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Epidemiology of renal insufficiency in inflammatory bowel disease patients in Tanta University Hospitals

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Abstract
Background: Inflammatory bowel diseases (IBD) are chronic immune mediated intestinal conditions. The objective of this research is to investigate the epidemiology of renal insufficiency among patients with IBD who were hospitalized in Tanta University Hospitals.
Methods: A cross-sectional research was conducted on 100 patients who exhibited clinical criteria indicative of Crohn's disease (CD) or Ulcerative colitis (UC). Glomerular filtration rate (GFR) and blood creatinine were evaluated. Patients were categorized into two groups: CD group (N=8), and UC group (N=92). The diagnosis of renal insufficiency in these patients was conducted by measuring GFR and blood creatinine levels using the modification of diet and renal disease (MDRD) study equation.
Results: IBD-related surgeries were significantly higher in CD (50% Vs 10.87% in UC). Renal impairment in IBD patients was higher with increasing age, the co-existence of Hyperlipidaemia, Diabetes mellitus and with the use of antibiotic, NSAIDs, acetaminophen, and azathioprine, also with IBD related surgeries and extra intestinal manifestations (EIMs) as Arthritis and Uveitis. Regarding univariate analysis, Age, HTN and Acetaminophen use were significant risk factors for IBD (OR= 1.227; p= 0.004, 14.333; p=0.006 and 6.882; p= 0.043) respectively. Regarding multivariate analysis, only age was a significant risk factor for IBD (OR= 1.254; p= 0.027).
Conclusions: Renal impairment was found in 16% of the cases, we reported that renal impairment was significantly higher with increasing age, the co-existence of DM, hyperlipidaemia and with the use of azathioprine, Nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen and antibiotic. Also, with IBD related surgeries and EIMs as arthritis and uveitis.

Keywords: Epidemiology, renal insufficiency, inflammatory bowel disease

Introduction

Inflammatory bowel diseases (IBD) are chronic, immune inflammatory intestinal conditions. Crohn's disease (CD) and ulcerative colitis (UC) are the most common types; they share certain symptoms but have different causes, clinical and pathological presentations.

A quarter of IBD patients undergo their initial diagnosis during adolescence or infancy. Typical clinical manifestations consist of abdominal pain, rectal haemorrhage, anaemia, diarrhea and weight loss. They may be associated with other disorders, including ankylosing spondylitis, arthritis, cholangitis, uveitis and erythema nodosum [1, 2].

UC and CD are the two most common IBD. Each of these diseases is subdivided into subtypes based on the specific region of the digestive tract that is affected.

Inflammation of the large intestine can also be caused by a variety of other conditions including microscopic colitis, indeterminate colitis, Behcet's disease and diversion colitis. They are uncommon and frequently exhibit comparable symptoms. This makes them challenging to diagnose [3].

Both UC and CD are recurrent chronic conditions characterized by intestinal inflammation resulting from genetic, environmental, microbial, immune and non-immune factors. CD has the potential to impact any segment of the gastrointestinal tract; however, UC is distinguished by inflammation that is predominantly localized in the large intestine [4].

Microscopically, CD affects the entire wall of the intestine, where UC is restricted to the epithelial mucosal lining of the colon starting at the anal canal and extending retrograde ascending without any "skip areas" as in CD [5].

In IBD, extraintestinal manifestations (EIMs) occur with a prevalence ranging from 6% to 46%. Their ethology continues to be unknown. There are hypotheses that rely on the immune system. EIMs have the potential to affect nearly all organ systems [6].

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EIMs may result from the same pathophysiologic mechanism shared by IBD, secondary complications of IBD or susceptibility to autoimmune diseases. Organs that are most commonly affected include the joints, eyes, skin, liver and biliary tract [7].

Renal involvement in IBD has been described in both CD and UC and is regarded as an EIM of IBD. Nephrolithiasis, tubulointerstitial nephritis, amyloidosis, glomerulonephritis, renal carcinoma and renal failure comprise the most prevalent renal complications among patients with IBD. Ultimately, renal failure which may necessitate haemodialysis [8].

The aim of the research is to study the epidemiology of renal insufficiency in IBD patients admitted to Tanta university hospitals.

Patients and Methods

At the time of admittance, serum creatinine and GFR of 100 patients, of both sexes, who met the clinical criteria for CD or UC were measured for this cross-sectional study.

The investigation was conducted subsequent to receiving ethical and research approval from the Department Council of Internal Medicine at Tanta University, under approval code 34961/10/21. Written informed assent was obtained from every patient.

The exclusion criteria comprised a patient's medical history of impaired renal function, pre-existing renal disorders including UC or CD, and secondary renal injury resulting from another disease. Patients were separated into two cohorts: UC (N=92) and CD (N=8). All patients were subjected to: Complete history taking (Personal, medical, surgical and family history), general examination with special emphasis on vital data (blood pressure, pulse, temperature), complete abdominal and local examination focusing on (distention, tenderness, rebound, guarding, altered bowel sounds, hepatomegaly, scars and perianal tags, fissures, fistulas, abscess) and determination of renal insufficiency using serum creatinine and GFR through modification of diet and renal disease (MDRD) study equation. This study was conducted from November 2021 till October 2022.

Statistical analysis

For statistical analysis, SPSS v26 (IBM Inc., Chicago, IL, USA) was utilized. Histograms and the Shapiro-Wilks test were utilized to assess the normality of the data distribution. The mean and standard deviation (SD) of quantitative parametric variables were utilized to compare the two groups with an unpaired Student's t-test. Non-parametric quantitative data were displayed as the median. The frequency and percentage (%) values of qualitative variables were utilized in the analysis, with the appropriate tests being the Chi-square test or Fisher's exact test. A two-tailed P value less than 0.05 was deemed to indicate statistical significance.

To determine the relationship between a dependent variable and one independent variable, univariate regression was utilized. In addition, estimates of the relationship between a dependent variable and additional independent variables were made using multivariate regression.

Results

Mean age of included subjects was 36.47±9.89. More than half of the cases were females (57%), were of low level of education (60%) and were employed (51%). Two third of cases (66%) had never smoked and 23 cases were active smokers. Regarding alcohol, 99 had never drunk. The most frequent comorbidity among the studied patients was DM (14%), followed by hyperlipidemia and hypertension accounted for 13% & 12% respectively. On the other hand, SLE was not encountered in any of the studied patients. Only 5 patients used TNF-alpha inhibitor whereas 81 patients used 5-amino salicylic acid (5-ASA). CD was observed in 8% of cases while UC was observed in 92% of cases. Median time elapsed since diagnosis was 3 years. As regard disease severity the majority of cases (81%) were either moderate or severe. Concerning local extension, rectosigmoid was found to be the most common affected part followed by left sided colitis. Arthritis was the most frequent EIM encountered among the studied patients (13%) whereas cholangitis was only encountered in 1% of the studied patients. Mean serum creatinine level was 0.96±0.21 and mean eGFR level was 79.09±20.56. Kidney impairment was found in only 16% of cases. Table 1

Table 1: Demographic data, distribution of patients according to comorbidities, drug categories, type of inflammatory bowel disease, time elapsed since diagnosis, extra intestinal manifestations and renal evaluation

Variable		Value
Age (years)		36.47±9.89
Sex n (%)	Male	43 (43%)
	Female	57 (57%)
Educational level	High level	34 (34%)
	Low level	60 (60%)
	Illiterate	6 (6%)
Occupation	Employed	51 (51%)
	non-employed	49 (49%)
Smoking	Current	23 (23%)
	Ex	11 (11%)
	Never	66 (66%)
Alcohol	Ex	1 (1%)
	Never	99 (99%)
Comorbidity		
Hypertension		12 (12%)
Diabetes mellitus		14 (14%)
Hyperlipidemia		13 (13%)
Systemic Lupus Erythematosus		0 (0%)
Drug category		

Antibiotic	17 (17%)	
NSAIDs	16 (16%)	
Acetaminophen	20 (20%)	
5-ASA	81 (81%)	
Steroids	40 (40%)	
Azathioprine	46 (46%)	
TNF-alpha inhibitor	5 (5%)	
Inflammatory Bowel Disease		
Crohn's Disease	8 (8%)	
Ulcerative Colitis	92 (92%)	
Disease Characteristics		
Median Time since diagnosis (years)	3	
IBD-related surgeries	14 (14%)	
Severity	Mild	17 (17%)
	Moderate	39 (39%)
	Severe	42 (42%)
Local Extension		
Ascending colitis	2 (2%)	
Ileocecal	3 (3%)	
Left sided colitis	27 (27%)	
Limited to the rectum	16 (16%)	
Pancolitis	20 (20%)	
Rectosigmoid	28 (28%)	
Scattered	3 (3%)	
Till hepatic flexure	2 (2%)	
Up to hepatic flexure	2 (2%)	
Up to transverse colon	5 (5%)	
Extra Intestinal Manifestations		
Erythema nodosum	6 (6%)	
Arthritis	13 (13%)	
Uveitis	4 (4%)	
Cholangitis	1 (1%)	
Renal Variables		
Family history of renal disease	2 (2%)	
serum Creatinine (mg/dL)	0.96±0.21	
eGFR (mL/min/1.73 m^2)	79.09±20.56	
Kidney impairment	16 (16%)	

Data is presented as mean ± SD or number (%).

Table 2: Comparison between CD, UC regarding sociodemographic characteristics, personal data, frequency of comorbidities, medications used, extra intestinal manifestations and renal evaluation among the studied patients

Variable		CD (N=8)	UC (N=92)	P. Value
Age		37.88 ± 6.2	36.35±10.16	0.67
Sex	Male	3 (37.5%)	40 (43.48%)	0.74
	Female	5 (62.5%)	52 (56.52%)	
Educational level	High level	5 (62.5%)	29 (31.5%)	0.39
	Low level	3 (37.5%)	57 (62)	
	Illiterate	0 (0%)	6 (6.5%)	
Occupation	Employed	5 (62.5%)	46 (50%)	0.49
	Non-employed	3 (37.5%)	46 (50%)	
Smoking	Current	2 (25%)	21 (22.83%)	0.88
	Ex	1 (12.5%)	10 (10.87%)	
	Never	5 (62.5%)	61 (66.3%)	
Alcohol	Ex	0 (0%)	1 (1.09%)	0.76
	Never	8 (100%)	91 (98.91%)	
Comorbidity				
Hypertension		1 (12.5%)	11 (11.96%)	0.34
Diabetes Mellitus		2 (25%)	12 (13.04%)	
Hyperlipidemia		2 (25%)	11 (11.96%)	
Systemic lupus erythematosus		0 (0%)	0 (0%)	
Drug category				
Antibiotic		1 (12.5%)	16 (17.39%)	0.61
NSAIDs		2 (25%)	14 (15.22%)	
Acetaminophen use		1 (12.5%)	19 (20.65%)	
5-ASA		6 (75%)	75 (81.52%)	
Steroid		5 (62.5%)	35 (38.04%)	
Azathioprine		3 (37.5%)	43 (46.73%)	

	CD	UC	
TNF-alpha inhibitor	0 (0%)	5 (5.43%)	
EIM			
Erythema nodosum	1 (12.5%)	5 (5.43%)	
Arthritis	1 (12.5%)	12 (13.04%)	0.47
Uveitis	0 (0%)	4 (4.35%)	
Cholangitis	0 (0%)	1 (1.09%)	
Regarding renal evaluation			
Family history of renal disease	0 (0%)	2 (2.17%)	
Serum Creatinine	0.98±0.25	0.96±0.21	0.67
eGFR	75.04±17.56	79.44±20.85	
Kidney impairment	1 (12.5%)	15 (16.3%)	

Data is presented as mean ± SD or number (%).

Table 3: Comparison between CD & UC according to time elapsed since diagnosis, IBD related surgeries, severity and local extension of the disease

Disease Characteristics		CD (N = 8)	UC (N = 92)	P. Value
Median Time since diagnosis (years)		3	3	0.84
Severity	Mild	1 (12.5%)	16 (17.39%)	
	Moderate	4 (50%)	35 (38.04%)	0.67
	Severe	3 (37.5%)	39 (42.39%)	
IBD-related surgeries		4 (50%)	10 (10.87%)	0.001*
Local extension				
Ascending colitis		1 (12.5%)	1 (1.09%)	
Ileocecal		2 (25%)	1 (1.09%)	
Left sided colitis		0 (0%)	27 (29.35%)	
Limited to the rectum		0 (0%)	16 (17.39%)	
Pancolitis		2 (25%)	18 (19.57%)	0.27
Rectosigmoid		0 (0%)	28 (30.43%)	
Scattered		2 (25%)	1 (1.09%)	
Till hepatic flexure		0 (0%)	2 (2.17%)	
Up to hepatic flexure		0 (0%)	2 (2.17%)	
Up to transverse colon		1 (12.5%)	4 (4.35%)	

Data is presented as mean ± SD or number (%).

Table 4: Comparison between IBD patients with & without renal impairment

Variable		Number of IBD patients with renal impairment	Number of IBD patients without renal impairment	p. value
Young age group less than 40 years old		6 (37.5%)	77 (91.7%)	0.001*
Older age group ≥ 40 years old		10 (62.5%)	7 (8.3%)	
Gender	Male	6 (37.5%)	37 (44%)	0.62
	Female	10 (62.5%)	47 (56%)	
Smoking	Current	2 (12.5%)	21 (25%)	
	Ex	3 (18.75%)	8 (9.5%)	0.373
	Never	11 (68.75%)	55 (65.5%)	
Alcohol	Ex	0 (62%)	1 (1.2%)	0.661
	Never	16 (100%)	83 (98.8%)	
HTN		4 (25%)	8 (9.5%)	0.081
DM		6 (37.5%)	8 (9.5%)	0.003*
Hyperlipidemia		5 (31.25%)	8 (9.5%)	0.018*
Antibiotic		6 (37.5%)	11 (13.1%)	0.017*
NSAIDS		6 (37.5%)	10 (11.9%)	0.010*
Acetaminophen		10 (62.5%)	10 (11.9%)	0.001*
Steroids		8 (50%)	32 (38.1%)	0.373
Azathioprine		3 (18.75%)	43 (51.2%)	0.017*
TNF-alpha inhibitor		1 (6.25%)	4 (4.8%)	0.802
ASA		12 (75%)	69 (82.1%)	0.504
IBD related surgeries		5 (31.25%)	9 (10.7%)	0.030*
Severity				
Mild		1 (6.25%)	16 (19%)	
Mod		7 (43.75%)	32 (38.1%)	0.557
Severe		8 (50%)	34 (40.5%)	
EIM				
Erythema Nodosum		2 (12.5%)	4 (4.8%)	0.232
Arthritis		6 (37.75%)	7 (8.3%)	0.001*
Uveitis		3 (18.75%)	1 (1.2%)	0.001*
Cholangitis		0 (62%)	1 (1.2%)	0.661
Family history of renal disease		0 (62%)	2 (2.4%)	0.533

Data is presented as mean ± SD or number (%)

There were no statistically significant differences in the socio demographic characteristics, personal data, comorbidity-wise, mediations used, EIMs and renal evaluation between patients of both UC and CD (*p*> 0.05). Table 2

There was no significant difference between CD and UC regarding time elapsed since diagnosis, severity and local extension of the disease. On the other hand, IBD-related surgeries were significantly higher in CD (50% Vs 10.87%). Table 3

Renal impairment in IBD patients was significantly higher with increasing age, the co-existence of DM, Hyperlipidemia and with the use of antibiotic, NSAIDs, Acetaminophen, Azathioprine. Also, with IBD related surgeries and EIMs as Arthritis and Uveitis. Table 4

Univariate and Multivariate logistic analysis for the most common risk factors for renal impairment in IBD patients. Regarding univariate analysis, Odds ratio of Age (years) was 1.227, with a significant logistic regression relationship between the two variables (p= 0.004). Odds ratio of HTN was 14.333, with a significant logistic regression relationship between the two variables (p= 0.006). Odds ratio of Acetaminophen use was 6.882, with a significant logistic regression relationship between the two variables (p= 0.043). Regarding multivariate analysis, Odds ratio of Age (years) was 1.254, with a significant logistic regression relationship between the two variables (p= 0.027). Table 5

Table 5: Univariate and multivariate logistic analyses of the most prevalent renal impairment risk factors in patients with IBD

		Renal impairment		
	OR	**95% CI**		**P**
		Lower	**Upper**	
Univariate analysis				
Age (years)	1.227	1.066	1.412	0.004
Sex (Male)	2.062	0.329	12.921	0.439
Smoking (Active)	0.830	0.088	7.812	0.870
BMI	1.299	0.990	1.704	0.059
Type of IBD (UC)	0.318	0.031	3.246	0.334
IBD Severity (severe)	2.154	0.344	13.498	0.413
HTN	14.333	2.109	97.419	0.006
DM	1.577	0.163	15.234	0.694
Chronic NSAIDs use	1.333	0.139	12.773	0.803
Acetaminophen use	6.882	1.067	44.411	0.043
Hyperlipidemia	1.729	0.178	16.794	0.637
Multivariate analysis				
Age (years)	1.254	1.026	1.531	0.027
HTN	6.481	0.613	68.555	0.120
Acetaminophen use	4.390	0.455	42.373	0.201

Discussion

The reported prevalence of EIM in patients with IBD varies between 6% and 47%. It is worth noting that the majority of these instances primarily affect adult individuals [9]. According to the findings of Stawarski *et al*., it was observed that around 50% of patients diagnosed with UC and 80% of patients diagnosed with CD experienced the development of at least one EIM over the course of their respective diseases [10].

In the present study, EIM encountered among the studied patients, Arthritis was the most frequent EIM (13%) whereas cholangitis was only encountered in 1% of the studied patients while in the study done by Momtaz and Fayed [11]. A total of 24 individuals presented with both episcleritis and iridocyclitis, whereas 19 patients were diagnosed with ankylosing spondylitis. Additionally, 3 patients were found to have erythema nodosum.

In our study, CD was observed in 8% of cases while UC was observed in 92% of cases while in the study done by Lewis *et al*. [12] 66% patients had CD and 34% patients had UC and that difference could be due to the differences in sample size.

In the present study, there was no significant difference in between UC and CD regarding smoking (P=0.88) which agree with Karmiris *et al*. Saunte and Jemec [13, 14] who stated that smoking had no difference in between UC and CD.

In the current study, there were no significant differences between UC and CD regarding extra intestinal manifestations among the studied patients (P=0.47) which is against the study done by Park and colleagues [15]. They discovered that the incidence of EIMs was greater in CD patients than in UC patients. Therefore, it is reasonable to predict that a systemic inflammatory process, originating in the inflamed gut, may become more severe in CD than in UC, which may then increase renal function deficiencies and finally lead to end-stage renal disease. Previous research on the epidemiology of EIMs in patients with IBD by Veloso *et al*. and Isene *et al*. supports this idea. [16, 17] who discovered that EIMs were more common in CD patients than UC individuals.

The involvement of the immune system in the pathogenesis of CD suggests another possible explanation for the onset of ESRD in CD patients. Finally, metabolic or nutritional abnormalities that arise as a result of persistent intestinal inflammation may contribute to end-stage renal disease [18, 19]. Chronic intestinal inflammation and intestinal resection increase the risk of electrolyte imbalances and recurrent acute renal failure, both of which may lead to chronic kidney disease (CKD), making nutritional issues like dehydration and electrolyte depletion more prevalent in CD [20].

In the current study, there were no significant differences between UC and CD regarding renal evaluation among the studied patients (P=0.67) which actually the same mentioned by Lewis *et al*. [12] who stated that Neither CD nor UC participants showed a statistically significant difference in the prevalence of renal insufficiency.

In the present study, there were 16 IBD patients with renal impairment which actually near to that in the study done by Lewis *et al*. [12] who found The incidence of acute or chronic renal insufficiency among IBD inpatients was 15.9%. Despite the literature indicating that renal EIMs affect between 6% and 23% of patients with IBD, there is a scarcity of studies that have provided data on the frequency at which renal EIMs progress to renal insufficiency. Furthermore, it is unclear whether EIMs induce acute kidney injury (AKI) or chronic renal insufficiency, a progressive yet ongoing decline in function.

In a large population-based retrospective cohort study by Vajravelu *et al*. [21] establishes an association between IBD and the development of stages 3–5 CKD, adjusting for prevalent CKD risk factors several mechanisms may account for the elevated risk of KD among patients with IBD. Initially, KD may result from an immunologic mechanism that regulates the disease activity of the intestines and a systemic inflammatory response. It was discovered that low-grade systemic inflammation contributes to renal dysfunction; as a result, it has become a

novel risk factor for KD [22].

In the current study, renal impairment in IBD patients was significantly higher with increasing age of patients (more than or equal to 40 years) (P=0.001) and that in the same way with Lewis *et al*. [12] who discovered that an increased risk of developing renal insufficiency by 30% was associated with advanced age and that patients with a history of renal dysfunction following an IBD diagnosis were more likely to have a GFR of 60 mL/min/1.73 m^2.

In another study by Elseviers *et al*. [23] also stated that patients with renal impairment were significantly older above 55 years (P=0.001). The primary reason for this is the rising incidence of conventional risk factors associated with CKD, including diabetes, hypertension, and CVD. Additionally, the eGFR range for CKD has been broadened by the implementation of new definitions [24].

Park *et al*. provide evidence for the inverse relationship between IBD and CKD that diminishes as individuals advance in age [15]. The relationship between IBD and end-stage kidney disease (ESKD) among South Koreans was the subject of a recent study. This study's subgroup analyses revealed that individuals under the age of 40 had a greater risk of developing ESKD than those aged 40 or older. The mechanism by which the intensity of the association between CKD and IBD weakens with age, as demonstrated in both our study and Park's study, remains unknown.

In this study, there was non-significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to steroids treatment (P=0.373) which agree with Khalifa *et al*. [25] who stated that both groups had insignificant difference as regard to steroids treatment.

In our study, there were 81% of the studied patients treated with 5-ASA and there was non-significant difference in between patients with renal impairment and those without (P=0.504). Numerous studies have been conducted to investigate the relationship between renal impairment and medicinal therapy for IBD, with a specific focus on 5-aminosalicylic acid (5-ASA) drugs. The majority of cases of renal impairment often manifested during the first year of 5-aminosalicylic acid (5-ASA) use, however there were instances where this pattern did not hold true. Furthermore, the observed renal impairment does not seem to exhibit a correlation with dosage. [26] Contrary to the assertion that renal deterioration may be attributed to the consumption of 5-ASA, other investigations have presented arguments against this claim. [12] Also, Lewis *et al*. [12] demonstrated an association between renal insufficiency and no use of 5-ASA medications in their univariable analysis. So currently, there is no clear agreement in the literature.

Also in the study done by Momtaz and Fayed [11] 5-aminosalicylic acid (5-ASA) was the most common IBD drug and used by 215 patients.

In another study by Elseviers *et al*., [23] 56% had CD, 42% UC and 2% indeterminate colitis. Half of the patients used 5-ASA during the study period. Comparing patients with and without renal impairment, no difference could be observed in 5-ASA consumption which online with our result.

Lewis *et al*. [12] found one plausible rationale for the observed outcome regarding the use of 5-aminosalicylic acid (5-ASA) is that individuals afflicted with chronic renal insufficiency were excluded from receiving 5-ASA treatment due to their pre-existing renal impairments. Additional investigation is necessary to elucidate the underlying cause of the adverse correlation between the use of 5-ASA and renal insufficiency.

In the present study, there was non-statistically significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to sex and smoking (P=0.62; 0.373) which agree with Khalifa *et al*. [25] who had the same results.

In our study, renal impairment in IBD patients was significantly higher with EIMs as Arthritis and Uveitis (P=0.001) and that coincide with Lewis *et al*. [12] who stated that presence of EIM (particularly arthritis/arthropathy) are factors Associated with Renal Insufficiency.

In this study, there was non-significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to Family history of renal disease (P=0.533) which disagree with Khalifa *et al*. [25] who stated that family history of CKD is a predictor of Kidney disease in patients with IBD.

In this study, there was non-significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to Severity of IBD (P=0.557) which agree with Lewis *et al*. [12] who had the same results.

In the current study, there was a-significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to Diabetes Mellitus and Hyperlipidemia (P=0.003; 0.018 respectively) which disagree with Lewis *et al*. [12] as they found non-significant difference in between the two groups regarding to Diabetes Mellitus and Hyperlipidemia.

In the current study, there was a-significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to Azathioprine, NSAIDS and Acetaminophen (P=0.017; 0.010; 0.001 respectively) which disagree with Lewis *et al*. [12] as they found non-significant difference in between the two groups regarding to Azathioprine , NSAIDS and Acetaminophen.

In the present study, there was a significant difference in between IBD patients with renal impairment and IBD patients without renal impairment as regard to IBD related surgeries (P=0.030) which was the same mentioned by Lewis *et al*. [12].

The findings of Lewis *et al*., [12] A research that has shown many clinical consequences. The monitoring of kidney function is of paramount importance. This approach would facilitate the timely identification of individuals with renal insufficiency, enabling the implementation of appropriate interventions. Episodes of acute renal insufficiency have the potential to be reversed with medical intervention without incurring further complications. There is evidence that suggests that 5-aminosalicylic acid (5-ASA) medications have a favourable safety profile with regards to renal function in individuals diagnosed with IBD.

Based on the current study, renal impairment in IBD patients was significantly higher with increasing age, the co-existence of DM, Hyperlipidaemia and with the use of antibiotic, NSAIDs, Acetaminophen and Azathioprine.

Our study recommended that extra intestinal manifestations as renal insufficiency is advised to be evaluated and properly managed in IBD patients, which can burden the knowledge and shed some light on future prospective studies with larger sample sizes for further assessment of our study outcomes and confirmation of our results and conclusion.

Conclusions
Studding the epidemiology of renal insufficiency in IBD

patients admitted to Tanta University Hospitals, renal impairment was found in only 16% of cases. However, we reported that renal impairment in IBD patients was significantly higher with increasing age, the co-existence of DM, hyperlipidemia and with the use of antibiotic, NSAIDs, acetaminophen, azathioprine. Also, with IBD related surgeries and EIMs as arthritis and uveitis.

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