regulation biological functions, methods of detection in human blood. Laboratornaja medicina. – Laboratory medicine. 2005;7:19-24.
4. Petunina N. A., Al’tshuler N. J. A comparative analysis of adenocarcinoma, leptin, resistin, lipid metabolism indicators and insulin resistance in subclinical hypothyroidism depending on presence or absence of replacement therapy with levothyroxine. Diabetes Care. – Consilium medicum. 2013;15(4):12-15.
5. Zatejshhkov D. A., Minushkina L. O., Kudrjawsova O. Ju. Functional condition of endothelium in patients with arterial hypertension and ischemic heart disease. Kardiologija. – Cardiology. 2000:6:14-17.
6. Jellinger P., Smith D., Mehta A., Ganda O., Handelsman Y. et al. Endocrine Practice. American Association of Clinical Endocrinologists’ Guidelines for Management of Dyslipidemia and Prevention of Atherosclerosis. 2012;18(1):1-78.
7. El Saghier E. O., Shebl S. E., Fawzy O. A., Eltayeb I. M., Lamya M. A. et al. Androgen deficiency and erectile dysfunction in patients with type 2 diabetes. Clin. Med. Insights Endocrinol. Diabetes. 2015;19(8):55-62.
8. Skeldon S. C., Detsky A. S., Goldenberg S. L., Law M. R. Erectile Dysfunction and Undiagnosed Diabetes, Hypertension, and Hypercholesterolemia. Ann. Fam. Med. 2015;13(4):331-335.
9. Dhinda S., Prabhakar S., Sethi M., Bandyopadhyay A., Chaudhuri A. et al. Frequent Occurrence of Hypogonadotrophic Hypogonadism in Type 2 diabetes. Clin. Endocrinol. Metab. 2014;89(11):5462-5468.
10. Sacks D. B., Arnold M., Bakris G. L., Bruns D. E., Horvath A. R. et al. Guidelines and recommendations for laboratory analysis in the diagnosis and management of diabetics. Diabetes Care. 2011;34(6):61-99.
11. Hadeed N. N., Thanoon I. A., Al-Mukhtar S. B. Total testosterone levels and the effect of sildenafl on type 2 diabetics with erectile dysfunction. Oman Med J. 2014;29(1):46-50.
12. Hakim L. S., Goldstein I. Diabetic sexual dysfunction. Endocrino. Metabol. Clin. North Am. 1996;25(2):379-400.
13. Kirby M., Jackson G., Betteridge J., Friedli K. IIs erectile dysfunction a marker for cardiovascular disease. Int. J. Clin Pract. 2001;55(9):614-618.
14. Laumann E., Paik A., Rosen R. Sexual dysfunction in the United States: prevalence and predictors. JAMA. 1999;281(8):537-544.
15. Liu C. C., Lee Y. C., Tsai V. F., Cheng K. H., Wu W. J. et al. The interaction of serum testosterone levels and androgen receptor CAG repeat polymorphism on the risk of erectile dysfunction in aging Taiwanese men. Andrology. 2015;3(5):902-908.
16. Mancia G., Laurent S., Agabiti-Rosei E., Ambrosioni E., Burnier M. et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. J. Hypertension. 2009;27(11):2121-2158.
17. Seftel A. D., Kathrins M., Niederberger C. Critical update of the 2010 Endocrine Society Clinical Practice Guidelines for male hypogonadism: a systematic analysis Mayo. Clin. Proc. 2015;90(8):1104-1115.
18. Tengblad A., Grodzinsky E., Lindström K., Mäki M., Borgquist L. et al. Self-monitoring of blood glucose and glycaemic control in type 2 diabetes. Health Care. 2007;25(3):140-146.
19. Speel T. G., Langen H., Meuleman E. J. The risk of coronary heart disease in men with erectile dysfunction. Eur. Urol. 2003;44(3):366-371.
20. The National Academy of Clinical Biochemistry. Laboratory Medicine Practice Guidelines. 2011;1(1):1-120.
The control group included 85 patients with obstructive jaundice of various pathogenesis: in 51 (60.0 %) benign diseases of cholecystopancreatoduodenal region, in 34 (40.0 %) – malignant. The main group consisted of 65 patients, of whom 37 (56.9 %) were benign diseases of cholecystopancreatoduodenal region, in 28 (43.1 %) – malignant. Bile Drainage performed in all patients under ultrasound guidance. In the main group, the authors used patented technique of detoxification of obstructive jaundice, and applied a patented technique of automated and smooth return of bile into the digestive tract during eating. The authors noted an improvement in the results of treatment of patients with obstructive jaundice in the group where composite therapy was used in conjunction with the bile return into the digestive tract.

Key words: obstructive jaundice, detoxification, treatment, biliary decompression, digestive tract

Проблема лечения больных механической желтухой остается одним из актуальных вопросов в абдоминальной хирургии. Механическая желтуха, как осложнение основного заболевания, декомпенсация интеркуррентной соматической патологии – все это отрицательно сказывается на статусе больного. Проведен анализ лечения 150 больных. В контрольную группу включены 85 больных механической желтухой различного генеза: у 51 (60,0 %) были доброкачественные заболевания органов билиопанкреатодуodenальной зоны, у 34 (40,0 %) – злокачественные. Основную группу составили 65 больных, из них у 37 (56,9 %) были доброкачественные заболевания органов билиопанкреатодуodenальной зоны, у 28 (43,1 %) – злокачественные. Дренирование желчевыводящих путей выполнено всем больным под контролем УЗИ. В основной группе больных применен разработанный и запатентованный авторами способ детоксикации при механической желтухе, а также применено запатентованное устройство автоматического и плавного возврата желчи в пищеварительный тракт во время еды. Авторы отмечают улучшение результатов лечения больных механической желтухой в группе, где применялась комплексная терапия в сочетании с возвратом желчи в пищеварительный тракт.

Ключевые слова: механическая желтуха, детоксикация, лечение, билиарная декомпрессия, пищеварительный тракт
It was observed that the daily dose of infusion therapy is directly dependent on plasma osmolality, bilirubin blood and total body weight of the patient. In the control group, calculation for the daily dose of infusion therapy was calculated using a formula developed by us:

\[ V = \frac{(\text{Plasma Osmolality} + \text{Blood Bilirubin Value}) \times 15000}{\text{Body Weight}} \]

where: \( V \) – daily dose of infusion therapy (L); Plasma osmolality (mmol/l) = Na (mmol/l) + 1.86 + Glucose (mmol/l) + Urea (mmol/l) + 10 (mOsm/l); bilirubin, blood (mmol/l); the patient’s body weight (kg); 15,000 – the number found empirically.

Infusion dose was subjected to correction in real time, depending on fresh blood test results. Reduction in bilirubin leads to reduction in infusion therapy dose as well. To eliminate the side effects of per-oral bile intake in patients, the experiment group used a new device for the return of bile into the digestive tract (Patent RF № 137670, 2014).

Device for the return of bile into the digestive tract in patients with obstructive jaundice (Fig. 1) consists of a biliary drainage tube (1) mounted percutaneously under ultrasound guidance and percutaneous gastrostomy tube (2), placed endoscopically. They are interconnected by a tube (3) having an anti-reflux valve (4). Roller clamp (5) and a silicone balloon (6) – for storing and measured return of bile into the digestive tract during eating. Antireflux valve (4) placed for bile flow along the tube (3) only in the direction of the digestive tract. Roller clamp (5) is set for easy regulation (3) speed of bile flow through a tube from drop to maximum flow, and a silicone balloon (6) – for storing and measured return of bile into the digestive tract during eating.

We have improved the previous model with a new device for automatic return of bile into the digestive tract in patients with obstructive jaundice after percutaneous trans-hepatic bile duct decompression and endoscopic mini-gastrostomy (Fig. 2).

Before discharge from the hospital blood level of bilirubin in the main group was 88.7±2.1 mmol/l, the severity of jaundice – 5.7 points (mild), the average hospital stay – 11 days. Patients were recommended for repeat consultation for the second phase of treatment after reduction of blood bilirubin levels to 60–70 mkmol/l.

**Results and Discussion.** Biliary decompression prior to admission to the second phase of treatment, patients in the control group lasted an average of 6 weeks. Patients in the main group started the second stage of treatment after an average of 2 weeks with severity of jaundice – 5 points (mild).

Improved results of treatment in the study group achieved through the optimization of the complex therapeutic measures carried out at all stages of treatment, reducing the incidence of postoperative complications from 11.8 % in the control group to 7.6 % – in the main group.

A comparative evaluation of the patient on the severity of jaundice by E. I. Galperin showed that the main group patients during discharge had mild jaundice, and in the control group patients – average. According to the classification of the severity of jaundice by E. I. Galperin likelihood of an unfavorable outcome of the disease in patients in the control group was 10.5 % and in the main group – 0 %.

The average length of stay in hospital patients of the main group was 11 days, the control group – 16. PreOPERATIVE hospital stay in the main group averaged 1.5 days, in the control group – 1.9. The postoperative hospital stay in the main group was 9.5 days, the control group – 14.1.

**Conclusions.** Minimal trauma, eliminating the possibility of infection of the biliary tract, slow and smooth decompression of the bile ducts, reducing length of hospitalization, minimizing complications and improving the quality of life of patients – the benefits of an integrated treatment of patients with obstructive jaundice in the experimental treatment and the return of bile into the digestive tract, that allows us to recommend the proposed optimization method to wider application in complex treatment of patients with obstructive jaundice of various pathogenesis.
ACTINOMYCOSIS IN COLOPROCTOLOGY

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ACTINOMYCOsis is a specific chronic infectious disease. Currently, actinomycosis common in about 6.0–7.5 % of patients with inflammatory diseases of pararectal and gluteal areas. There are only a few scientific articles describing the observations of visceral actinomycosis in clinical cases. Descriptions of sacrococcygeal and perianal gastroenteritogi. – Journal of Surgical Gastroenterology, 2008; 2: 24-32.

References
1. Gusev A. V., Barsukov I. N., Martins Ch. T. Novye tehnologii pri mekhanicheskoj zheletuzhe dobrokachestvennego geneza. Annaly khirurgicheskoj gepatologii. – Annals of Surgical hepatology. 2008;13(1):72-75.
2. Vetches P. C. Mekhanichesksaya zheletuzhe: posledstviya «vtorogo udara», printsipy lecheniya. Annaly khirurgicheskoy gepatologii. – Annals of Surgical hepatology. 2011;3:16-25.
3. Galperin E. I., Vetches P. C. Guidelines for surgery of the biliary tract. M.: 2009:568.
4. Galperin E. I. Mekhanichesksaya zheletuzhe: sostoyaniye «mnimoy stabilnosti», posledstviya «vtorogo udara», printsipy lecheniya. Annaly khirurgicheskoy gepatologii. – Annals of Surgical hepatology. 2011;3:16-25.
5. Galperin E. I., Kotovskiy A. E., Momunova O. N. Optimalny uroven bilirubinenni pered vpolnieniem operatsii u bolnykh mekhanicheskoy zheltuzheh opukhovoe etiologii. Annaly khirurgicheskoy gepatologii. – Annals of Surgical hepatology. 2012;2:45-52.
6. Pugaev A. V., Achkasov E. E. Assessment of nutritional status and identifying the need for nutritional support. M.: 2007:86.
7. Vetches P. C. Vozmoznosti sovremenntyh metodov diagnostiki i obosnovaniye lechebnoy taktiki pri mekhanicheskom zheltuzheh. Vestnik hirurgicheskoy

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