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Gastrointestinal Evaluation in Chronic Kidney Diseases

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Abstract

Background: Upper gastrointestinal (GI) symptoms are common in patients with severe chronic renal failure. The aim of this prospective study is to determine the prevalence of GI abnormalities and Helicobacter pylori (H. pylori) infection and assess the importance of GI evaluation among in pretransplantation with CKD patients

Material and Methods: Between August 2008 to July 2010, 287 patients with CKD who were candidates for renal transplantation were included for the study. Endoscopic changes were described and multiple antral gastric biopsies were taken for detection of H. pylori infection. Gastric biopsy findings were compared to findings in 100 consecutive patients with normal renal function undergoing endoscopy for assessment of dyspepsia.

Results: There were 197 males 90 females. The Mean age was 36.7 years. Duration of hemodialysis treatment prior to endoscopy was 17 ±12.3 months. Symptoms of GI disturbance were found in 82(28.6%) of the 287 patients. In the 172 patients with endoscopic abnormalities, there were 49 asymptomatic and 123 symptomatic cases (P<0.001). Helicobacter pylori were present in 78 patients in the dialysis patients versus 29 in the control group.

Conclusion: Upper GI abnormalities are common among CKD patients. Gastric erosions, esophagitis, antral erosion are common lesions in these patients. There is no association between patient symptoms and these lesions. There were no relation between H.pylori and symptoms. These patients should undergo endoscopic evaluation periodically and they should be treated prior to ultimate renal transplantation.

Keywords: GI symptoms; Chronic kidney disease; Helicobacter pylori, Endoscopy; Transplant evaluation

Introduction

Renal transplantation is the gold standard treatment of choice for patients with chronic kidney disease (CKD). Upper GI abnormalities are common among adult uremic patients even in the absence of symptoms [1-3]. Several factors, such as the cause of terminal uraemia, immunosuppressive medication and infections, can predispose kidney transplantation patients to the development of GI problems. Chronic hemodialysis (HD) patients continue to suffer from various symptoms referable to the upper GI tract [4]. Gastric pathologic changes are common in HD patients [5]. Probable etiologic factors in their pathogenesis may include a high level of serum gastrin, delayed gastric emptying, and infection by Helicobacter pylori (H. pylori). The aim of this study was to evaluate the endoscopic findings, prevalence of H.pylori infection and assess the importance of GI evaluation in pretransplantation with CKD.

Materials and Methods

A prospective study was undertaken to study the endoscopic findings and predisposing factors in patients with CKD, who were candidates for transplantation between August 2008 to July 2010. Inclusion criteria included all the Patients, who are attending the gastroenterology clinic with the diagnosis of CKD for pre transplant workup were included in this study. Patients had to be on regular HD for at least 3 months before the endoscopy. The patients who had a history of smoking and alcohol abuse were excluded. Patients with history of peptic ulcer disease, or upper GI bleeding and patients who had received antibiotic or antacid or H2 receptor inhibitor therapy during the past two months before studies were also excluded. All patients were examined by the gastroenterologist and GI symptoms were evaluated. A control group was chosen among patients with normal renal function undergoing upper GI endoscopy for dyspeptic symptoms. Findings on antral gastric biopsies in the HD patients were compared to findings in 100 control group patients. The endoscopic procedure was performed on a non-dialysis day. Patients were considered endoscopically normal if no mucosal abnormalities were found. Ulcers were diagnosed when mucosal denuding was over 5mm in diameter. Multiple gastric antral biopsies were obtained from an intact mucosa in the antrum within 5 cm of the pylorus, fixed in 10% formalin and sent for histopathological examination and Helicobacter pylori identification for all the patients. The study was approved by the ethical committee of the institution and informed written consent was obtained from all the patients included in the study.

Statistical Analysis

Data was collected using a standardized proforma and analyzed using the SPSS 16.0 version statistical software. Results are expressed as the mean ± SD. The statistically significant differences were determined by means of student's T-test. Chi-square test was used for comparing nominal. P value less than 0.05 was considered statistically significant.

Results

287 patients underwent endoscopic evaluation. There were 197 males 90 females. The Mean age was 36.7 years (range 13 to 54 years). Duration of HD treatment prior to endoscopy was 17 ±12.3 months with a range of 3-32 months. Symptoms of GI disturbance were found in 82(28.6%) of the 287 patients. The prevalence of various GI symptoms was nausea 36 (12.6 %), heartburn 39 (13.9 %), regurgitation in 27(9.4%) and abdominal pain 21 (7.3 %) patients. The most commonly described

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endoscopic findings were esophagitis, gastritis, antral erosions. Table 1 is the lists of endoscopic findings. The uremic patients were categorized based on H pylori infection and endoscopic findings and their mean ages, hemodialysis duration, GI symptoms, were compared between the patients with positive and negative findings (Tables 2). There were no significant differences between the study groups regarding the above mentioned parameters.

Normal GI mucosa was observed endoscopically in 32 patients. In the 172 patients with endoscopic abnormalities, there were 49 asymptomatic and 123 symptomatic cases. Symptoms and endoscopic findings were poorly correlated (P > 0.05) in our study.

Of the symptomatic patients, 102 (35.5%) had abnormal endoscopic findings and 78 (27.2%) were positive for H pylori infection. However, the rates of endoscopic abnormalities and positive for H.pylori was 78 (27.7%) and 33 (11.5 %) in the asymptomatic patients in HD group, respectively. There was no relation between the presence of Helicobacter pylori and duration of dialysis (p>0.05). Endoscopic abnormality was found in 38(38%) patients and 29 (29%) were positive for H.pylori in the control group.

Discussion

Upper GI disorders are common among uremic patients maintained on regular HD and upper GI endoscopy is an important tool in the evaluation of such patients. No doubt that upper GI endoscopy before transplantation should be considered in patients with GI symptoms or those with a history of peptic ulcer disease. Although direct evidence is lacking, it is recommended that kidney transplantation be postponed in patients with active peptic ulcer until they are fully treated and are asymptomatic [6].

Patients with chronic renal failure may have higher risks of gastric mucosal damages compared with individuals with normal renal function because of systemic and/or local chronic circulatory failure, [7,8] hypergastrinemia, [9] high ammonia levels, [10] and enhanced inflammation.

The prevalence of gastro duodenal lesions and relevant gastrointestinal symptoms vary depending on whether they are uremic patients not undergoing dialysis, or patients undergoing dialysis, or patients with kidney transplantation. The incidence of gastrointestinal symptoms varies from 37% to 93% [11]. According to the results obtained in our study. Dyspeptic problems were detected in 42.9% of uremic patients undergoing dialysis. The most frequent gastrointestinal symptoms in uremia are the consequence of disequilibria of liquid and electrolytes, mechanical, physical, and emotional problems of patients, and toxins, which cannot be removed by dialysis and, which cause abnormalities in the stomach [12].

The prevalence of peptic ulcers is very different and depends on the applied diagnostic methods [13]. In our study, in the investigated group of patients undergoing dialysis, duodenal ulcers were detected in 6.6% patients. Several different studies pointed to the occurrence of erosive changes in about 50% of patients undergoing dialysis. [13,14] In our study, erosive changes were detected in 19.9%, patients. Symptoms and endoscopic findings were poorly correlated (P > 0.05) in our study.

Ala Kaila et al. [4] studied 29 patients with CKD both during predialytic stage and after active treatment for upper GI disease. Upper GI diseases increased in active treatment stage. The increase in the serious GI findings, active peptic ulcer and bleeding was more prominent during regular dialysis. Fabbian et al. [15] studied 57 HD patients for pre renal transplantation workup. Endoscopy revealed normal mucosa in 17.5% of cases, whilst gastritis was diagnosed in 30%. Chronic gastritis was also the most common microscopic abnormality diagnosed in 71.5% of biopsies. Thirteen out of 38 patients in whom multiple biopsies of the gastric mucosa were performed had H. pylori infection (34%), and none of them had normal mucosa. In a study by Ozgur et al. [16] the prevalence of H pylori was 70% and 60% in renal transplant recipients and hemodialysis patients, respectively. But, in our study, gastritis was diagnosed in 14.4% patients, 10.8% were positive for H pylori infection.

Recently, in the investigation of 539 Japanese hemodialysis patients with treatment in a mean period of 8.4 to 0.3 years, the prevalence of H. pylori infection was reported to be 48.6%, which was significantly lower than in dyspepsia patients with normal renal function (78.5%) and individuals with the normal renal function receiving health checkup (69.4%) [17]. Moreover, the prevalence of H. pylori infection in hemodialysis patients is significantly lower (27.5%) compared with non-hemodialysis chronic renal failure patients (56.0%), [18] and the prevalence in individuals with normal renal function, are similar with patients receiving hemodialysis treatment for less than the 1-year period [17]. These data suggest that hemodialysis treatment, but not uremia by chronic renal failure itself, plays a role in the lower prevalence of H. pylori infection. However, Helicobacter pylori infection was detected in 31.5% of our patients and 29 % in the control group and there was no relation between the presence of Helicobacter pylori and duration of dialysis (p>0.05).

In a series of 2890 renal transplant patients, 230 post transplant malignances were found. Of these 39 were of gastrointestinal origin and 8 were confined to gastroduodenal segment [19]. One patient had growth stomach in our series prior to surgery. The H.pylori is in the

Endoscopic findings	No. of patients, N (%)
Esophagitis	36 (12.5)
Monilial Esophagitis	6 (2.1)
esophageal varices	6(2.1)
Antral erosions	35(12.2)
Gastritis	41 (14.3)
Growth stomach	1 (0.3)
Inflammatory gastric polyps	4(1.4)
Duodenal erosion	22(7.7)

Table 1: Endoscopic findings

Variable	H.pylori Positive	H.pylori Negative	P-value
No. of patients	111	176	.....
Sex:			
Male	63(56.8%)	112(63.6%)	<0.01
Female	48(43.2%)	64(36.4%)	
Mean age (yrs)	30.2±13.2	31.2±11.2	0.56
Mean dialysis duration(mo)	17±13.8	18±13	0.77
Symptomatic dyspepsia	78(70.3%)	98(55.6)	0.65
Abnormal endoscopic findings	80(72.1%)	94(53.4)	0.98

Table 2: Demographic and clinical findings in H.pylori infected and noninfected patients on Hemodialysis

co-factor involved in the development of neoplastic transformation of the gastric mucosa [20].

In summary, Upper GI abnormalities are common among CKD patients even in the absence of symptoms. Chronic renal failure patients have a higher risk of gastroduodenal disorders. Gastritis in 41(14.3%) patients, Esophagitis in 36(12.5%) and antral erosions in 35(12.2%) are common lesions in these patients. Since there is no association between patient's symptoms and these lesions, developing diagnostic strategies for the detection of these lesions are recommended. There was no relation between H.pylori and symptoms. Duration of hemodialysis and the presence of symptoms did not influence the prevalence of H. pylori infection. These patients should undergo endoscopic evaluation periodically, and they should be treated prior to ultimate renal transplantation.

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