IMUNOENZYMATIC RESEARCH IN PANCREATIC DISEASES

Maria Prisecaru, Daniela Tiță, Roibu Lilia, Ionuț Stoica, Gabriel Alin Iosob, Maria Călin, Tina Oana Cristea, Florian Prisecaru

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INTRODUCTION

Pancreatic pathology is a widely encountered pathology, constantly increasing with varying incidences from one continent to another, depending on ethnicity, genetic predisposition and eating habits. Within the digestive pathology, pancreatic pathology is the least known.

Ignoring the diagnostic disorders and nosological imprecision that reigns in this chapter as well as the insufficient knowledge of the structure and especially of the exocrine pancreatic disorders in the whole digestive economy.

The clinical diagnosis of pancreatic disorders faces great and real difficulties, as the clinical picture of pancreatic disorders mimics the picture of many other pathological entities, especially from the digestive sphere.

The deep anatomical situation of the pancreas excludes the possibility of its direct exploration; Direct palpation of the pancreas is only a surgical privilege. In this situation, functional exploration with the help of sufficiently verified tests, as well as the radiological exploration of the pancreas, it becomes of great importance.

Numerous tests have been imagined to evaluate the functions of the exocrine pancreas, some of them involving a great deal of skill, but unfortunately their diagnostic value is unequal. Also, radiological exploration of the pancreas relies more on indirect methods, as erythrosine B did not enter the clinic, and pancreatic scintigraphy is one of the methods with isotopes difficult to perform and interpret, due to its proximity to the liver.

Recent studies of physiology and biochemistry have enriched our knowledge of pancreatic functions, allowing the improvement of exploration techniques. Thanks to them, the pathophysiology of the pancreas has been considerably clarified, and the syndrome of pancreatic insufficiency is well understood.

The studies are aimed at an evaluation of the complex diagnosis of pancreatitis, based on modern methods of investigation that include the use of specific markers that can invalidate or confirm the diagnosis (CA 19-9 and CEA) and the evaluation of lipase and amylase enzymes, in relation to pancreatitis.

Biological markers have the advantage of being quantifiable along the carcinogenesis cascade thus offering the possibility of their standardized measurement and, at the same time, can be applied for the early diagnosis of pancreatic tumors or the identification of high risk patients, allowing their close monitoring.

The carrying out of the research activity and the results obtained were performed in the Laboratory of Medical Analyzes of the Bacau County Emergency Hospital, between February and May 2018.

MATERIAL AND METHODS

In our study were included 70 patients admitted to the gastroenterology department, within the Bacau County Emergency Clinical Hospital.

Pancreatic pathology was acute pancreatitis (n = 17), chronic pancreatitis (n = 16), chronic cholecystitis (n = 15), malignant pancreatic tumor (n = 8), duodenal ulcer (n = 5), gastric ulcer (n = 9).

Patients from the study and control groups were collected peripheral venous blood samples (for the immunological test and the determination of tumor markers).

Prior to the collection of biological materials for the study, all patients signed the informed consent after explaining the details and clarifying any occurrences.

For 70 patients registered in February - May 2018, the surface antigen detection of pancreatitis was determined, the tumor markers CA19-9, CEA and the enzymes amylase and lipase were used, all these investigations being carried out in the Laboratory of Medical Analyzes. Bacău County Emergency Hospital.

The determination of pancreatic markers - antigens and antibodies, was performed using the COBAS 6000 analyzer, by the spectrophotometric method (fig. 1).

The enzyme activity (lipase and amylase) was determined using the COBAS INTEGRA 4000 Plus analyzer (fig. 2).

Fig. 1. "COBAS 6000" automatic analyzer

Fig. 2. COBAS INTEGRA 400 plus analyzer

RESULT AND DISCUSSIONS

The results obtained from the investigations were recorded and statistically processed. According to the data obtained from the study of the group of patients investigated, 44% were women and 56% men (Figure 3). Although the presence of pancreatic disorders is found in both men and women, the percentage of male patients is higher, which results in the pathology appearing to affect slightly more male patients ($p < 0.01$) due to ingestion. alcohol, smoking.

From the point of view of the origin of the patients affected by pancreatic pathologies, an equality of 50% was detected (Figure 4). This yield could be the consequence of multiple pancreatic disorders or complications associated with the living environment, as well as environmental conditions, such as industrialization in rural areas, pollution, waste water, waste generation, unhealthy food education, market emergence. new unhealthy products, excessive alcohol consumption in both environments.

According to the diagnosis, it was found that most patients suffer from acute pancreatitis 24%, chronic pancreatitis 21%, chronic cholecystitis 21%, gastric ulcer 13%, duodenal ulcer 7% and pancreatitis 2% (Figure 5). Major causes often include excessive and prolonged consumption of alcoholic beverages, potentially toxic drugs, viral infections, abdominal trauma, hereditary causes, slow

destruction of cells that absorb digestive enzymes, nutrients insufficiently absorbed with the onset of the disease called malabsorption, infection *Escherichia coli*, streptococci, *Salmonella* and others.

According to the distribution of patients by age groups (Figure 6), we found that the age of the confirmed diseases is between 51 - 60 years with 18%, with maximum incidence in the age group 51 - 60 years with 20%.

By comparing the distribution of patients from the provenance areas according to the diagnosis (Figure 9, Figure 10) I mention that the incidence of acute pancreatitis in patients in urban areas reaches 23%, and in rural areas 29% patients are diagnosed with chronic pancreatitis.

By comparison of the sex groups according to the diagnosis (Figure 7, Figure 8) the female patients are predisposed to suffering from an acute pancreatic disease with a percentage of 29%, in most cases in the IV and V decades, frequently appear after surgery or endoscopy, estrogen use in women with high blood lipids, and 21% of male patients develop chronic pancreatitis favored by smoking, which causes prolonged spasm of the pancreatic vessels. This leads to a deterioration of metabolism in the organ and contributes to chronic disease. Often, illnesses occur after a heavy intake of alcohol and a large amount of spicy, fatty foods.

Following the immunological analysis of the total group of 70 patients, 39% of them reported pathological values of carbohydrate antigen (CA19-9) and 61% normal values (Figure 11). This result is due to the blood levels of this antigen which can achieve a higher than normal rate in healthy people, as well as in people with cancer or non-cancer, and those diagnosed with pancreatitis.

A high level of this antigen is most often seen in people with advanced pancreatic cancer. CA level 19-9 is usually not elevated when the cancer is in a very early stage. If the CA level 19-9 was higher than normal, a decrease in this rate or a return to normal values, it could mean that the cancer responds well to treatment. Increased levels of CA 19-9 could mean that, the cancer does not respond well to treatment, regardless of whether it is still in development or recurrence (recurrence). Slight growth is not necessarily important.

Carcinoembryonic antigen (CEA) shows (Figure 12) 26% pathological values and 74% normal values. The presence of CEA in small quantities in adults is not abnormal. CEA is also found in some people who are not sick. There may be an increase in the CEA rate in the presence of cancer or non-cancerous conditions. It is known, for example, that about 3% of the population has a high blood level of carcinoembryonic antigen. Also, smokers who do not have cancer have high values. The blood level of CEA is often higher in the presence of pancreatic cancer. After treatment, the return to increased normal CEA values usually means that the cancer has

responded to the treatment. In non-cancerous conditions there is an increase in blood level, including ulcer, inflammation, such as pancreatitis (inflammation of the pancreas) or cholecystitis (inflammation of the gall bladder).

Lipase offers a larger diagnostic window than amylase, 93% normal values and only 7% pathological values (Figure 14). Normal values yield, because lipase is increased for a long time, thus allowing it to be a useful diagnostic biomarker in the early and later stages of acute pancreatitis.

Figure 13 shows the percentage distribution of serum amylase, 91% normal values and only 9%

pathological values were obtained. The normal values are due to macroamylazemia, being the biological condition in which moderately elevated values of the serum concentration of total amylase persist without pancreatic dysfunction and are due to the formation of complexes between amylase and globulin, complexes that are not excreted. Pancreatic amylase is increased in acute pancreatitis within the first 6-12 hours after installation and persists for 3-4 days. The increase in these situations is 4 - 6 times the reference limit. Macroamylases can produce less dramatic and persistent increases in pancreatic amylase, up to weeks and even months.
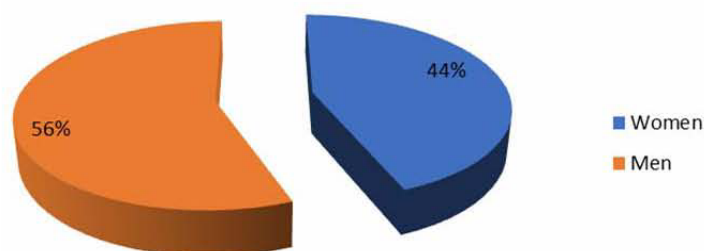

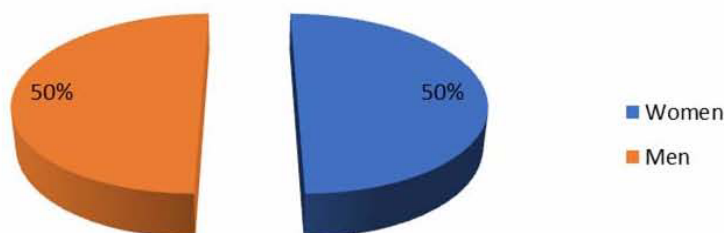Fig. 3. Percentage distribution of patients by sex

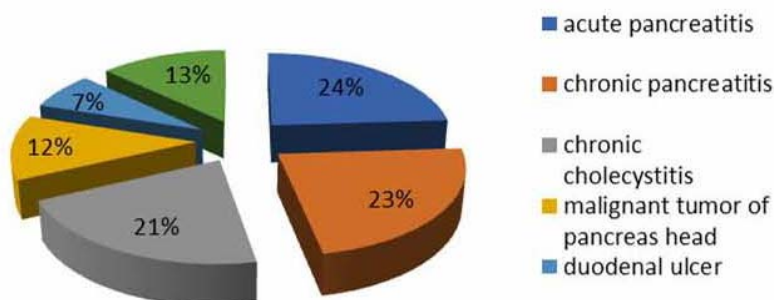Fig. 4. Percentage distribution of patients by province of origin

Fig. 5. Percentage distribution of patients according to diagnosis
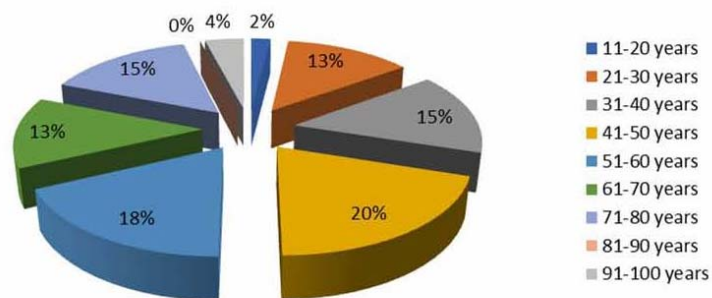
Fig. 6. Percentage distribution of patients by age groups
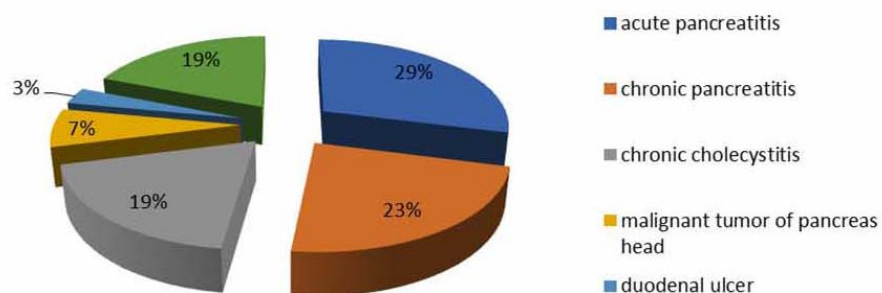

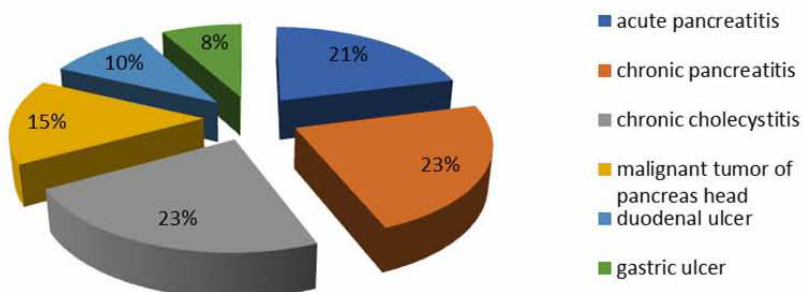Fig. 7. Percentage distribution of female patients according to diagnosis

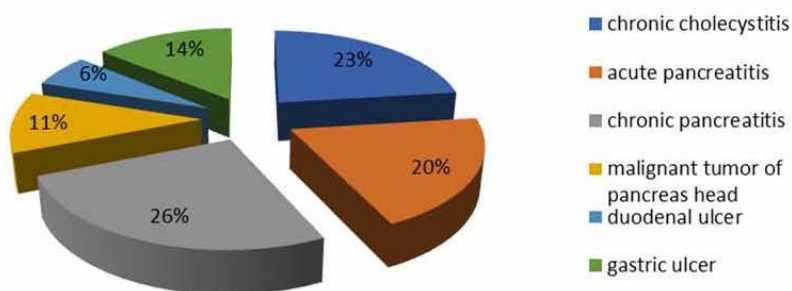Fig. 8. Percentage distribution of male patients according to diagnosis

Fig. 9. Percentage distribution of patients in urban areas according to diagnosis
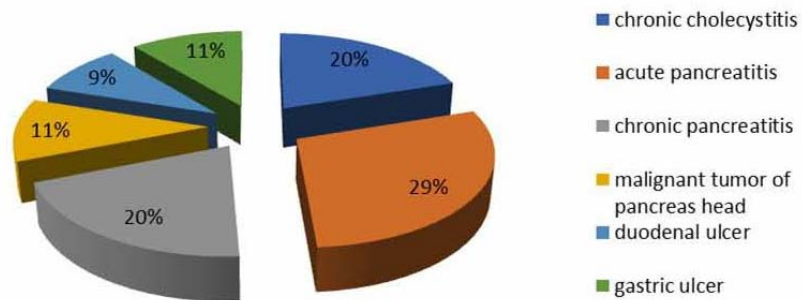
Fig. 10. Percentage distribution of patients from rural areas according to diagnosis
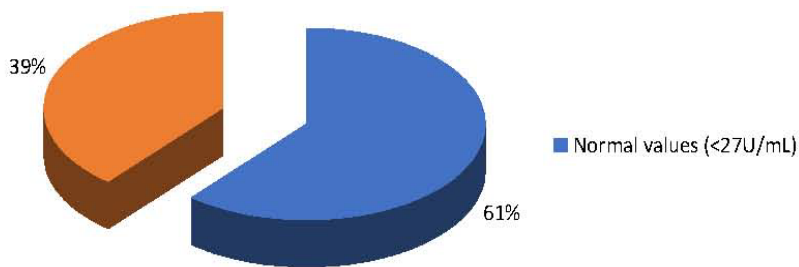

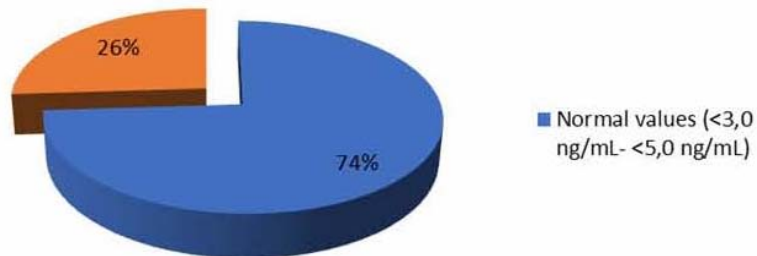Fig. 11. Percentage distribution of CA 19-9 according to values

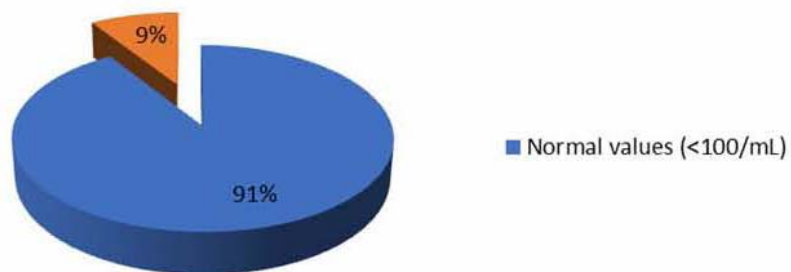Fig. 12. Percentage distribution of CEA by values

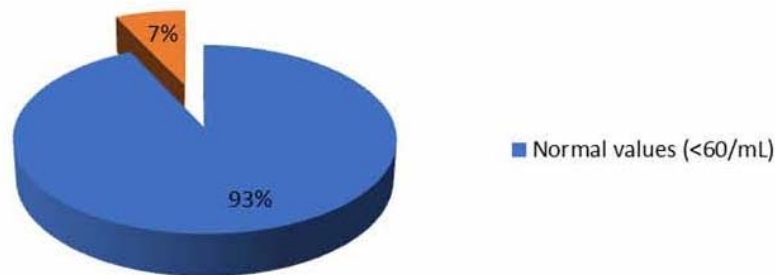Fig. 13. Percentage distribution of amylase by values

Fig. 14. Percentage distribution of lipase by values

CONCLUSIONS

The presented results allow us to affirm that pancreatic pathologies are still a major public health problem, affecting all age categories of the population (young children, young people, adults and the elderly).

Pancreatic disorders may also be a mode of onset or an early manifestation of serious digestive tract disorders which may subsequently be framed in cases of food intolerance, whether it is malabsorption, or may follow a longer term early. of expression in an inflammatory bowel disease.

In our study, the distribution by country of origin showed an equal predominance of cases in rural and urban areas regarding the forms of pancreatic pathologies that have a long evolution and with a chronic characterization.

The distribution of cases according to the sex of the patients showed a slightly higher frequency of the male patients - 56%, compared to the frequency of the female ones - 44%, but without a statistically significant association between the male and the diagnosis of the forms. pancreatitis.

The age of the patients in the study was between 11-91 years, and the results showed a higher number of cases in the age groups between 41 and 60 years.

Favorable factors may impose a high degree of evolution. In our study, the most important risk factors that determined the evolution of cases were: excessive and prolonged consumption of alcoholic beverages, drugs with potentially toxic, viral infections, abdominal trauma, hereditary causes, precarious socio-economic environment, thermal preparation incorrect food etc.

Plasma concentrations of amylase and lipase increase within hours of an episode of acute pancreatitis. These are key components of the diagnostic criteria, along with abdominal pain and radiological findings. Lipase is now preferred over amylase, due to increased sensitivity, especially in cases of pancreatitis due to alcohol and hypertriglyceridemia. It also tends to stay high longer than amylase, making it more useful when the presentation has been delayed by more than 24 hours.

Both enzymes can be grown under different conditions, other than pancreatitis. None is useful in monitoring the course of the disease or in predicting the severity in adults.

Non-specific preventive measures - improving sanitation conditions, ensuring water potability, food hygiene, observing the rules of personal and collective hygiene, implementing safety strategies for parenteral treatment, reducing the impact of pancreatic pathologies on public health.

ABSTRACT

The studies are aimed at an evaluation of the complex diagnosis of pancreatitis, based on modern methods of investigation that include the use of specific markers that can invalidate or confirm the diagnosis (CA 19-9 and CEA) and the evaluation of lipase and amylase enzymes, in relation to the type of pancreatitis. In our study were included 70 patients admitted to the gastroenterology department, within the Bacau County Emergency Clinical Hospital, between February and May 2018. The distribution of cases according to the sex of the patients showed a slightly higher frequency of the male patients. (56%) and an equal predominance of cases in rural and urban areas regarding the forms of pancreatic pathologies. The results showed a higher number of cases in the age groups between 41 and 60 years. Plasma concentrations of amylase and lipase increase within hours of an episode of acute pancreatitis. Lipase tends to remain high longer than amylase, making it more useful when presentation to the doctor has been delayed by more than 24 hours. Both enzymes can be grown under different conditions, other than pancreatitis. None is useful in monitoring the course of the disease or in predicting the severity in adults.

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AUTHORS' ADDRESS

PRISECARU MARIA, ROIBU LILIA, STOICA IONUŢ - "Vasile Alecsandri" University of Bacau, Faculty of Biology, Marasesti Street, no.157, Bacau, Romania, e-mail: prisecaru_maria@yahoo.com; ionut_stoica23@yahoo.com;

TIŢĂ DANIELA - Bacău County Emergency Hospital, Spiru Haret Street, no. 2-4, e-mail: danielatita2007@yahoo.com;

IOSOB GABRIEL ALIN – Vegetable Research and Development Station Bacau, Calea Barladului, No. 220, Bacau, code: 600388 and Doctoral School, "Vasile Alecsandri" University of Bacau, Marasesti Street, no.157, Bacau, Romania, e-mail: iosob.gabriel@gmail.com;

CĂLIN MARIA, CRISTEA TINA OANA - Vegetable Research and Development Station Bacau, Calea Barladului, No. 220, Bacau, code: 600388, e-mail: sclbac@legumebac.ro;

PRISECARU FLORIAN – Siret Water Directorate, I. Cuza Vodă Street, Bacau, Romania, e-mail:florin_prisecaru@yahoo.com;

Corresponding author: STOICA IONUŢ, e-mail: ionut_stoica23@yahoo.com.