GAVIN PUBLISHERS

OPEN ACCESS

Annals of Medical and Clinical Oncology

Lychkova AE, Puzikov AM. Ann med clin Oncol 3: 121.

DOI: 10.29011/AMCO-121.000121

Research Article

Motor Function of the Gastrointestinal Tract and Biliary Tract in Pancreatic Tumors

Lychkova AE* **and Puzikov AM**

Moscow Clinical Research and Practice Center, Moscow, Russia

***Corresponding author:** Lychkova AE, Moscow Clinical Research and Practice Center, Moscow, Russia

Citation: Lychkova AE, Puzikov AM (2020) Motor Function of the Gastrointestinal Tract and Biliary Tract in Pancreatic Tumors. Ann med clin Oncol 3: 121. DOI: 10.29011/AMCO-121.000121

Received Date: 16 June, 2020; **Accepted Date:** 26 June, 2020; **Published Date:** 30 June, 2020

Abstract

The goal is to identify motor disorders of the Gastrointestinal Tract and Biliary tract (GIT and RVC) in tumors of the pancreas.

Material and methods: There were 8 patients with pancreatic adenoma under observation: 75% of women aged 67.2 ± 3.5 years and 25% of men aged 57.3 ± 5.9 years. The diagnosis of a pancreatic tumor was made on the basis of abdominal sonography, aiming at the pancreas. The motor function of the gastrointestinal tract and GI departments was studied Electromyographically (EMG) by applying silver bipolar electrodes to the projection area of the registered organ on the anterior abdominal wall. The analysis of electromyograms was performed using the Conan-M hardware and software complex with a bandwidth of 1-10 Hz.

Results: In pancreatic tumors, hypermotor dyskinesia of the longitudinal and oblique muscle layers of the stomach, hypermotor dyskinesia of the duodenum were observed. Hypermotor dyskinesia of the jejunum, hypomotor dyskinesia of the right parts of the colon, hypomotor dyskinesia of the proximal part of the descending colon due to a pronounced spasm of the circular muscle layer.

Keywords: Electromyography; Pancreatic tumors

The incidence of pancreatic tumors in Russia as of 2014 is 11.4 people per 100 thousand populations [1]. At the same time, its steady growth is noted, which over the past 10 years has amounted to 21.6%. Among all malignant neoplasms, pancreatic cancer occupies the 13th place, and in the structure of mortality from malignant neoplasms, it has consistently held the 4th place for several years worldwide [2]. This is primarily due to the late detection of a malignant tumor. According to statistics, the indicators of delayed diagnosis are maximum in cases of pancreatic neoplasms. More than 80% of patients are diagnosed at stages III and IV, when there is a regional or remote spread of the process. At the same time, survival directly depends on the stage of the disease. Thus, the 5-year survival rate for stage I-II pancreatic adenocarcinoma is 23-26%, at stage III it is reduced to 10%, and at stage IV it remains only 2%. Only the possibility of radical surgical treatment is the key to a favorable prognosis. This is why primary preoperative differential diagnosis of pancreatic tumors and assessment of resectability of the process are important [3-5].

Tumor-like diseases of the exocrine part of the pancreas (pancreas) include inflammatory changes of a mixed nature, cysts (pseudocysts, retention, congenital, lympho-epithelial cysts), changes in the lining of the ducts (squamous metaplasia, hypertrophy of mucus-forming cells, papillary and adenomatous hyperplasia, severe dysplasia), focal transformation of the acinar epithelium, hetero and ectopic Islands, hamartoma, pseudomyomatous hypertrophy [6]. However, despite detailed morphological classifications of pancreatic tumors, studies of the motor function of the gastrointestinal tract have not been conducted. The goal is to identify motor disorders of the Gastrointestinal Tract and Biliary tract (GIT and RVC) in tumors of the pancreas.

Material and methods

There were 8 patients with pancreatic adenoma under observation: 75% of women aged 67.2 ± 3.5 years and 25% of men aged 57.3 ± 5.9 years. Of the concomitant diseases, GERD, diverticular disease, liver steatosis was observed in half of the patients, non-GERD - in 25%, and stool disorders in almost all patients. The diagnosis of a pancreatic tumor was made on the basis of abdominal sonography, aiming at the pancreas. The motor function of the gastrointestinal tract and GI departments was

studied by Electromyography (EMG) by applying silver bipolar electrodes to the projection area of the registered organ on the anterior abdominal wall. The analysis of electromyograms was performed using the Conan-M hardware and software complex with a bandwidth of 1-10 Hz. Statistical analysis was performed using the Mann-Whitney system with a confidence interval of $p < 0.05$.

Results

The frequency of slow stomach waves in patients with pancreatic tumors was 10.3 ± 0.9 \min (an increase of 83.7%, p< 0.05), the amplitude – 0.13 ± 0.003 mV, (a decrease of 13.3%, p<0.05), the power of tonic contractions – 1.34±0.18 (an increase of 62.4%, p<0.05).The frequency of spikes was 3.5 ± 0.2 (an increase of 250%, p<0.05), the amplitude – 0.02 ± 0.004 mV (decrease by 80%, p< 0.05), power of phase contractions 0.07± 0.003 (decrease by 30%, p<0.05), propulsive activity 19.1 ± 0.8 (increase by 124, 2%, p< 0.01).In other words, hypermotor dyskinesia of the longitudinal and oblique muscle layers of the stomach was observed in pancreatic tumors.

Electromyographically, the frequency of slow duodenal waves was 23.0 ± 1.5\ min (an increase of 4.5%, p>0.1), the amplitude was 0.14 ± 0.003 mV (an increase of 40%, p < 0.05), the power of tonic contractions was 3.22 ± 0.21 (an increase of 46.4%, p< 0.05). The frequency of spikes was 3.3 ± 0.02 (an increase of 230%, p< 0.01), the amplitude – 0.02 ±0.001 mV (a decrease of 80%, p< 0.05), the power of phase contractions – 0.066± 0.004 (a decrease of 34%, p<0.05), propulsive activity – 48.8 ±2.5 (140%, p<0.01). In other words, hypermotor dyskinesia of the duodenum was observed in pancreatic tumors. The frequency of slow waves of the jejunum was 22.6 ± 0.4\ min (an increase of 13%, p<0.05), the amplitude – 0.08 ± 0.002 mV (a decrease of 20%. P< 0.05) power of tonic contractions 1.808±0.042 (decrease by 19.6, P< 0.05). The rate of spikes was 3.0 ± 0.04 (increase 199,8%, p< 0.01), amplitude 0,01 ± 0,003 mV (a decrease of 90%, p< 0,03), power phase reductions of 0.03 ± 0,0015 (a reduction of 70%, p< 0.05), the propulsive activity of 60.3 ± 0.8 (increase 201,5 %, p< 0.01). That is, in pancreatic tumors, hypermotor dyskinesia of the jejunum is observed, progrediently increasing in the proximal part of the small intestine – the duodenum.

Electromyographically, the frequency of slow waves of the right colon was 10.9 ± 0.4 \min (a decrease of 0.9%, p< 0.05), the amplitude – 0.1 ± 0.03 mV (within the reference values), the power of tonic contractions – 1.09 ± 0.09 (a decrease of 9%, p< 0.05). The frequency of spikes was 4.0 ± 0.2 (an increase of 299%, p< 0.01), the amplitude - 0.04 ± 0.01 mV (a decrease of 60%, p< 0.05), the power of phase contractions – 0.16 ± 0.009 (an increase of 60%, P<0.05), propulsive activity - 6.8 ± 0.7 (a decrease of 38.2%, p< 0.05). In other words, hypomotor dyskinesia of the right colon was observed in pancreatic tumors. The frequency of slow waves of the left colon proximal section was 10.0 ± 1.0 \min (increase by 66.7%, p< 0.05), the amplitude -0.13 ± 0.004 mV (increase by 30%, p< 0.05), the power of tonic contractions -1.3 ±0.15 (increase by 116.6%, p< 0.01). The frequency of spikes was 3.3 ± 0.2 (an increase of 230%, p< 0.01), the amplitude -0.05 ± 0.003 mV (a decrease of 50%, p<0.05), the power of phase contractions – 0.165 ± 0.012 (an increase of 65%, p< 0.05), propulsive activity – 7.9 ± 0.5 (a decrease of 28.2%, p< 0.05). That is, in pancreatic tumors, hypomotor dyskinesia of the proximal descending colon was observed due to a pronounced spasm of the circular muscle layer.

Electromyographically, the frequency of slow waves of the left colon (sigmoid) was 8.4 ± 0.3 \min (an increase of 40%, p< 0.05), the amplitude – 0.11 ± 0.002 mV (an increase of 10%, p< 0.05), the power of tonic contractions – 0.924 ± 0.026 (an increase of 54%, p< 0.05). The frequency of spikes was 4.1 ± 0.15 (an increase of 310%, p<0.0001), the amplitude - 0.03 ± 0.0011 mV (a decrease of 70%, p< 0.05), the power of phase contractions – 0123 ± 0.009 (an increase of 23%, p< 0.05), propulsive activity – 7.5 ± 0.47 (a decrease of 25%, P< 0.05). In other words, hypomotor dyskinesia of the sigmoid colon was observed in pancreatic tumors, mainly due to spastic contractions of the circular muscle layer. The frequency of slow waves of choledoch was 8.8 ± 06 \min (decrease by 2.2%, p> 0.1), the amplitude – within the reference values, the power of tonic contractions - 0.88 ±0.05 (decrease by 2.2%, p> 0.1). The frequency of spikes was 3.5 ± 0.3 (gain by 250%, p< 0.01), the amplitude-0.08 ± 0.04 mV (decrease by 20%, p< 0.05), the power of phase contractions-0.280 ± 0.04 mV (increase by 180%, p<0.01), propulsive activity 3.14 ± 0.05 (decrease by 65.1%, p< 0.05). Thus, in tumors of the pancreas were observed hypomotor dyskinesia of common bile duct due to spasm of the circular muscle layer.

Electromyographically, the frequency of slow gallbladder waves was 7.6 ± 0.4\min (a decrease of 5%, p< 0.05), the amplitude was 0.12 ± 0.002 mV (an increase of 20%, p< 0.05), the power of tonic contractions was 0.76 ± 0.051 (a decrease of 5%, p< 0.05). The frequency of spikes was 3.2 ± 0.3 (an increase of 220%, p< 0.01), the amplitude was 0.03 ± 0.002 mV (a decrease of 70%, p< 0.05), the power of phase contractions was 0.096 ± 0.005 (a decrease of 0.4%, p< 0.1), the propulsive activity was 7.9 ± 0.5 (a decrease of 1.3%, p> 0.1). That is, the propulsive activity of the gallbladder practically does not differ from the norm. Thus, the propulsive activity of the stomach, duodenum and jejunum significantly exceeds the norm and there is a pronounced hypermotor dyskinesia, which contributes to the development of GERD and digestive disorders in the upper digestive tract. The motor function of the choledochus and various parts of the colon is reduced, and there is a cranio-caudal decreasing gradient of hypomotor dyskinesia of the colon, which is accompanied by the development of diverticulosis and various stool disorders. In

all the studied departments of the gastrointestinal tract and bile ducts, there is a pronounced spastic activity of the circular muscle layer, possibly associated with the development of the neoplastic process.

References

1. Ivashkin VT, Mayev IV, Kaprin AD, Agapov M Yu (2019) Early detection of oncological diseases of the digestive system (methodological guide of the Russian Gastroenterological Association and the Association of oncologists of Russia for primary care physicians). Russian journal of gastroenterology, Hepatology, Coloproctology 29: 53-74.
2. Simard EP, Ward EM, Siegel R, Jemal A (2012) Cancers with increasing incidence trends in the united states: 1999 through 2008. CA : a cancer journal for clinicians 62: 118-128.
3. Karmazanovsky GG (2016) solid structure pancreatic Tumors: results of radiation studies, differential diagnostics (lecture, part 1). Medical visualization 4: 54-63.
4. Karmazanovsky GG (2016) solid structure pancreatic Tumors: staging and resectability, criteria for evaluating the progression of the tumor process after surgical treatment (lecture, part 2). Medical visualization 5: 43-49.
5. Akhtanin EA, Berelavichus SV, Vetsheva NN, Gorin DS (2019) Diagnostics and surgical treatment of cystic tumors of the pancreas, methodological guide 2019: 55.
6. Palcev MA, Anichkov NM (2005) Atlas of pathology of human tumors 2005: 426.