

Epidemiology and opportunities for diagnosis of pancreatic diseases in Ukraine (2009–2015)

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Key words: pancreatic diseases, chronic pancreatitis, acute pancreatitis, prevalence, incidence, diagnosis, surgical care

Among the main factors causing damage to health in Ukraine non-communicable diseases and injuries are on the first place, that's why their prevention and control should be among priorities if strengthening of the population health is desired. Population prophylactics should play a primary role in relation to non-communicable diseases.

High Risk Strategy and the prevention of non-communicable diseases progression on early stages Strategy provide a rapid decline in the level of correctable risk factors in a large part of the population, to reduce morbidity and mortality.

Chronic pancreatitis frequency in various countries ranges from 0.4 to 5%, and it has a clear tendency to increase. In developed countries, chronic pancreatitis is noticeably "younger", the average age from the time of diagnosis has decreased from 50 to 39 years, the proportion of women has increased by 30%, proportion of alcoholic pancreatitis is increased from 40 to 75%. In 30% of cases early complications are developed (purulent-septic complications, bleeding from gastroduodenal ulcers, thrombosis in the portal vein, stenosis of common bile duct and others). Mortality is about 5.1%. As a result, 30% of patients with chronic pancreatitis die within 10 years, 50% — within 20 years.

During the last two decades several epidemiological studies has been undertaken in order to generalize trend level of hospitalization and the incidence of chronic pancreatitis, analyze etiological factors that cause and contribute to its development in the countries of Western Europe, India, China and Japan.

According to the literature, in Europe the incidence of chronic pancreatitis ranged from 8.0 to 26.4 per 100 thousand people. The highest incidence was observed in Finland (23.0 per 100 thousand people) and France (26.4 per 100 thousand people), while the lowest numbers were reported in Switzerland (8.0 per 100 thousand people).

In China during the same period of time, the incidence of chronic pancreatitis was 9.9 per 100 thousand people.

The highest incidence of chronic pancreatitis in the world (32.9 per 100 thousand people) was registered in Japan by the end of the 90s of the last century.

Incidence of chronic pancreatitis in Ukraine remains a problem for official statistics. Today, in the official statistics forms provided by the Center for Statistics of Ministry of Health of Ukraine chronic pancreatitis is not recorded separately but only as a part of the bigger group of pancreatic diseases. Therefore, official statistics presented in this review is given only for this group of diseases, in which the major part belongs to chronic pancreatitis.

The purpose of current research is to analyze the prevalence and incidence of pancreatic diseases, as well as the surgical activity and postoperative mortality due to surgical interventions on the pancreas among the population of Ukraine for the last 7 years (2009-2015).

Materials and Methods: We applied structural and logical analysis and clinical-statistical method. The study was carried out based on the performance analysis of the materials of official statistics provided by the Center for Statistics of Ministry of Health of Ukraine chronic in 2009-2015, in dynamics. Increase/decrease rate has been used to identify the nature of the changes and to determine the general

trend. In order to calculate all aforementioned values, data for each of the previous years were taken as the reference values, while others has been calculated as a percentage of it.

The study of official statistics shows a steady increase in the number of patients with pancreatic diseases. In 2015, nearly 1 million of such patients were registered in Ukraine. The situation shows that the pancreatic diseases prevalence rate of growth was significantly higher than the growth rate of the overall prevalence of digestive diseases. For example, if the overall prevalence of acute pancreatitis in the past 10 years (2006-2016) was decreased by 0.4%, the prevalence of pancreatic diseases during the same period grew by a third.

In 2015, in the structure of the digestive diseases prevalence in Ukraine, the share of pancreatic diseases was 13.8%, in the structure of newly diagnosed diseases - 9.8%. This is the second place after the biliary system diseases.

In-depth analysis by the regions identified 5 areas with very high prevalence of pathology: Kiev, Odessa, Dnipro, Vinnytsa and Khmelnytsky region. Low rates were recorded in Volyn, Zaporizhia and Lviv regions.

The tendency to increase is detected in the incidence of pancreatic diseases in the adult population to 30%. Most likely, this increase has occurred for two reasons. The first is connected with the improvement of existing and introduction of new pancreatic imaging techniques with high resolution, which allows verification of pancreatitis at earlier stages of the disease. The second is related to the increase in the number of consumed alcoholic beverages (including low quality) in the world.

The indicator of pancreatic disease prevalence in the adult population in 2015 was at 2,518.0 cases per 100 thousand. The growth rate amounted to 32.1%. In the pediatric population from 2006 until 2014 it grew by 5.6%, but in 2015 decreased by 11.6%.

The number of the cases of pancreatic diseases among people of working age grew by 26.8%, among the elderly - by 12.2%.

It is important to note the significant increase in the prevalence of pancreatic diseases in a rural population by 30.6% versus urban residents, among whom it has increased by 19.9%.

In the last decade in Ukraine, operations on the pancreas equaled 1.3% in the structure of the operations on the digestive organs and abdominal cavity. The proportion of surgical interventions for the chronic pancreatitis equaled 18.3% of all operations on the pancreas.

Study on the dynamics of indicators of the surgical interventions in patients with pancreatic diseases showed that their absolute number decreased from 4606 operations for the last 10 years in 2006 to 3572 - in 2015, reducing the rate by 22.4%.

At the same time the number of operations for chronic pancreatitis was increased by 0.6%, of which 653 were performed in 2015. Here we pay attention to the fact that between 2006 and 2014 the number of surgical interventions for chronic pancreatitis was more than 800 cases per year.

Mortality after operations on the pancreas remains high and 5 times higher than general numbers for the digestive organs operations. Trends showed that in the period from 2006 to 2015 mortality after operations on the pancreas had a tendency to decrease, with the exception of operations for chronic pancreatitis, due to which it has increased by 1.2 times and amounted to 6.28% in 2015.

To evaluate emergency surgery against the background of pancreatic diseases, which was presented in a form of data on acute pancreatitis, we analyzed all officially registered cases of admission, including those with late 24 hours, the number of operations, and postoperative mortality.

It was found that the number of cases of the hospital treatment for acute pancreatitis was decreased by 13% and amounted to 30 thousand cases in 2015. In the period from 2009 to 2013 those numbers were 3-5 thousand more.

Hospitalization within 24 hours remains an important problem. The proportion of such cases in the total number of patients brought to the hospital with acute pancreatitis was 37.6%.

Late and incidental hospitalization are one of the main reasons for the unsatisfactory results of the treatment for acute pancreatitis, and the death of the patients comes as a result of delayed diagnosis, underestimating the severity of the condition, delaying the start of intensive care.

It was found that in Ukraine the total number of operations for acute pancreatitis in the last 7 years has decreased by 37.6% and amounted to 2465 cases in 2015 versus 3949 in 2009. Index for 10 thousand of people was decreased by 32.6%.

In the overall structure of urgent interventions, surgery for acute pancreatitis in 2015 amounted to 12%. Also, it is important to note, there is a decrease for 29.4%, in the share of fixed-term operations during the last 7 years, comparing to the total amount, which indicates an improvement in the chronic pancreatitis treatment.

Frequently relapsing course of chronic pancreatitis with development of complications requiring surgical treatment leads to a deterioration in the quality of life (sometimes disability) among the most employable population.

According to the dynamics of postoperative mortality for acute pancreatitis, we can draw the following conclusions: postoperative mortality for the last 7 years successively reduced by 14% until 2013, when it amounted to 10.84%. However, in 2015 this figure increases to 13.1, that is, for 2 years (2014-2015), postoperative mortality increased by 21.3%.

Postoperative mortality in late hospitalization does not tend to decrease, and for 6 years has grown by 12.9%.

Instrumental diagnosis of chronic pancreatitis is based on the pancreas imaging techniques, of which ultrasound is particularly widely used in Ukraine.

In 2015, number of studies of the abdominal cavity was about 10 million cases, the rate for 10 thousand people amounted to 2142.2. In comparison to 2009, rate of abdomen ultrasound decreased by 12.1%. The number of ultrasound machines in 2015 amounted to 3614 units, which is 21.7% more than in 2009.

The most important methods of differential diagnosis of chronic pancreatitis are imaging techniques such as computer tomography, magnetic resonance, ultrasonography, transabdominal ultrasonography and endosonography.

However, use of these methods is very limited due to the fact that the majority of health care facilities in Ukraine cannot provide these diagnostic services due to lack of equipment. In those institutions where they are available, the cost of this diagnosis is quite high.

In 2014, in Ukraine there were 80 thousand of CT studies performed on the digestive organs. Rate for 10 thousand people has increased compared to 2009 by 32.2%. Proportion of MRI cases is smaller, the rate for 10 thousand amounts to 0.4, which is 20% less than in 2009.

It should be noted that during the analysis of indicators we found no statistical data on such methods as the morphologic diagnosis or endosonography, which currently are not included in the official statistical reports and are very often decisive in a correct and timely diagnosis of chronic pancreatitis.

Inadequate assessment of pathology may contribute to the selection of the wrong tactics – for example decision to settle upon the dynamic monitoring of patient who needs urgent surgical treatment due to undiagnosed tumor process or, on the contrary, enhanced-duodenal pancreatic resection for chronic pancreatitis.



Fig. 4. The prevalence of pancreatic diseases in the adult and child population.

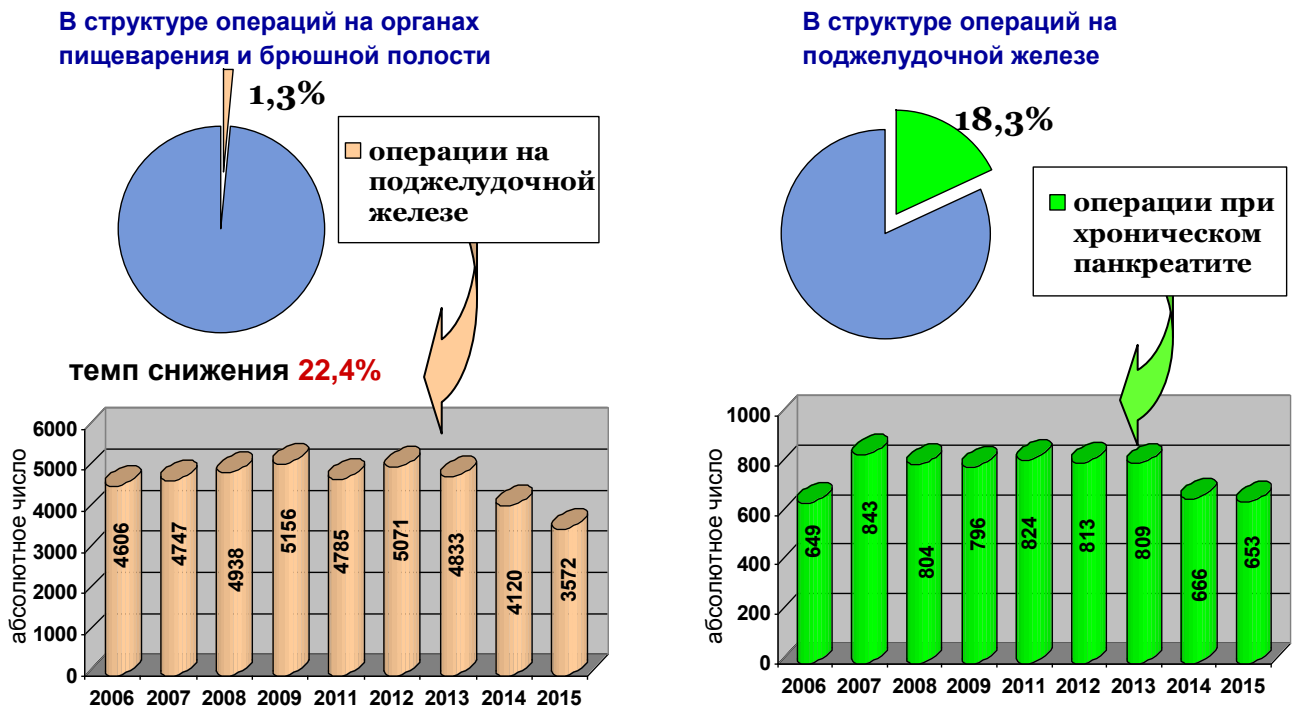


Fig. 5. Indicators of surgical interventions.

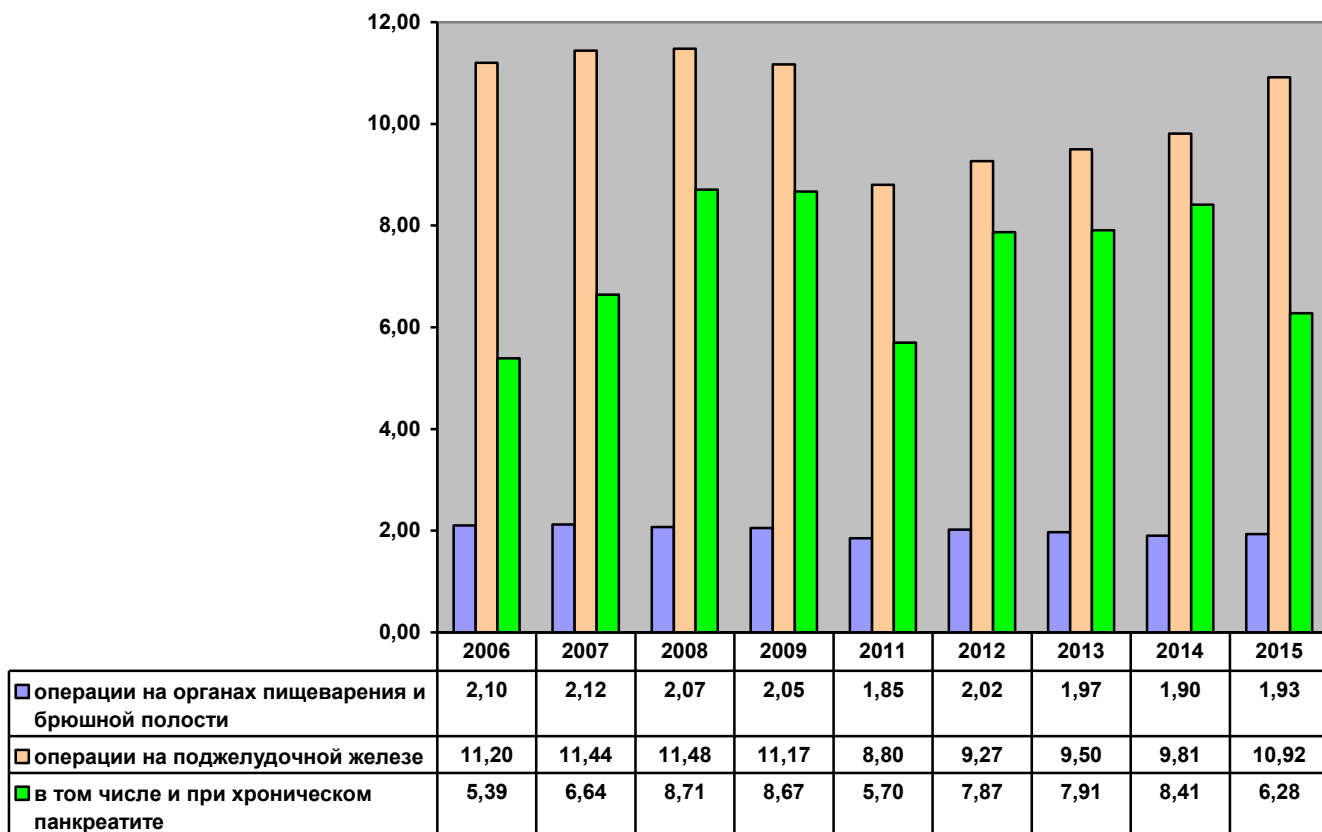


Fig. 6. Postoperative mortality in chronic pancreatitis (%).

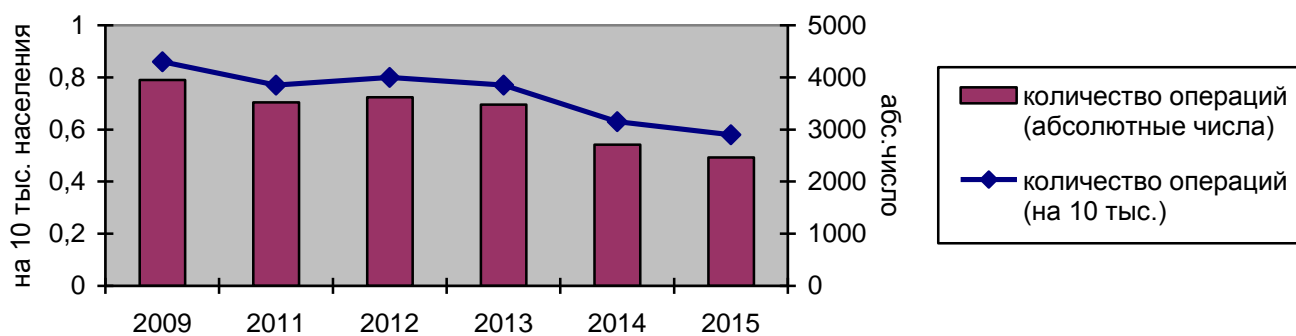


Fig. 7. Dynamics of operations in acute pancreatitis.

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A steady increase has been reported recently in the prevalence of pancreatic diseases among the chronic non-communicable diseases. Official statistics of chronic pancreatitis in Ukraine still remain unclear. As for today, chronic pancreatitis is not recorded as a separate nosology in the forms of the Statistics Center of the Ministry of Health of Ukraine, but as a part of the whole pancreatic diseases group.

During 2015, about 1 mln of patients with pancreatic diseases had been registered in Ukraine. The situation shows that the growth rate of pancreatic diseases prevalence is significantly higher than the growth rate of the overall prevalence of digestive diseases. The tendency of increasing incidence of pancreatic diseases in the adult population is up to 30%.

The number of cases of hospital treatment for acute pancreatitis had been decreased by 13%, while the proportion of hospitalizations within 24 hours was 37.6%.

Postoperative mortality in acute pancreatitis for the last 7 years was successively reduced by 14% until 2013, when it amounted 10.84%. However, in 2015 there was a growth of this index to 13.1, that is, for 2 years (2014-2015), postoperative mortality increased by 21.3%.

Postoperative mortality in cases of late hospitalization does not tend to decrease, and for 6 years was grown by 12.9%.

In 2015, index of abdominal ultrasound performed per 10 thousands amounted to 2142.2.

CT index performed per 10 thousands increased compared to 2009 by 32.2%.

A smaller share was allotted to MRI index, the rate of which was 0.4 per 10 thousands, which is 20% less than in 2009. The ratio of ultrasound to CT and MRI was 99.9 vs. 0.88 and 0.03%.