



ANTIOXIDANT STATUS AND THE IN VITRO EFFECT OF AMYLASE AND LIPASE ENZYMES ON IRAQI PANCREATIC CANCER PATIENTS.

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Article history:	Abstract:
<p>Received: June 11th 2022 Accepted: July 14th 2022 Published: August 21st 2022</p>	<p>cancer of the pancreas Pancreatic cancer has been identified as the 11th most prevalent cancer in the world. It is an incurable malignancy and the seventh major cause of cancer deaths globally in industrialized nations. 100 blood samples were obtained from AL-Anbar oncology cancer and the nearby Baghdad Hospital. Two groups were created out of them. The first group consists of 30 pancreatic cancer patients between the ages of 20 and 40, while the second group consists of 30 patients between the ages of 41 and 60, with 20 healthy individuals serving as the control group. Measurements were made to gather biological data to aid in the early diagnosis of the illness. The concentration of Amylase enzyme in the serum of pancreatic cancer patients increased, while the concentration of Lipase enzyme decreased when compared to the control group, according to the results of the measurements of the two groups' levels.</p> <p>Materials and Methods the total number of blood samples collected was 100 samples. 60 blood samples of pancreatic cancer patients of different ages 20-60 years , including patients without chronic diseases Such as blood pressure, diabetic , heart disease, those with a family history of pancreatic cancer , and smokers (group A) of 100 samples Blood There are 40 samples of healthy controls (Group B). healthy controls has been selected without chronic diseases or a family history of pancreatic cancer or other cancers.</p> <p>Results: According to our research, people with Pancreatic cancer had significantly high concentration levels of Amylase while the concentration of Lipase enzyme decreased when compared to the control group Conclusion: In our study, we can conclude that pancreatic cancer patients exhibited a significant reduction in the level Lipase enzyme ,while it showed an increase in the Amylase enzyme.</p>

Keywords:

AIMS

1. Study the change in levels of enzymes (Amylase and Lipase) in pancreatic cancer patient as compared with the control group .

INTRODUCTION

Despite decades of ongoing research, the five-year survival rate for pancreatic cancer is still less than 9 percent. It is one of the most aggressive cancers. According to recent data, pancreatic cancer is the 11th most frequent cancer worldwide and the seventh major cause of cancer deaths globally in industrialized nations (1) .

The pancreas is an organ in your abdomen that is

located behind the bottom portion of your stomach. Pancreatic cancer starts in the tissues of the pancreas. Your pancreas generates hormones that help you control your blood sugar as well as enzymes that help with digestion.

The pancreas can develop both malignant and non-cancerous tumors, among other growths. The cells that lining the ducts that expel digestive enzymes from the pancreas are where the most prevalent type of pancreatic cancer first develops (pancreatic ductal adenocarcinoma) .

Rarely is pancreatic cancer found in its earliest stages, when it is most treatable. This is due to the fact that



symptoms frequently don't appear until the disease has spread to other organs.

Depending on how far advanced the illness is, many treatments are available for pancreatic cancer. Surgery, chemotherapy, radiation therapy, or a combination of these are all possible options(2). Among the dietary components with potential chemopreventive effects are antioxidant vitamins. Beta-carotene (pro-vitamin A), vitamin E, vitamin D3, and vitamin C are antioxidant vitamins that are thought to reduce the risk of cancer by limiting tissue damage by trapping organic free radicals and/or deactivating excited oxygen molecules, a byproduct of numerous metabolic processes(3). Amylase and Lipase level changes may serve as biomarkers for the early detection of pancreatic cancer(4).

MATERIALS AND METHODS

Patients

In this study, the total number of blood samples collected was 80 samples. 40 blood samples were collected from patients during November of 2021 to July of 2022 at the Baghdad Teaching Hospital and AL-Anbar oncology cancer, Iraq. 40 blood samples of pancreatic cancer patients of different ages 20-60 years. Blood samples were collected from people by intravenous withdrawal using A 5 ml syringes. After the samples were drawn, they were placed directly in tubes (gel tubes). The samples were left for 15 minutes at room temperature for coagulation, and sometimes an incubator was used to make the clotting process faster within 5-10 minutes. At 37 °C, the tubes were centrifuged at 4000(xg) for 10 minutes, then the serum was transferred to other tubes (white tubes) using micropipette and stored at - 20 C until the analysis date.

Amylase Enzyme

A Pancreatic Amylase specific antibody was precoated and blocked onto 96-well plates. After adding the standards or test samples to the wells, a Pancreatic Amylase specific biotinylated detection antibody is applied, followed by washing with wash buffer. Unbound conjugates are washed away with wash buffer after Streptavidin-Peroxidase Conjugate is introduced. The Streptavidin-Peroxidase enzymatic reaction is then seen using TMB. TMB is catalyzed by Streptavidin-Peroxidase, resulting in a blue product that becomes yellow when an acidic stop solution is added. The amount of Pancreatic Amylase recorded in the plate is directly related to the density of yellow coloration.

Lipase Enzyme

Lipase activity measurement approaches that are simple, direct, and automation-ready are highly desirable. The QuantiChrom™ Lipase Assay from BioAssay Systems is based on an enhanced dimercaptopropanol tributyrates (BALB) technology, in which SH groups produced by lipase cleavage of BALB react with 5,5'-dithiobis(2-nitrobenzoic acid) (DTNB) to produce a yellow-colored result. The color intensity in the sample, measured at 412 nm, is proportional to the enzyme activity.

Statistical Analysis:

Statistical analysis was performed with Graph Pad Prism version 6(Graph Pad Software Inc., La Jolla, CA). Results were expressed as mean ± standard deviation (Mean ± SD). T-test was performed to analyze the statistical significance of the both groups. The P-values ≤0.05 were considered statistically significant .

RESULTS AND DISCUSSION

Serum Amylase enzyme level

The results present that the concentration of amylase enzyme in pancreatic cancer patient were increased when compared with control as in the figure (1).The group (20-40)year it was (65.02±9.853ng/ml) comparing with control group(430.8±51.21 ng/ml) and the group (41-60)year it was(63.32±11.28 ng/ml) with the control (386.4±39.96ng/ml) both group was high and significant.

The outcomes of serum amylase enzyme are shown in figure(1) and it revealed a significantly very high serum amylase enzyme level in Patients of pancreatic cancer in(20-41) year the compare between patient and control approximately 90% and (41-60) year shown the same increase.

high serum amylase enzyme level in Patients of pancreatic cancer is attributed to ductal obstruction or inflammation secondary to pancreatic cancer. Because the width of the pancreas is approximately 4 to 6 cm and the main pancreatic duct runs through the center of the pancreas, even a tumor less than 2 cm in diameter could obstruct the main pancreatic duct and cause elevation of serum pancreatic enzymes. There are several other reasons for elevated plasma amylase besides acute pancreatitis. For example, renal failure and combined disease.(5)

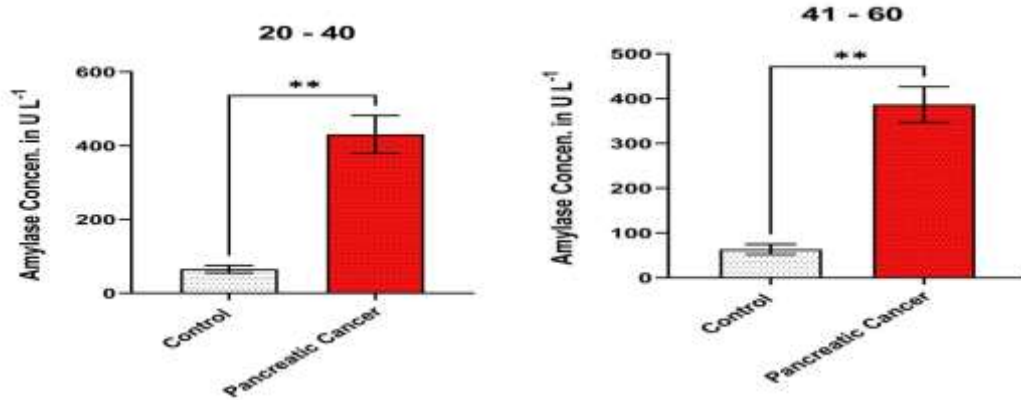


Fig. (1): Serum Amylase concentration (ng/ml) in control group and patient pancreatic cancer age (20-40)(41-60).

Serum Lipase enzyme level

The results revealed that the concentration of lipase enzyme in pancreatic cancer as in the figure (4). Have certain differences between groups of patient and control. In group of patient (20-40 year) there was significant decreasing in level of lipase enzyme and it was (5.368±2.891 ng/ml) in comparing with control group (86.05±37.31 ng/ml) In the sometime group of patient (41-60 year) show same decreasing in comparing with control and it was (5.650±3.031 ng/ml) and (93.95±33.09 ng/ml) respectively .

The outcomes of serum lipase enzyme are shown in figure (5-6) and it revealed a significantly very low

serum lipase enzyme level in Patients of pancreatic cancer in (20-40) year the compare between patient and control approximately 95% and (41-60) year shown the same deficiency. low serum lipase enzyme level in Patients of pancreatic cancer enzyme is attributed to may either have blocked pancreatic ducts or the cells that produce lipase may be damaged . Such cell damage and duct blockage repeated bouts of acute pancreatic and mutation in the CFTR PRSS1 and R116C genes. cause pancreatic insufficiency because the amount of enzymes transported to the digestive is inadequate for proper food digestion.(6)

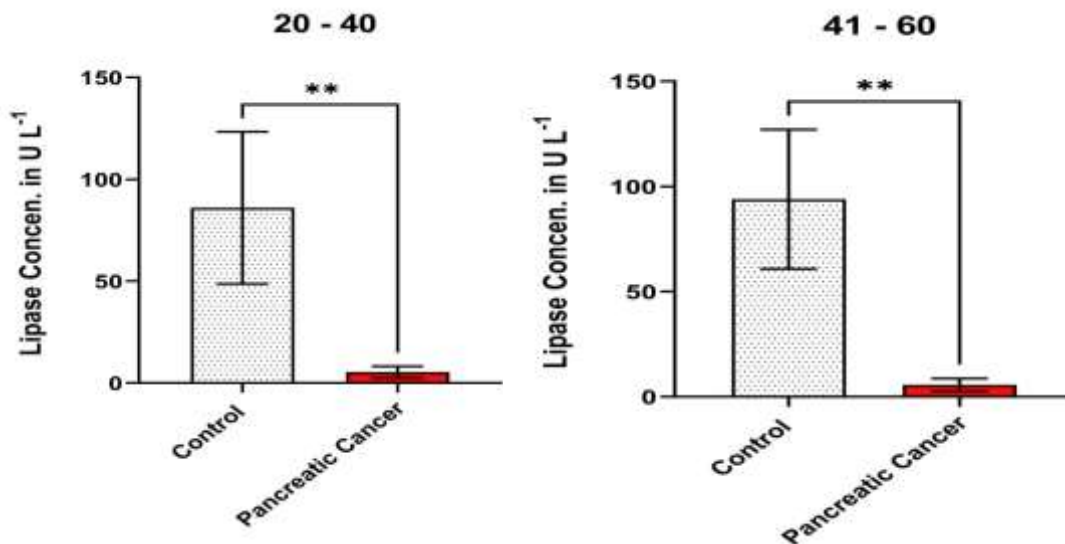


Fig.(2): Serum Lipase concentration (ng/ml) in control group and patient pancreatic cancer age (20-40)(41-60).



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