

Research Article

Functional Dyspepsia in Chronic Kidney Disease Patients in Minia University Hospital

Ahmed Magdy*, Omar Ahmed*, Basma Fathy** and Zienab Mostafa*

* Department of Tropical Medicine, Minia Faculty of Medicine

** Department of Internal Medicine, Minia Faculty of Medicine

Abstract

Introduction: Dyspeptic symptoms are commonly experienced by CKD patients. Patients with Chronic Kidney disease usually have different abdominal complaints. Abdominal pain or discomfort is frequently seen in clinical practice in patients with chronic kidney disease without any other systemic affection, the functional origin of abdominal complaints is claimed in many patients.

Method: This cross-sectional study was conducted at Minia University Hospital, over a period of six months from December 2019 to May 2020. One hundred and fifty patients with chronic kidney disease were included. **Results:** the socio-demographic criteria of the patients with functional dyspepsia compared to patients without functional dyspepsia and it revealed that there was a significant difference between 2 groups as regard to sex (p value < 0.047) but there was no significant difference as regard to Age, Residence, Socioeconomic status, Smoking or BMI. Also, there was a significant difference between 2 groups as regard to history of HCV infection with (p value < 0.001), however there was no significant difference as regard to history of diabetes or hypertension.

Conclusion: Functional Dyspepsia is more prevalent in males CKD patients than females. HCV infection is a risk factor for Functional Dyspepsia in CKD patients.

Keywords: Functional Dyspepsia, Chronic Kidney Disease, Rome IV criteria, Minia University Hospital

Introduction

Prevalence of chronic kidney disease (CKD) is high worldwide. It is defined as structural or functional alteration in kidney function for a period of at least 3 months along with health implications.⁽¹⁾

The National Kidney Foundation [Kidney Dialysis Outcomes Quality Initiative (KDOQI)] classified CKD into 5 stages depending on the estimated GFR.⁽²⁾

Dyspepsia is a common symptom in CKD patients. Dyspepsia literally means poor digestion. It indicate an upper abdominal syndrome triggered by food ingestion. It includes upper abdominal fullness after eating and early satiety and also epigastric pain or burning which may or may not be associated with food ingestion.⁽³⁾

It may present as burning pain, nausea, bloating, and fullness after meals, a feeling of indigestion or slow digestion. It may be ulcer disease or functional dyspepsia i.e. non-ulcer

dyspepsia. Owing to uremia, occurrence of gastritis, peptic ulcer disease or mucosal ulcerations at any part of gastrointestinal tract leading to upper abdominal pain, nausea, vomiting or GI bleeding is common. Increased gastrin levels have also been found in such patients. This, along with uremia, inflammation and local circulatory disturbances may lead to injury to mucosa. CKD patients have higher prevalence of gastric mucosal injury than normal population.⁽⁴⁾

The association between functional dyspepsia and chronic kidney disease is not extensively studied. This attracts our attention to study the possible relation between FD and chronic Kidney disease, and for this reason we designed this work to study the relation between the two clinical conditions.

Patients and Methods

This cross-sectional study will be conducted at Hospital of Minia University, over a period of six months from December 2019 to May 2020.

It will include one hundred and fifty patients with chronic kidney disease. CKD will be diagnosed on basis of history, blood urea and serum creatinine level, U/S findings- kidney size, corticomedullary differentiation and cortical thickness. Demographic data is collected in all patients. Patients are screened for presence of D.M and hypertension. Laboratory investigations in the form of complete blood count (CBC) and Kidney Function Tests are done in each patient. E-GFR is calculated as per the application of the simplified CKD-epi formula, taking the values of serum creatinine into consideration and patients are categorized according to 5 stages of CKD.

In addition, patients fulfilling criteria for functional dyspepsia will undergo upper GI endoscopy.

Statistical analysis

All analysis were done using SPSS version 20. Cleaning of data as a first step was done to detect missing values an invalid responses.

Quantitative data were presented by mean, standard deviation while qualitative data were presented by frequency distribution. The Chi-square test was used to compare between proportions or Fisher exact test “if >20 of cells had expected count less than 5”. Independent sample t-test was used to compare two means. Logistic regression analysis was used to predict the effect of different independent variables on the target (dependent variable). The probability of less than 0.05 was used as a cut off point for all significant tests and all statistical tests were 2 tailed.

Results

We assessed 150 patients; 77 (51.3%) of them were females with mean age (45.71 ± 9.59), 68.7% from rural areas. Mean BMI (26.58 ± 5.39). 44 (29.3%) of studied patients were smokers. 71 patients (47.3%) diabetic and 85 patients (56.7%) hypertensive. 28.7% of all patients were HCV positive. 40 patients fulfilled criteria of FD, 22 patients of them confirmed to had FD by exclusion of organic causes of dyspepsia by upper gastro intestinal endoscopy.

Table (1): Comparison of Socio-demographic data regarding functional dyspepsia among the studied cases (N=150)

	Total (N=150)	Functional dyspepsia (N=22) N (%)	PT without FD (N= 128) N (%)	P value
Age (years) Mean \pm SD	45.71 \pm 9.59 22 - 84	48.31 \pm 10.52	45.27 \pm 9.39	0.44
Sex				
Male	73 (48.7)	15 (68.2)	58 (45.3)	0.047*
Female	77 (51.3)	7 (31.8)	70 (54.7)	
Residence				
Rural	103 (68.7)	15 (68.2)	88 (68.8)	0.96
Urban	47 (31.3)	7 (31.8)	40 (31.2)	
Socioeconomic status				
Low	103 (68.7)	15 (68.2)	87 (68)	0.98
High	47 (31.3)	7 (31.8)	41 (32)	
BMI Mean \pm SD	26.58 \pm 5.39 17.6 – 43.5	27.19 \pm 4.79	26.47 \pm 5.51	0.36
Smoking status				
Non smoker	106 (70.7)	16 (72.7)	90 (70.3)	0.82
Smoker	44 (29.3)	6 (27.3)	38 (29.7)	

There were significant differences in patients with FD and patients without FD as regards to female gender & HCV infection, but no significant difference regards to other factors which support that female gender & HCV infection risk factors for FD in CKD patients

Table (2): Comparison for history of certain diseases and drugs among the studied cases regarding functional dyspepsia (N=150)

	TOTAL (NO=150)	Functional dyspepsia (N=22) N (%)	PT without FD (N= 128) N (%)	P value
DM				
Negative	79 (52.7)	14 (63.6)	65 (50.8)	0.27
Positive	71 (47.3)	8 (36.4)	53 (49.2)	
HTN				
Negative	65 (43.3)	11 (50)	54 (42.2)	0.49
Positive	85 (56.7)	11 (50)	74 (57.8)	
HCV				
Negative	107 (71.3)	9 (40.9)	98 (76.6)	0.001*
Positive	43 (28.7)	13 (59.1)	30 (23.4)	
Drug history				
No	50 (33.3)	7 (31.8)	43 (33.6)	0.9
Yes	100 (66.7)	15 (68.2)	85 (66.4)	

Univariate regression analysis was done to clarify the association between patient's risk factors and functional dyspepsia. The most important predictor of FD in CKD patients were HCV infection, stage of CKD and eGFR but no significant association between FD and other factors including gender

Table (3): Univariate analysis for factors associated with functional dyspepsia among CKD patients (N=150).

Independent factors	Crude OR (95% CI)	P value	Independent factors	Crude OR (95% CI)	P value
Age (years)	1.03 (0.99-1.1)	0.17	HCV	1 (Ref)	0.001*
			-ve	0.21 (0.08-0.54)	
			+ve		
Sex		0.05	Drug history	1 (Ref)	0.87
Male	1 (Ref)		-ve	0.92 (0.35-2.43)	
Female	2.59 (9.9-6.7)		+ve		
Residence		0.96	Stages of CKD	1 (Ref)	0.001*
Rural	1 (Ref)		CKD	5.52 (1.93-15.83)	
Urban	0.97 (0.37-2.57)		ESRD		
Socio-economic status		0.98	E GFR	1.08 (1.02-1.15)	0.01*
Low	1 (Ref)				
High	1.01 (0.38-2.67)				
BMI	1.02 (0.94 -1.12)	0.57	Smoking status	1 (Ref)	0.82
			Non smoker	1.13 (0.41- 3.09)	
			Smoker		
DM		0.27	HTN	1 (Ref)	0.49
-ve	1 (Ref)		-ve	1.37 (0.55 – 3.39)	
+ve	1.69 (0.66-4.3)		+ve		

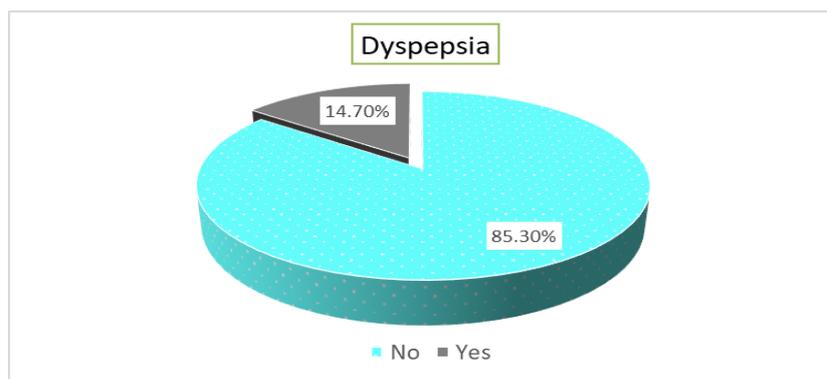


Figure (1): Frequency of dyspepsia among the studied patients (N=150).

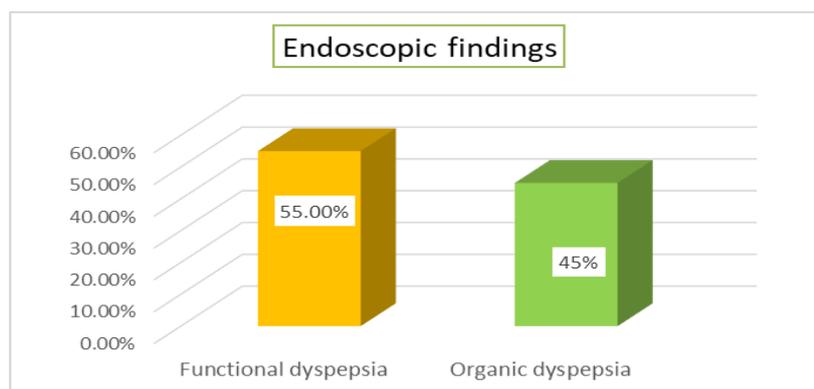


Figure (2): Endoscopic findings among the studied patients (N=40)

Discussion

In our study age is not a predictive value of functional dyspepsia. This is come in agreement with the results from previous study that found that age was not predictive of FD^(5,6). No relation was found with socio economic status or residence. Similar findings regarding education was demon-strated by Aro et al in there study⁽⁵⁾.

In a study, functional dyspepsia had no relation to BMI in chronic kidney disease patients⁽⁷⁾. Similar findings were reported in our study.

Our study revealed that gender was a predictive variable for Functional Dyspepsia. Functional Dyspepsia is more prevalent in males CKD patients 15 patients (68.2%) than females 7patients (31.8%). There was a significant difference between 2 groups as regard to sex (p value< 0.047).

Definitions and diagnostic criteria influence the prevalence rates of FD. In Kalixanda study in which Rome III criteria was used, the prevalence of FD was 15.7%⁽⁵⁾. An Italian study

found that the prevalence of FD was 11% when a modified Rome II criteria was used⁽⁶⁾, while our study in which we used ROM IV criteria, the prevalence was 14.7% .

Conclusion & Recommendations

Functional Dyspepsia is more prevalent in males CKD patients than females. HCV infection is a risk factor for Functional Dyspepsia in CKD patients. Socio demographic evaluation and Screening for HCV infection in Chronic Kidney patients may reduce risk of Functional Dyspepsia and ease early diagnosis of patient's symptoms.

References

1. Bacci MR, Chehter EZ. Dyspepsia among patients with chronic kidney disease: a cross sectional study. International archives of medicine. 2013;6:43.
2. Inker LA, Astor BC, Fox CH, Isakova T, Lash JP, Peralta CA, et al., KDOQI US commentary on the 2012 KDIGO clinical practice guideline for the evaluation and management of CKD. American Journal of Kidney Diseases. 2014;63(5):713-35.

3. Brun R, Kuo B. Functional dyspepsia. *Therapeutic advances in gastroenterology*. 2010;3(3):145-64.
4. Yu C, Wang Z, Tan S, Wang Q, Zhou C, Kang X, et al., Chronic kidney disease induced intestinal mucosal barrier damage associated with intestinal oxidative stress injury. *Gastroenterology research and practice*. 2016;2016.
5. Aro P, Talley NJ, Ronkainen J, Storskrubb T, Vieth M, Johansson SE, et al., Anxiety is associated with uninvestigated and functional dyspepsia (Rome III criteria) in a Swedish population-based study. *Gastroenterology*. 2009;137(1):94-100.
6. Zagari RM, Law GR, Fuccio L, Cennamo V, Gilthorpe MS, Forman D, et al., Epidemiology of functional dyspepsia and subgroups in the Italian general population: an endoscopic study. *Gastroenterology*. 2010;138(4):1302-11.
7. Junior LDS, Santos PR, dos Santos AA, de Souza MHL. Dyspepsia and gastric emptying in end-stage renal disease patients on hemodialysis. *BMC nephrology*. 2013;14(1):275.