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Neuropeptide Mechanism of Sphincter of Oddi Dysfunction

Development after Cholecystectomy

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Gallstone disease (GSD) is a very common disease. The main method of treatment of calculous cholecystitis is cholecystectomy [1]. However, after cholecystectomy some patients have pathological symptom, called postcholecystectomical syndrome (PCES) [2]. Researches of recent years have mostly focused on diagnosis, treatment and prognosis of organic conditions that lead to this syndrome. There are not enough studies on the development of PCES of inorganic etiology, particularly sphincter of Oddi dysfunction (SOD) of the functional nature [3].

Aim: to improve the results of diagnosis and treatment of patients with acute calculous cholecystitis (ACC) and SOD of inorganic etiology after cholecystectomy.

The research included 214 patients of both sexes aged from 25 to 80 with the ACC and PCES. The research included 166 (77,6%) women and 48 (22,4%) men. Group 1 patients (49 people) with the ACC after the traditional conservative treatment were operated. After surgery, patients of group 1 received standard medical therapy. Patients of group 2 (76 people) with the ACC after standard conservative treatment, supplemented by selective inflammatory drugs (mebeverine hydrochloride 200 mg four times a day orally) were operated. On the third postoperative day

mebeverine hydrochloride was included into the treatment regimen. Patients of group 3 (36 people) with the functional nature of PCES – SOD type III received traditional medical treatment. Complex conservative therapy of improved scheme with selective antispasmodic drugs was prescribed to patients of group 4 (53 people) with the functional nature of PCES – SOD type III.

Patients with ACC had initial cholecystokinin (CCK) level raising 4-7 times (the norm – 0,5-1 ng/ml), which allows to judge indirectly about the seriousness of functional disorders of the biliary tract in case of ACC. Before surgery, the concentration of CCK was $4,11 \pm 0,1$ ng/ml. In the early postoperative period a relatively stable level in the first and fifth day – $3,9 \pm 0,1$ ng/ml and $3,49 \pm 0,12$ ng/ml was revealed. By the ninth day of observation there was a decrease in its concentration up to $2,14 \pm 0,11$ ng/ml. Dysfunctional disorders of biliary tract develop during gallstone disease and the longer the history of gallstone disease is, the more serious functional disorders are and the more likely the formation of structural changes is.

Out of 125 patients that made up groups 1 and 2, 34 (27,2%) sought medical help after cholecystectomy during the first year. 18 of them (52,9%) made up group 1 and 16 (47,1%) formed group 2. There were fewer patients who applied for medical help again in group 2 than the first group. In the process of the study of the CCK concentration, patients with PCES tended to lower levels of this neuropeptide. In the period up to 1 month after surgery the level of CCK is at the lower limit of normal ($0,58 \pm 0,05$ ng/ml), then there is a tendency to decrease in CCK. Thus, in the first month after cholecystectomy neuropeptide element reacts to the new conditions of functioning of biliary tract by reduction in CCK. Patients of groups 3 and 4 did not have organic pathology hepatopancreatoduodenal zone or significant changes in laboratory parameters of blood.

The decrease in CCK in more than 50 times – from 4,11 to 0,08 ng/ml is observed from the first day and in terms of up to 5 years after cholecystectomy. Out of 125 patients forming groups 1 and 2, 34 (27,2%) sought medical help after

cholecystectomy during the first year. In the process of comprehensive survey of these patients organic pathology of the hepatopancreatoduodenal zone was not found, the clinical picture corresponded to the SOD of the functional nature, which was the basis for the diagnosis: postcholecystectomical syndrome, dysfunction of the sphincter of Oddi type III. In the study of the levels of CCK there were found variations from 0,08 to 0,44 ng/ml, the middle concentration – $0,29 \pm 0,02$ ng/ml. A direct strong correlation (correlation coefficient = 0,94) between the multiplicity of the reduction of the CCK level and the development of SOD type III was found. Prognostic criteria is based on the following pattern: when the level of CCK after surgery is more than twice smaller to the ninth day, the risk of the development of SOD of the functional nature is increased by 22,6%, which is the criterion for the timely implementation of preventive measures – prescription of the selective antispasmodic drugs in early time after removal of the gallbladder.

Thus, we can conclude the following: determination of the level of cholecystokinin in patients with acute calculous cholecystitis allows to judge about the seriousness of functional disorders of the biliary tract. In the postoperative period cholecystokinin of plasma concentration decreases progressively, resulting in the development of sphincter of Oddi dysfunction of the functional nature. Cholecystokinin concentration below 0,5 ng/ml when there is the absence of organic pathology of hepatopancreatoduodenal zone indicates sphincter of Oddi dysfunction of the functional type. When the level of cholecystokinin on the ninth postoperative day becomes more than two times lower, the risk of sphincter of Oddi dysfunction of the functional nature rises to 22,6%, which requires the use of selective antispasmodic drugs.

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