading clinics in the world is 15-28%, postoperative lethality is 2.7-3%, often patients need re-hospitalization within the 30-90 days after the surgical intervention [11; 12; 13].

The major reasons for the return of patients to the hospital are bleeding and purulent complications. Infectious complications after the Whipple operation occur in a third of the operated patients; thus the preoperative endobiliary stenting is a significant risk factor for their development [14]. Potential factors, contributing to the development of purulent complications after the operation, are the duration of the operation, blood transfusion, microbial contamination of the bile ducts, and operation by the open method [15]. The insufficiency of the sutures of the pancreatic-digestive anastomoses after the Whipple operation in CP ranges from 2.7% to 32%; this is quite often (in 9-16.7% of cases) leads to the necessity for re-intervention because of purulent-septic complications [11; 16]. The analysis of long-term results showed that most patients who underwent this intervention, have signs of progressive failure of endo- and exocrine function of pancreatic gland (dumping syndrome, diarrhea, peptic ulcer, dyspepsia) [17, 18].

**The purpose** of the research is to determine the location of the Whipple operation in the surgical treatment of patients with complicated forms of CP.

**Materials and Methods.** During 2011-2017 in the department of general surgery of Ivano-Frankivsk Regional Hospital 170 patients with complicated forms of CP were operated. In 11 out of 170 patients (6.5%) operation of choice was the surgical intervention (of the resection type) with removal of duodenum – pancreatoduodenal resection (Whipple operation), who were assigned to the main group. The immediate and long-term results of this operation were compared with the similar results in 61 out of 170 patients (35.9%) who were applied duodenum-saving resection operations (56 patients underwent the Frey surgery and 5 patients were made the Bern operation).

For the diagnosis of CP and its complications the following procedures were used: laboratory tests (bilirubin, alkaline phosphatase), ultrasound examination (US), computed tomography (CT), magnetic resonance cholangiopancreatography (MRCP). The evaluation of the long-term results of surgical treatment was performed by examining patients, performing ultrasound and filling in a "Short Form Medical Outcomes Study" (SF-36) questionnaire. The results of processing the SF-36 questionnaire were evaluated using eight scales that reflect the physical and mental well-being of the respondents. For processing the obtained results of the study, a database was formed on Microsoft Excel basis, where the material was grouped by contingent of study. All the resulting quantitative data were first verified by the type of their distribution using the Kolmogorov-Smirnov and Lilliefors methods. As the absolute majority of these data corresponded to Gauss's normal law, the mean arithmetic mean  $\pm$  standard error ( $M \pm m$ ) was chosen to describe the central tendency. The verification of the reliability of the data difference in the comparison groups was carried out by calculating the criterion of  $\chi^2$

**Results and Discussion.** Among the 11 patients who underwent the Whipple surgery, 2 (18.2%) were women, 9 (81.8%) were men, aged 21-63, and the average age was  $47.8 \pm 0.8$  years. One out of 11 patients (9.1%) had previously undergone cholecystectomy surgery in the other clinic, complicated by mechanical jaundice. Another 4 out of 11 patients (27.3%) were treated repeatedly in gastroenterological and surgical hospitals for pancreatitis. Pain syndrome occurred in 7 out of 11 patients (63.6%), signs of exocrine insufficiency of PG were observed in 5 out of 11 patients (45.5%), symptoms of biliary hypertension and mechanical jaundice were in 8 out of 11 patients (72.7%), the phenomena of chronic duodenal obstruction was observed in 3 of 11 patients (27.3%), recurrent gastrointestinal bleeding was in 1 out of 11 patients (9.1%). In 2 out of 11 patients (18.2%) there was a combination of mechanical jaundice and chronic duodenal obstruction. Symptoms of endocrine insufficiency (hyperglycemia) were diagnosed in 4 out of 11 patients (36.4%). The duration of clinical manifestations of CP varied from 6 months to 10 years, on the average of  $(5.2 \pm 1.2)$  years. During the laboratory examination, hyperbilirubinemia was determined in 8 out of 11

patients (72.7%). Ultrasonography of the abdominal cavity was performed according to the standard program. This study is screening one and was performed in all patients before and after the surgery. In ultrasound examination, the size of PG was studied, induration in its parenchyma, the presence of cysts of PG, dilation of the Wirsung's duct, the presence of calcinates in the parenchyma of the gland and concretions in its ducts, the state of para-pancreatic lymph nodes, diameter of the bile-flow ducts, their presence on the lumen of concretions. During the ultrasound, in all 11 patients, a local enlargement of the pancreatic head (from 3.5 to 6.0 cm) was found. In 9 out of 11 patients (81.8%) the structure of the pancreatic head was heterogeneous, in 11 patients (9.1%) intra-pancreatic cystic forms were diagnosed, and in dopplerographic mapping the aneurysmically altered upper anterior pancreatoduodenal artery with the defect and active bleeding into the lumen of the cyst were detected. In 8 out of 11 patients (72.7%) who had mechanical jaundice, the width of the common bile duct was greater than 8 mm. In 4 out of 11 patients (36.4%) the diameter of the portal vein was greater than 1.1-1.3 cm, indicating a local venous hypertension caused by the enlarged PG head. CT was used in 11 patients (72.7%). The study was performed exclusively with intravenous bolus contrast enhancement and oral contrast. The diagnosis of CP was based on the detection of induration of PG parenchyma, calcinosis, presence of duct system dilation, Lithiasis of Wirsung's duct. Besides, the presence, localization and size of cysts, their nature, connection with PG was determined. In all 8 patients, the enlargement of the head of the PG was diagnosed, in 1 out of 8 patients (12.5%) the cysts in the area of the pancreatic head were found. Supra-pancreatic enlargement of the bile ducts was diagnosed in 6 out of 8 patients (75%), who had a mechanical jaundice.

MRI-study was performed using the magnetic resonance tomograph "Simens Magnetom Avanto" with a magnetic field intensity of 1.5 T. In 3 out of 11 patients (27.3%), MRCP was used to clarify the diagnosis. During the study, they were detected the tubular stenosis of the intra-pancreatic part of the CBD with its supra-pancreatic expansion.

Surgical treatment of patients with CP was aimed at elimination of the resistant pain syndrome, elimination of the dysfunction of the adjacent organs (biliary hypertension, chronic duodenal obstruction, local venous hypertension and their combination), restoring of the passage of pancreatic juice (for the correction of exocrine failure). A prerequisite for the establishment of directions for the operation was the availability of a stable clinical picture and pronounced pathomorphological changes in the PG and adjacent organs.

Therefore, indications for the Whipple operation in CP were: the inability to exclude the malignant process in the pancreatic head (7 out of 11 patients (63.6%)). Fibro-degenerative changes in the pancreatic head or pseudo-tumor pancreatitis in these patients simulated the tumor process. The advanced laboratory and instrumental research methods at the preoperative stage do not give the possibility of verifying morphological substrate of the disease; the presence of a significantly increased size of the pancreatic head, which simultaneously caused compression of the duodenal ulcer, CBD and vessels of the pancreatoduodenal zone (3 out of 11 patients (27.3%)); the presence of an intra-pancreatic type of PG head injuries with the determined defect in the anterior pancreatic-duodenal artery, which caused repeated bleeding into the lumen of the cyst and the gastrointestinal tract (1 out of 11 patients (9.1%)). It was technically impossible to perform the selective angiography and occlusion of the artery. Patients in the preoperative period were given complex preparation. In particular, perioperative management of patients with CP, complicated by mechanical jaundice, provided for the correction of a number of specific violations related to both CP and the complications of cholemia.

Patients with mechanical jaundice along with CP in the preoperative period were performed: 1. An unload of bile ducts under the control of ultrasound (1 out of 8 patients (12.5%) or endoscopic endobiliary stenting (1 out of 8 patients (12.5%) only in the prolonged (more than 2 weeks) or severe jaundice with manifestations of liver failure. In cases of absence of symptoms of liver failure and coagulopathy, the operation was performed even in total bilirubin values greater than 250  $\mu\text{mol/l}$ .

Intervention on the bile ducts (in particular, endobiliary stenting) is considered a risk factor for the occurrence of infectious complications (cholangitis, pericholangitis) that complicates the implementation of PDR, and sometimes postpone it. 2. Correction of dehydration, water-salt disorders (balanced saline solutions, glucose-potassium-insulin mix). 3. Refrain from the administration of hepatotoxic and nephrotoxic medicines, didn't use benzodiazepines with a prolonged half-life in the perioperative period, and thiopental during of anesthesia. 4. Opioids were not used, especially fentanyl and morphine, as they can cause spasticity of the sphincter of Oddi, which can exacerbate biliary hypertension. 5. Operative intervention was postponed for several days to correct the nutritive status, if there was hypoalbuminemia  $<30 \text{ g/l}$ . 6. To protect the mucous membrane of the gastrointestinal tract, proton pump inhibitors or  $\text{H}_2$ -histamine receptor antagonists were used. 7. Treatment of cholangitis provided, in addition to the discharge of bile ducts, the appointment of hepatotropic antibiotics. 8. Coagulopathy required at the preparatory stage the use of single-group plasma and parenteral forms of vitamin K. 9. In order to reduce the risk of transplantation of gram negative bacteria and

prevent/reduce febrile encephalopathy, drugs containing lactulose were used. 10. At the stage of preparation for intervention, epidural analgesia was established. Its application provided for its own anesthesia (which predominates on the effectiveness of opioids), stimulation of intestinal motility, and improvement of splenic perforation. The catheterization of the epidural space was performed at Th5-Th8 levels.

The first stage of Whipple operation included distal resection of the stomach, removal of the duodenum, cholecystectomy with the removal of part of the common bile duct (more distal to the location of the cyst duct), resection of 15-20 cm of the initial part of the small intestine, resection of the head, hoof appendix and isthmus of the PG. At the reconstructive stage of the operation, 5 out of 11 patients (45.5%) with non-spread Wirsung's duct (up to 4 mm) and "soft" PG there were used invaginating termino-terminal pancreatic enteroanastomosis, in 6 out of 11 patients (54.5%) patients with wide Wirsung's duct a termino-lateral pancreatic enteroanastomosis (duct to mucosa) were applied. After that, a terminally-lateral hepatic enteroanastomosis was formed on one loop behind the colon at a distance of 10-15 cm from pancreaticojejunostomy.

Gastroenteroanastomosis in 9 out of 11 patients (81.8%) was superimposed in front of the colon with the subsequent formation of inter-intestinal anastomosis. In 2 out of 11 patients (17.2%), gastroenteroanastomosis was imposed behind colon, without inter-intestinal anastomosis. The intraoperative blood loss varied from 250 up to 600 ml (the average of  $380 \pm 35$  ml). Duration of surgical intervention was from 210 min to 295 min, on the average of  $265 \pm 25$  min. According to the histological study of the operative material, all patients were found inflammatory degenerative changes in the pancreatic head. Postoperative complications and their combination after Whipple surgery occurred in 5 out of 11 patients (45.5%). In particular, postoperative pancreatitis (hyperamylasemia, edema of PG stump according to ultrasound data) was diagnosed in 4 out of 11 patients (36.4%). In 1 out of 11 patients (9.1%) there was an insufficiency of sutures of pancreatic enteroanastomosis and a pancreatic fistula (class B) was formed. All patients were performed an intensive treatment, which helped to eliminate pancreatitis and fistula healing. In 1 patient out of 11 patients (9.1%) on the fourth day after the operation the bile flow out of drainage was found and bile peritonitis was diagnosed. During relaparotomy above the line of sutures of hepato-enteroanastomosis, a defect of hepato-choledocus (as a consequence of thermal trauma due to the use of diathermocoagulation – coagulation necrosis) was detected, sewn, peritonized by the bowel loop. In 4 out of 11 patients (36.4%) there were gastrostasis events in the early postoperative period. To eliminate it, decompression of the stomach, prokinetics, and blockers of gastric secretion were used. Signs of gastrostasis in all patients were eliminated on average at the 11<sup>th</sup> -13<sup>th</sup> day.

In the comparison group, the postoperative complications and their combination occurred in 12 out of 61 patients (19.7%). In particular, postoperative pancreatitis was diagnosed in 10 out of 61 patients (16.4%). In 2 out of 61 patients (3.3%) there was an insufficiency of sutures of pancreatic enteroanastomosis and the pancreatic fistula (class B) was formed. One of these patients developed acute gastrointestinal bleeding from erosions of the stomach and duodenum, and another patient had the acute early connective intestinal obstruction, which was eliminated during relaparotomy. No lethal effects in patients of the main group in the postoperative period occurred. The period of patients' stay in the hospital was  $17.5 \pm 2.4$  days, after the operation –  $15.2 \pm 1.8$  days. In the comparison group, 1 patient out of 61 patients (1.6%) died, who had a lack of sutures of pancreatic enteroanastomosis with the development of multiple organ failure. The performed mathematical analysis showed the absence of statistically reliable differences in the early postoperative complications ( $\chi^2=3.84$ ,  $p=0.06$ ) and postoperative lethality  $\chi^2=3.84$ ,  $p=0.66$ ) in patients of the main group and the comparison group. After Whipple operation, the long-term results of treatment were observed in 8 out of 11 patients (72.7%) in the terms of 6 months up to 5 years. Well long-term outcomes of surgical treatment after the Whipple operation were obtained in 5 out of 8 patients (62.5%). Patients felt satisfactorily. Enzyme preparations were periodically taken by 4 patients. There were no symptoms of biliary hypertension in patients. The biochemical parameters of the blood were kept within the normal limits. In ultrasound examination, pathological changes from the organs of the pancreatoduodenal zone were not determined. In the study of life quality, using the SF-36 questionnaire, the average score according to the scale of physical health was  $72.3 \pm 3.2$  points (against  $56.1 \pm 3.1$  points at the preoperative period), according to the scale of psychological health –  $69.5 \pm 3.0$  points (versus  $53.9 \pm 3.3$  points prior to surgery). The working efficiency of all patients has been maintained. As satisfactory ones, the long-term outcomes of surgical treatment were evaluated in 2 out of 8 patients (25.0%). The frequency of CP exacerbations was 2-3 times a year. Patients were periodically asked for medical help, they were disturbed by abdominal pain, dyspeptic and dyskinetic phenomena. One patient, apart the complaints on the organs of the pancreatic-biliary zone, occasionally had a partial connective intestinal obstruction, which was submitted to a conservative treatment. There were no symptoms of biliary hypertension in patients. The biochemical parameters of the blood were kept within the

normal limits. In ultrasound examination, significant pathological deviations from the side of PG stump and the bile ducts were not detected. Patients were in a disability group, their ability to work was reduced. In the study of life quality, using the SF-36 questionnaire, the average score according to the scale of physical health was  $64.4 \pm 3.0$  points (compared with  $56.1 \pm 3.1$  points before surgery), according to the psychological health scale –  $65.5 \pm 4.2$  (versus  $53.9 \pm 3.3$  points of preoperative surgery). Unsuccessful long-term outcomes of surgical treatment after the Whipple operation were obtained in 1 out of 8 patients (12.5%). In one patient during the first year after surgery, the frequency of exacerbations of CP was 3-4 times a year. 12 months after the operation, the frequency of exacerbations increased (by 6-7 times).

The patient was repeatedly treated as outpatient and inpatient, but with a negligible and short-term effect. She had a progressive cachexia. One of the reasons for this condition was the use of alcohol and tobacco. The working efficiency of the patient was sharply reduced. 22 months after the operation, the patient was brought in a serious condition into the one of the hospitals with a clinical picture of pancreatic gland stump necrosis. Intensive therapy was ineffective, the patient died. After duodenum-saving operations the long-term consequences were monitored in 38 out of 61 patients (62.3%). Good results were obtained in 29 out of 38 patients (76.5%). The average indicator of the physical health was  $86.2 \pm 4.2$  points (as compared with  $59 \pm 3.1$  points before the operation), according to the psychological health scale –  $86.4 \pm 4.2$  points (against  $57.1 \pm 3.3$  points before the operation). The efficiency of all the patients was maintained. As the satisfactory ones, the long-term outcomes of surgical treatment were evaluated in 8 out of 38 patients (21.0%). In the study of life quality, the average score according to the scale of physical health was  $78.4 \pm 3.2$  points (against  $56.1 \pm 3.1$  points before surgery), according to the scale of psychological health –  $77.8 \pm 4.5$  (against  $53.9 \pm 3.3$  points before the operation). Unsatisfactory long-term results of surgical treatment after Frey operation were obtained in 1 out of 38 patients (2.6%). The study of the long-term outcomes of treatment of patients in the study group and the comparison group shows that they are not statistically different ( $\chi^2=4.8$ ,  $p=0.09$ ).

### Conclusions

In patients with CP, in whom it is impossible to exclude a malignant process in the pancreatic head the Whipple operation should be considered as the operation of choice. The analysis of the immediate and long-term results of the Whipple operation in patients with complicated forms of CP shows that this intervention is effective, gives a steady clinical effect on the elimination of the pain syndrome, the phenomena of biliary hypertension and chronic duodenal obstruction. Patients who underwent CP-related pancreaticoduodenal resection, the level of early postoperative complications, long-term consequences and life quality indicators do not significantly differ from similar figures after duodenum-preserving surgical interventions.

### References

1. Prosolenko KA. Curation of patients with chronic pancreatitis according to the latest Ukrainian standards. *Vestn. kluba pancreatologov*. 2016; 2 (31): 5-11.
2. Dronov OI, Kovalska IO, Shvets YuP et al. Composition of bile in patients with chronic pancreatitis. *Clin.khirurhiya*. 2013;5: 14 -17.
3. Krivoruchko IA. Duodenosecretory resections of the pancreatic head in the treatment of chronic pancreatitis. *Suchasni medychni tekhnolohiyi*. 2011; 3-4: 195.
4. Beger HG, Matsuno S, Cameron JL. *Diseases of the Pancreas*. Springer Verlag. 2008: 905.
5. Momi N, Kaur S, Krishn SR. Discovering the route from inflammation to pancreatic cancer. *Minerva Gastroenterol Dietol*. 2012; 58 (4): 283-297.
6. Kubyshkin VA, Kriger AG, KozlovIA et al. Tactics of surgical treatment of patients with chronic pancreatitis. *Khirurgiya. Journal named after NI Pirogov*. 2013; 1:17-24.
7. Zaporozhchenko BS, Gorbunov AA, Muravyov PT. The choice of the optimal method of surgical treatment of patients with various forms of chronic pancreatitis. *Klin.khirurgiya*. 2014; 1.2: 49-51.
8. Hildebrand P, Dudertadt S, Czymek R. Different surgical strategies for chronic pancreatitis significantly improve long-term outcome: a comparative single center study. *European Journal of Medical Research*. 2010; 15 (8): 351-356.
9. RiedigerH, Adam U, Fischer E. Long-term Outcome After Resection for Chronic Pancreatitis in 224 Patients. *Journal of Gastrointestinal Surgery*. 2007; 11: 949-960.
10. Strate T, Taherpour Z, Bloechle C. Long-term follow-up of a randomized trial comparing the beger and frey procedures for patients suffering from chronic pancreatitis. *Annals of Surgery*. 2005; 241: 591-598.
11. Kopchak VM, Khomyak IV, Cheverdiuk DA. Surgical treatment of chronic pancreatitis. *Kharkivska khirurgichna shkola*. 2009; 2.1 (33): 124-125.
12. Ahmad SA, Edwards MJ, Sutton JM. Factors influencing readmission after pancreaticoduodenectomy: a multi-institutional study of 1302 patients. *Annals of Surgery*. 2012; 256 (3): 529-537.
13. Callery MP, Pratt WB, Kent TS. A prospectively validated clinical risk score accurately predicts pancreatic fistula after pancreatoduodenectomy. *Journal of the American College of Surgery*. 2013; 216 (1): 11-14.
14. Pastena de M, Malleo G, Machegiani G et al. Postoperative infectious complications as potential negative predictors: Analysis of 600 consecutive pancreaticoduodenectomies. *Pancreatolgy*. 2016; 16(3.1): 108.
15. Okano K, Suzuki Y. Postoperative infectious complications after pancreatic resection: Proposal of a nomogram for predicting the risk. *HPB: the official journal of the International HepatoPancreatoBiliaryAssociation*. 2016; 18 (1): 81.

16. Veligotsky NN, Veligotsky AN, Arutiunov SE. Surgical aspects of treatment of obstructive diseases of the pancreatoduodenal zone. Perioperative complications. Zdorovya Ukrainy. Onkologiya. 2016; 2 (43): 48-19.
17. Hildebrand P, Duderstadt S, Jungbluth T. Evaluation of the quality of life after surgical treatment of chronic pancreatitis. JOP. Journal of the Pancreas. 2011; 12 (4): 364-371.
18. Möbius C, Max D, Uhlmannetal D. Five-year follow-up of a prospective non-randomised study comparing duodenum-preserving pancreatic head resection with classic Whipple's procedure in the treatment of chronic pancreatitis. LangenbecksArchiveSurgery. 2007; 392(3): 359-64.

### Реферати

#### ВИКОРИСТАННЯ ОПЕРАЦІЇ УІПЛА У ХВОРИХ НА УСКЛАДНЕНІ ФОРМИ ХРОНІЧНОГО ПАНКРЕАТИТУ

Пилипчук В.І.

В період 2011-2017 років у відділенні загальної хірургії Івано-Франківської обласної клінічної лікарні прооперовано 170 хворих на ускладнені форми ХП. У 11 з 170 хворих (6,5%) методом вибору оперативного втручання була операція Уіпла – основна група. Безпосередні та віддалені результати цієї операції порівнювали з аналогічними результатами у 61 з 170 хворих (35,9%), яким застосовано дуоденумзберігаючі резекційні операції – група порівняння. У хворих на ХП, у яких неможливо виключити злоякісний процес в головці ПЗ операцією вибору слід вважати операцію Уіпла. Аналіз безпосередніх та віддалених результатів виконання операції Уіпла у хворих на ускладнені форми ХП показує, що дане втручання є ефективним, дає стійкий клінічний ефект. У хворих, яким проведено панкреатодуоденальну резекцію з приводу ХП, рівень ранніх післяопераційних ускладнень, віддалені наслідки та показники якості життя достовірно не відрізняються від аналогічних показників після проведених дуоденумзберігаючих оперативних втручань.

**Ключові слова:** хронічний панкреатит, операція Уіпла, панкреатичний ентероанастомоз, біліарна гіпертензія, хронічна непрохідність дванадцятипалої кишки.

Стаття надійшла 16.11.2017 р.

#### ИСПОЛЬЗОВАНИЕ ОПЕРАЦИИ УИПЛА У БОЛЬНЫХ С ОСЛОЖНЕННЫМИ ФОРМАМИ ХРОНИЧЕСКОГО ПАНКРЕАТИТА

Пилипчук В.И.

В период 2011-2017 годов в отделении общей хирургии Ивано-Франковской областной клинической больницы оперировано 170 больных осложненными формами ХП. У 11 из 170 больных (6,5%) методом выбора оперативного вмешательства была операция Уипла – основная группа. Непосредственные и отдаленные результаты этой операции сравнивали с аналогичными результатами у 61 из 170 больных (35,9%), у которых использованы дуоденумсохраняющие резекционные операции – группа сравнения. У больных ХП, у которых невозможно исключить злокачественный процесс в головке ПЗ, операцией выбора следует считать операцию Уипла. Анализ непосредственных и отдаленных результатов операции Уипла у больных осложненными формами ХП указывает на ее эффективность со стойким клиническим эффектом. У больных, которым проведено панкреатодуоденальную резекцию по поводу ХП, уровень ранних послеоперационных осложнений, отдаленные результаты и показатели качества жизни достоверно не отличаются от аналогичных показателей после проведенных дуоденумсохраняющих оперативных вмешательств.

**Ключевые слова:** хронический панкреатит, операция Уипла, энтероанастомоз поджелудочной железы, билиарная гипертензия, хроническая дуоденальная непроходимость.

Рецензент Ксьонз І.В.

DOI 10.26724 / 2079-8334-2018-1-63-69-74  
УДК 616.127-005.8-036.11-06:613.632

Світлик І.В.

Львівський національний медичний університет імені Данила Галицького, м. Львів

e-mail: docsvit@gmail.com

#### ВПЛИВ КСЕНОБІОТИКІВ НА ПЕРЕБІГ ГОСТРОГО ІНФАРКТУ МІОКАРДА

Проаналізовано характер перебігу гострого інфаркту міокарда з елевацією сегмента ST у пацієнтів, які тривало контактували з ксенобіотиками техногенного походження. З'ясовано, що у таких осіб ранній післяінфарктний період характеризується вищою активністю системного запалення (у порівнянні з особами, умови праці яких не були пов'язані з виробничими шкідливостями), що корелює з частішим виникненням кардіоваскулярних подій. У цих пацієнтів глибший вегетативний дисбаланс з переважанням симпатичного тону, що достовірно пов'язане з частішою появою шлуночкових екстрасистол високих градацій.

**Ключові слова:** гострий інфаркт міокарда з елевацією сегмента ST.

*Робота є фрагментом НДР «Особливості механізмів розвитку та клінічного перебігу гострих і хронічних форм ішемічної хвороби серця в залежності від факторів ризику», № держреєстрації 0114U000124.*

На сьогоднішній день стало очевидним, що протистояння людини і природи створює загрозу для життєдіяльності живих організмів. Небезпечних масштабів набуло забруднення навколишнього середовища, зокрема, атмосфери: актуальними є проблеми парникового ефекту, озонних дір, кислотних дощів, а також пилового забруднення. На окремих промислових територіях щільність пилу у повітрі настільки значна, що впливає на зміну мікроклімату і сприяє формуванню смогів [2]. З пилом в атмосфері розсіюється велика кількість шкідливих речовин, які є «чужими» для біосфери: вони не можуть асимілюватись живими організмами і, потрапляючи в організм, ініціюють ряд складних порушень різних біологічних процесів. Ксенобіотиками, зокрема, є тютюновий дим, засоби побутової