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Pancreatic Disorders in Patients with Ulcerative colitis.

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ABSTRACT— Inflammatory bowel disease (IBD) is a recurrent chronic intestinal illness categorized into two subtypes. Crohn's disease (CD) with ulcerative colitis (UC). Multiple organ systems can be affected by IBD, and pancreatic symptoms of UC are not uncommon. Numerous pancreatic illnesses are more prevalent in UC patients than in the general population. Pancreatic symptoms in UC are diverse, ranging from mild and self-limiting diseases to serious illnesses. Amylase and/or lipase levels are frequently elevated asymptomatic. In this review, the estimation of the enzyme lipase and amylase and the discussion of possible causes for the elevation can be considered as one of the most important ways to assist the specialist in diagnosing UC patients before resorting to endoscopy.

KEYWORDS: Inflammatory bowel disease. Pancreatitis · Crohn’s disease. Ulcerative colitis.

1. INTRODUCTION

Inflammatory bowel disease (IBD) is a chronic relapsing inflammatory bowel illness that is categorized into two subtypes: Crohn's disease (CD) and ulcerative colitis (UC) [1]. CD is a term that refers to transmural discontinuous inflammation of the intestine, which can affect any section of the gastrointestinal system from the mouth to the perianal area [2]. On the other hand, UC is a chronic mucosal inflammation that affects the entire colon, from the rectum to the proximal colon [3]. Ileocolitis is present in around 50% of CD patients, with a frequency of 3.1-20.2 per 100,000. Additionally, UC is more frequent than CD, occurring at a rate of 9-20 per 100 000 000 [4].

UC is an inflammatory chronic illness that originates in the rectum and spreads to the colon [5]. It is a persistent disorder marked by bloody diarrhea, rectal discomfort, and stomach pain. The third and fourth decades of life are the most common [6].

UC Endoscopic, histological, laboratory, serological, and radiographic investigations are used to make the diagnosis, which is confirmed by clinical examination and medical history.

There are criteria for diagnosing UC: chronic inflammation of the intestinal mucosa without granulomata, typically involving the rectum and spreading in a continuous pattern to the involved section or full colon to varied degrees [7].

Although colonoscopy with biopsy is the primary way for diagnosing UC, it is invasive, painful, and costly. Additionally, no very sensitive or specific endoscopic or histological score available to predict clinical recurrence of UC. In comparison to serum biomarkers, fecal biomarkers have increased sensitivity and specificity [8].

The pancreas is a complicated organ composed of exocrine glands that secrete digestive enzymes into the

intestine's lumen and endocrine glands called islets of Langerhans that produce hormones directly into the circulation and aid in glucose metabolism management. Amylase and lipase are acinar proteins that aid in digestion. They are typically elevated threefold and are used to diagnose acute pancreatitis.

Pancreatic enzymes usually increased in a high proportion of patients having IBD, and the rise is associated with more severe and active illness. In prior prospective studies, hyperamylasemia or hyperlipidemia without indications of pancreatitis was found to occur in 8% to 21% of selected CD or UC patients [9]. Serum pancreatic enzyme levels are increased as a result of either direct pancreatic injury induced by enzyme release into the circulation or increased intestinal permeability of intraluminal enzymes. In more severe or active illnesses, the observed pancreatic enzyme rise may represent the excessive passage of pancreatic amylase from the gut lumen to the blood as a result of the inflamed mucosa's enhanced permeability [10]. The concept that elevated serum pancreatic enzyme levels are indicative of pancreatic injury and imply greater enzyme leakage or transfer from the pancreas to the blood pool might explain these findings. Therefore, the present study aimed to investigate serum lipase and amylase levels in subjects with ulcerative colitis. The secondary aim of the study was to evaluate the correlation coefficients between these markers for ulcerative colitis disease.

2. METHODS

During one year (January 2020 to January 2021), we observed consecutive subjects with ulcerative colitis in the gastrointestinal tract unit of Al Imamain Alkadhimain Medical City.

Approved by the Institutional Review Board of the College of Medicine at Al-Nahrain University (approval date: 01/19/2020 and approval). Number: 130).

Subjects of patients with ulcerative colitis, at the discretion of the attending physician in the endoscopy unit, were included in this study. After explaining study objectives and obtaining written informed consent from all patients, baseline demographic and clinical data were collected from participants by interview and recorded using a study questionnaire. Individuals with atherosclerosis or rheumatoid arthritis were excluded from the study. Another criterion for exclusion is smoking, alcohol intake, and antibiotic use.

2.1 Statistical Analysis

Statistical analysis was performed using SPSS program (version 22). Because all continuous variables were normally distributed, data were presented as mean ± standard deviation (mean±SD) and all statistical comparisons were done using the independent t-test, with a P value of 0.01 regarded statistically significant. Spearman rank correlation was used to analyze the relationship between the variables. Analyses were performed as a two-tailed, and the descriptive level of significance was set at $p< 0.001$.

3. RESULTS

74 patients and 74 people were examined during the study period. The patients under study were divided into three groups according to the degree of endoscopic severity, and twenty-seven patients of the group had moderate: marked erythema, loss of vascular signs, erosion, While forty-two for the severe group: ulcers. as well as three two of the severe group: spontaneous bleeding (Table 1.1) and 74 people were used as controls.

Table (1-1): classification of grades is according to the degree of endoscopic severity.

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Grade	Endoscopic features	no. of patients
2	Moderate: marked erythema, loss of vascular marking, erosions.	27
3	Severe: ulcers.	24
4	Severe: spontaneous bleeding.	23

The results showed significant differences $p < 0.05$ and the mean ± SD of age of patients with ulcerative colitis was 36.48 ± 11.31 years with a range of 19–60 years, while the mean ± SD of age of healthy individuals was 31.14± 8.25 years with a range of 19–53 years. The age distribution of patients with ulcerative colitis was non-significant difference $p> 0.05$ in gender there were 22 males and 52 females, and this represented 29.73 % and 70.27% of patients, while there were 18 males and 56 females, and this represented 24.32% and 75.67% of the control group, respectively.

The estimated levels of serum lipase for UC patients compared to control (74.40 ± 37.01 vs. 29.36 ± 12.66 U/I, respectively; $p < 0.001$), and serum amylase for UC patients compared to control (101.17 ± 26.08 vs. 59.16 ± 25.46 U/I, respectively; $p < 0.001$).

It was significantly increased level in three groups of UC patients was observed compared to control (78.01± 42.10, 62.63 ± 26.72 and 82.46 ±38.32 vs. 29.36 ± 12.66 U/I, respectively; $p < 0.001$) also amylase (104.68± 27.36, 94.32 ± 18.63 and 104.21 ±30.54 vs. 29.36 ± 12.66 U/I, respectively; $p < 0.001$) is shown in Table (1.2) and figure (1.1), figure (1.2) respectively.

Table (1.2): The means of lipase and amylase values in patients with UC.

Groups	Lipase (Mean ± SD); U/l	Amylase (Mean±SD) ; U/l	P-value
Grade 2 (N = 27)	78.01 ± 42.10	104.68 ± 27.36	P < 0.001**
Grade 3(N = 24)	62.63 ± 26.72	94.32 ± 18.63	P < 0.001**
Grade 4 (N = 23)	82.46 ± 38.32	104.21 ± 30.54	P < 0.001**
Control (N = 74)	29.36 ± 12.66	29.36 ± 12.66	P < 0.001**

**: The difference is highly significant at p=0.001 when compared patients group with control group.

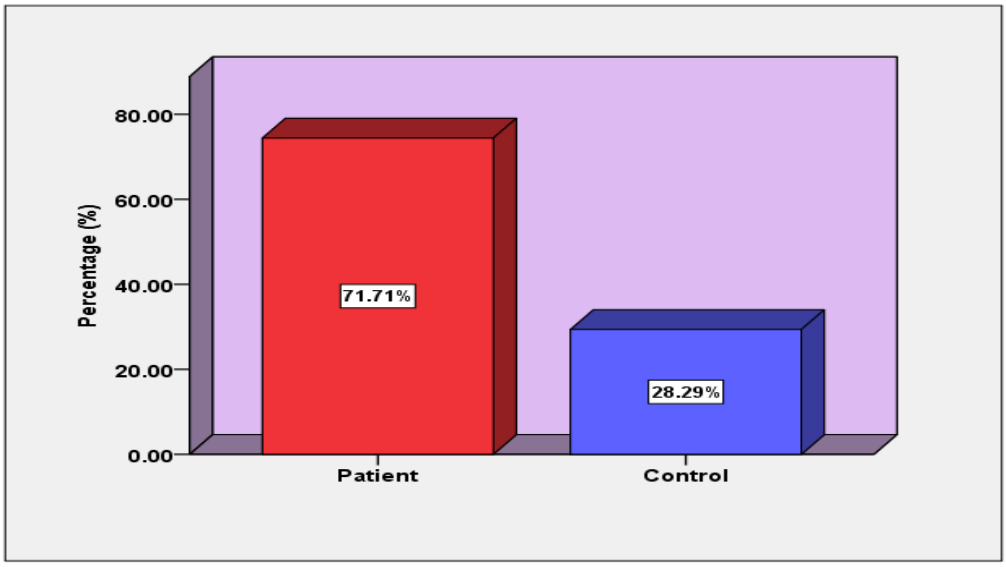

Figure (1. 1): Distribution of serum lipase levels in patient and control groups.

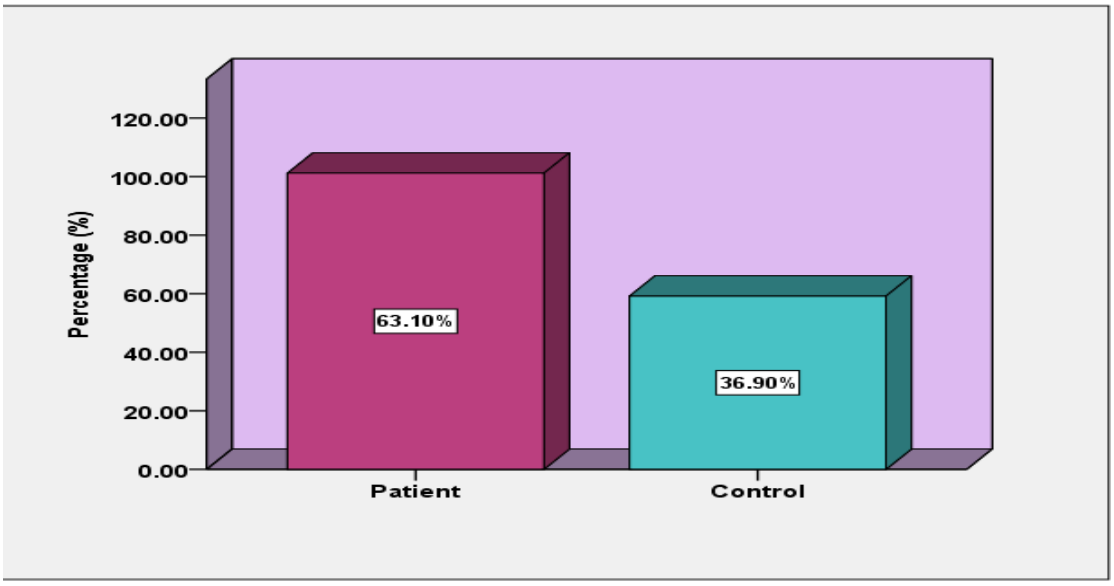

Figure (1. 2): Distribution of serum amylase in patient and control groups.

3.1 Correlation between lipase and amylase concentration

The results show positive variation statically significant between between serum of lipase and amylase concentration in patient ($r = 0.331$, $p < 0.05$) while the results show variation but variation not statically significant between serum of lipase and amylase in control groups ($r = - 0.071$, $p > 0.05$), as shown in figures (1.3), (1.4).

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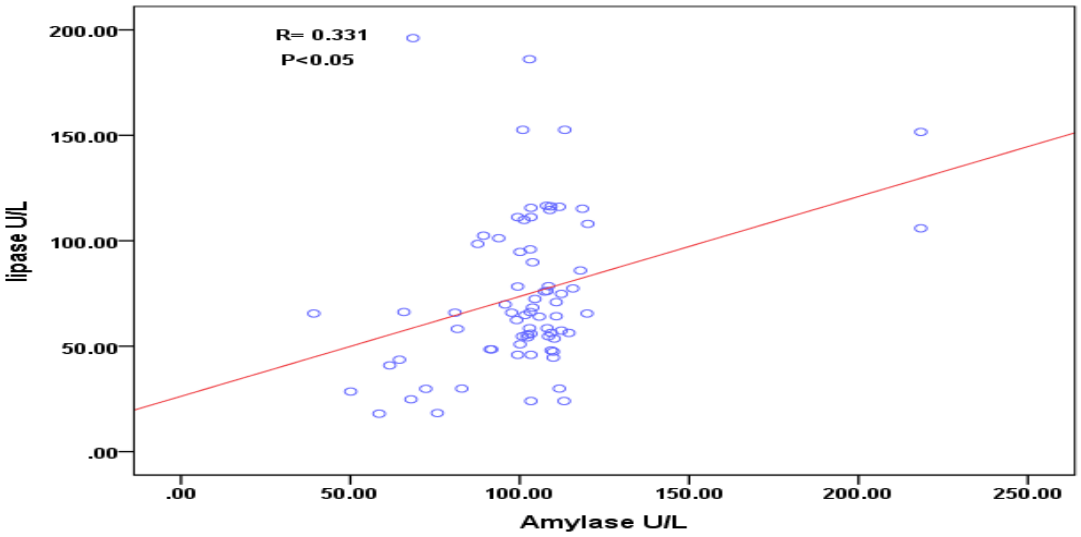

Figure (1.3): Correlation between serum of lipase and amylase concentration in patient groups.

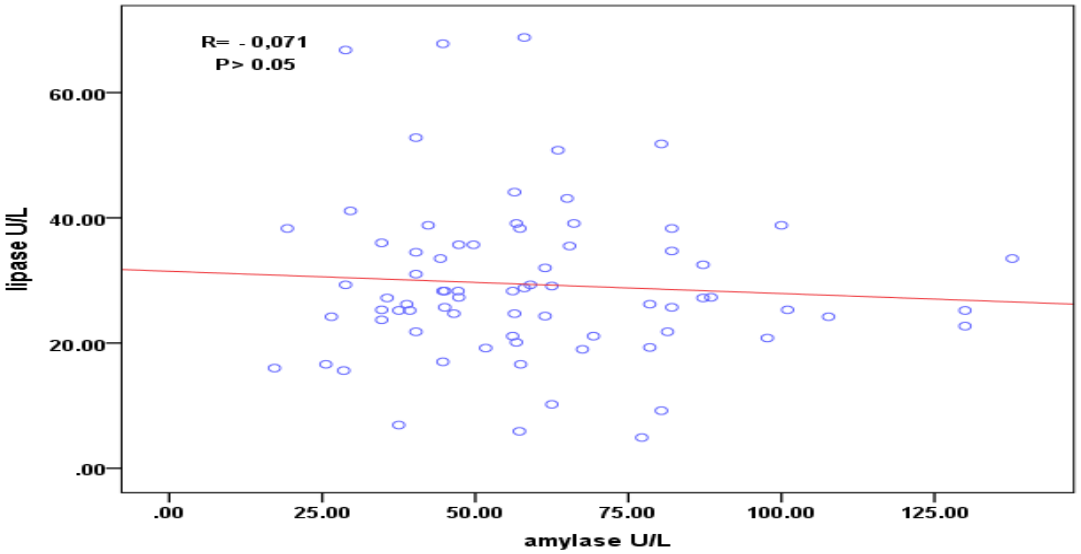

Figure (1.4): Correlation between serum of lipase and amylase concentration in control groups.

4. Discussion

Pancreatic disturbances are uncommon extraintestinal symptoms of inflammatory bowel disease (IBD), and they are more common in the IBD group than in the general population. IBD has been associated with a broad variety of pancreatic problems, ranging from asymptomatic pancreatic enzyme rise to an increased risk of acute pancreatitis, chronic pancreatitis, and pancreatic cancer. The main results of this study were that subjects who underwent inflammatory bowel disease due to ulcerative colitis had higher levels of lipase and amylase in their patients compared to the control group. These findings were supported by a study in IBD patients [11], which found that asymptomatic elevations in serum amylase and/or lipase, unrelated to pancreatic disease and without obvious morphological abnormalities of the pancreas on imaging, occur in 8% to 21% of people with inflammatory bowel disease [12], [13].

Elevated levels may be due to acute or chronic kidney disease, salivary gland disease, and hematopoiesis, failure of the sphincter of Oddi after cholecystectomy, prolonged drug use, or possibly accelerated absorption of amylase in the inflamed intestine [14].

The most common cause of acute pancreatitis in people with (IBD) is gallstone pancreatitis, followed by drug-induced pancreatitis. Because of the increased incidence and prevalence of pancreatic disease in patients with IBD, and finally in this study, clinicians can be helped by relying on elevated pancreatic enzyme index to confirm this diagnosis without resorting to endoscopic examination and to provide appropriate treatment to the patient as well.

Ethical approval: Al-Nahrain University, College of Medicine,
The committee approved the study (approval date:01.19.2020 and approval number: T/B/2/3/130).

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