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Research Article

Pancreatitis and Its Relationship to Diabetes

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Abstract:

Background

In recent years, post-pancreatitis diabetes mellitus (PPDM), also known as type 3 diabetes mellitus, has received a great deal of attention from researchers. PPDM is one of the long-term sequelae of pancreatitis, and PPDM is now the second most common cause of new onset diabetes in adults after Type T2DM beyond type (T1DM), the aim of this study was to find out the proportion of patients who developed secondary diabetes mellitus as a complication of pancreatitis.

Methods

A cross-sectional study in Damascus Hospital, in the Department of Gastroenterology included 215 cases from 2017 to 2023.

Results

The percentage of males was 116 (54%), and the average age of the sample was approximately 45 years. Reef Dimashq had the largest percentage, reaching 108 (50.2%). More than half of the sample were non-alcoholics, and their percentage was 194 (90.2%), and non-smokers, and their percentage was 117 (54.4%). %), and the percentage of those who had complications of pancreatitis reached 114 (53%), and those who had symptoms of diabetes reached 59 (27.4%), and it was found that there is a real, statistically significant relationship between pancreatitis and the occurrence of diabetes as a complication of it, as the percentage of patients reached of those who had symptoms of diabetes 50 (23.3%).

Key words: cardiovascular diseases; fuzzy logic; data mining; decision support system

Introduction

Acute pancreatitis: an inflammatory condition of the pancreas often caused by gallstones or alcohol abuse, typical manifestations include sudden and severe epigastric pain radiating to the back, nausea and vomiting, and epigastric tenderness [1]. Chronic pancreatitis is characterized by progressive inflammation that results in irreversible damage to the structure and function of the pancreas [2]. In recent years, the topic of post-pancreatitis diabetes mellitus PPDM, also known as type 3c diabetes, has received a lot of attention from researchers. PPDM represents long-term sequelae of pancreatitis and is the most common exocrine pancreatic disease [3]. There is a significant lack of knowledge among practitioners about the diagnosis, complications, and management of PPDM. Rapid and correct diagnosis of this condition has far-reaching implications including patient counseling, generation of better management strategies to improve blood glucose control, to decrease short- and long-term complications, and to increase patient and provider satisfaction. service, reducing burnout among treating physicians [4].

Aim of the study:

Diabetes mellitus after pancreatitis is one of the most common types of secondary diabetes. In this study, we aimed to find out the percentage of patients who had secondary diabetes as a complication of pancreatitis.

Methods

A cross-sectional study in Damascus Hospital, in the Department of Gastroenterology included 215 cases from 2017 to 2023. Inclusion criteria: Records of patients admitted to the Division of Gastroenterology. Exclusion criteria: archive errors, records missing information. Cases discharged at the patient's responsibility. Data collection tool: A questionnaire containing several questions serving the purpose of the research was prepared and included in the appendix section at the end of the study.

Statistical analysis

Patients' data was tabulated and entered into the computer, and then the statistical package for social sciences SPSS version (26) was used to analyze this data, and the following statistical methods were relied upon in the analysis: descriptive analysis: It consists in finding the relative frequency distributions of the categorical variables of the study (gender, place of residence, ...) and adding graphic forms to enrich the results. inferential analysis: This part of the analysis aims to present and interpret the results and infer them in order to reach the goal of the study, by conducting the Chi Square independence test to study whether there is a

relationship between two descriptive variables, by applying the chi square statistic.

Results

(Table 1) shows the distribution of the sample, which amounted to 215 cases, according to gender, age and place of residence, where the percentage of males was 116 (54%), more than half of the sample, compared to females 99 (46%), and with regard to age, the average age of the sample was approximately 45 years with a standard deviation of 19.44 The highest recorded age was 87 years, compared to 5 years as the youngest recorded age. As for the place of residence, the governorate of Rif Dimashq had the largest percentage, reaching 108 (50.2%), and the governorate of Rif Dimashq ranked second, with a rate of 61 (28.4%), while the governorate of Homs had the lowest percentage 4 (1.4%).

		N	%
Gender	Male	116	54
	Female	99	46
Total		215	100
Age	Mean		45.4
	Median		45
	Mode		75
	Std. Deviation		19.44
	Minimum		5
	Maximum		87
	Sum		9761
		N	%
Place of residence	Damascus	61	28.4
	Rif Dimashq	108	50.2
	Daraa	33	15.3
	Al Qunaitra	5	2.3
	Homs	3	1.4
	Hamah	5	2.3
Total		215	100

Table 1

(Table 2) shows the distribution of the sample according to alcohol consumption, as more than half of the sample were non-alcoholics, with a percentage of 194 (90.2%), compared to alcoholics, whose percentage was only 21 (9.8%). (Table 3) shows the distribution of the sample according to smoking habit. More than half of the sample were also non-smokers, with a percentage of 117 (54.4%), compared to 96 (44.7%) of smokers. (Table 4) shows the distribution of the sample according to surgical histories, as more than half of the sample had surgical histories and their percentage reached 120 (55.8%), compared to the rest of the sample 94 (43.7%). (Table 5) shows the distribution of the sample according to their suffering from obesity, as more than half of the sample 154 (71.6%) did not suffer from high BMI.

		N	%
Is the patient alcoholic?	No	194	90.2
	Yes	21	9.8
Total		215	100

Table 2

		N	%
Does the patient smoke?	No	117	54.4
	Yes	96	44.7
	Other	2	0.9
Total		215	100

Table 3

		N	%
Is there a surgical history?	Yes	120	55.8
	No	94	43.7
	Don’t Know	1	0.5
Total		215	100

Table 4

		N	%
Does the patient suffer from BMI obesity?	No	154	71.6
	Yes	61	28.4
Total		215	100

Table 5

(Table 6) presents the family history of the study sample, where more than half of the sample had no family history, and they amounted to 153 (71.2%). As for the family history that was recorded, high blood pressure had the largest share at a rate of 33 (15.3%), and the disease came in second place. diabetes by 25 (11.6%). (Table 7) shows the radiographic investigations used in the context of managing a case of pancreatitis, where ultrasound was the most used method with a percentage of 207 (27.3%), and the ERCP came in second place with a percentage of 118 (17.50%), followed by a chest x-ray. simple (CXR) with a rate of 132 (17.40%), while magnetic resonance imaging (MRI) was the least used method with a rate of 7 (0.9%).

		N	%
Is there a family history?	No	153	71.2
	Diabetes	25	11.6
	Arterial hypertension	33	15.3
	Hypothyroidism	1	0.5
	Stomach cancer / thyroid cancer	1	0.5
	Gilbert's disease	1	0.5
	asthma	1	0.5
Total		215	100

Table 6

		N	%
Radiographic investigations:	Echo	207	27.30%
	CT	44	5.80%
	MRI	7	0.90%

		N	%
	ERCP	118	15.50%
	CXR	132	17.40%
	AXR	129	17.00%
	ECG	121	15.90%
	Emergency laparotomy	1	0.10%
Total		759	100.00%

Table 7

(Table 8) shows the distribution of the sample according to the presence of medical history, and more than half of the sample had suffered from medical history, and their percentage was 139 (64.7%), compared to the rest of the sample who did not suffer from medical history, and their percentage was 76 (35.3%). (Table 9) shows the distribution of the sample according to complications of pancreatitis, and the percentage of those who had complications was 114 (53%), compared to 101 (47%) who did not.

		N	%
Do you have a medical history?	No	76	35.3
	Yes	139	64.7
Total		215	100

Table 8

		N	%
Does the patient suffer from complications of pancreatitis?	No	101	47
	Yes	114	53
Total		215	100

Table 9

(Table 10) shows the distribution of the sample according to the appearance of diabetes symptoms after pancreatitis, and more than half of the sample did not have any symptoms and their percentage reached 156 (72.6%), compared to those who had symptoms and their percentage was 59 (27.4%). (Table 11) shows a study of the relationship between the occurrence of complications of pancreatitis and the emergence of symptoms of diabetes, as the significance of the test was less than 0.05 (P-Value < 0.05), meaning that with 95% confidence there is a real, statistically significant relationship between pancreatitis and the occurrence of diabetes as a complication for him, the percentage of patients who showed symptoms of diabetes was 50 (23.3%).

		N	%
Do you have any symptoms of diabetes after pancreatitis?	No	156	72.6
	Yes	59	27.4
Total		215	100

Table 10

		Does the patient suffer from complications of pancreatitis?		Total
		No	Yes	
Did any symptoms of diabetes appear after pancreatitis?	No	92	64	156
		42.80%	29.80%	72.60%
	Yes	9	50	59

		Does the patient suffer from complications of pancreatitis?		Total
		No	Yes	
		4.20%	23.30%	27.40%
Total		101	114	215
		47.00%	53.00%	100.00%
Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	32.851a	1	0.000		
Continuity Corrections	31.119	1	0.000		
Likelihood Ratio	35.661	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	32.698	1	0.000		
N of Valid Cases	215				

Table 11

Discussion

Unlike type 1 and type 2 diabetes, the epidemiology of PPDM was relatively unknown until the past decade, prevalence is still likely to be lower than expected and may be expected to rise with increased awareness [5].

The prevalence of PPDM is significantly higher in men than in women in both acute and chronic pancreatitis [6], and this was shown in the context of our study, as the incidence of males was (54%), while the incidence of females was (46%).

The small sample size may play a role in not giving accurate information about the habits followed that may have a role in the occurrence of pancreatitis, as a small percentage of the patients were alcoholics (9.8%) and less than half were smokers (44.7%).

Long-term complications of PPDM include abdominal pain, pancreatic exocrine insufficiency, malnutrition, decreased bone mineral density, pseudocysts, visceral vascular complications, diabetes mellitus, and pancreatic cancer [7–9], which was demonstrated in the course of our study where more than half of the patients They had complications of pancreatitis (53%).

When studying the relationship between the occurrence of pancreatitis and the development of diabetes, it was found that there is a real relationship with statistical significance and with confidence of 95%, as the percentage of patients who showed symptoms of diabetes reached 50 (23.3%).

It was found that less than half of the patients who suffered complications from pancreatitis suffered from symptoms of diabetes (27.4%), although there is a relationship between pancreatitis and the development of diabetes, and it is likely that the small sample size also played a role in that.

Declarations

Declarations Ethical statement:

The ethical consent was obtained from Syrian private university ethical committee Competing Interest: the authors declare no competing of interests.

Availability of data and materials:

All data are available from the corresponding author on reasonable request.

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