

Prevalence of Helicobacter Pylori in Chronic Kidney Disease Patients with Upper Gastro Intestinal Symptoms in a Tertiary Care Center in South India

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ABSTRACT

Background: *Helicobacter pylori* is a Gram-negative, microaerophilic bacterium usually found in the stomach, is associated with peptic ulcer disease and gastric malignancy. Earlier studies had shown lower prevalence of *H. pylori* infection in patients with chronic kidney disease. In this study we tried to find the prevalence of *H. pylori* infection in chronic kidney disease (CKD) patients present with upper gastrointestinal symptoms in a Tertiary Care Center in South India. **Methods:** In this study we have investigated the prevalence of *H. pylori* infection in 72 CKD patients who attended our outpatient department with upper gastro intestinal symptoms in Madras Medical College during the period of May 2017 to April 2018. We used Rapid Urease Test to diagnose *H. pylori* infection. **Results:** Seventy two patients with CKD were screened for *H. pylori* infection. Out of 72 patients, 54 were male and 18 were female. Twelve patients (16.6%) were more than 50 years and 60 patients (83.4%) were less than 50 years. Sixty eight patients (94%) were undergoing long term hemodialysis. Six patients (8.3%) presented with upper gastrointestinal bleed and 62 patients (86%) had endoscopic findings of gastritis and duodenitis. Forty eight (66.6%) had antral gastritis and 14 (19.4%) had duodenitis. Two patients had duodenal ulcer and 52 patients (72%) were tested positive for *H. pylori* using rapid urease test. **Conclusion:** Patients with CKD with upper gastro intestinal symptoms have higher prevalence of *H. pylori* infection.

Keywords: Helicobacter pylori, Gram-negative.

INTRODUCTION

Helicobacter pylori is a fastidious and microaerophilic Gram-negative bacteria that colonizes human gastric mucosa.^[1] Barry Marshall and Robin warren established its role in peptic ulcer disease. *H. pylori* affects 50% of the world population.^[2] It colonizes the gastric mucosa during childhood and usually remains asymptomatic. It causes peptic ulcer disease and gastric malignancy in 10–15% of infected patients. Close person to person contact is the mode of transmission and it is transmitted by feco oral and oro oral routes.^[3]

MATERIALS AND METHODS

Consecutive 72 out-patients with CKD showing upper gastrointestinal symptoms reporting to Department of Medical Gastroenterology, during the period May 2017 to April 2018 were included in the

study. In all these patients gastroscopy was done and biopsy was taken from the antrum. With the biopsy specimen Rapid Urease Test was done to find the presence of *H. pylori* infection. The endoscopic findings were also documented.

RESULTS

Table 1: Demographic profile and base line characteristic

| Base Characteristics | Number | Percentage (%) |
|----------------------|----------|----------------|
| Mean age | 44 years | |
| Male | 54 | 75 |
| Female | 18 | 25 |
| DM | 27 | 37.5 |
| CGN | 18 | 25 |
| CIN | 15 | 20.8 |
| HT | 9 | 12.5 |
| CKD | 2 | 2.8 |
| Undetermined | | |
| ADPKD | 1 | 1.4 |

Seventy two patients with CKD with gastrointestinal symptoms were screened for *H. pylori* infection. Of these 72 patients 54 were male and 18 were female. The mean age at presentation was 44 years. Twelve patients (16.6%) were more than 50 years and 60

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patients (83.4%) were less than 50 years. Sixty eight patients were undergoing long term hemodialysis. The causes for CKD include Type 2 diabetes mellitus (DM) in 27 patients(37.5%), chronic glomerulonephritis (CGN) in 18 patients (25%), chronic interstitial nephritis (CIN) in 15 patients (20.8%), hypertension (HT) in 9 patients (12.5%), CKD undetermined in 2 patients (2.8%), and autosomal polycystic kidney disease (ADPKD) in 1 patient (1.4%), respectively. Most of them were on long term hemodialysis [68 patients (94%)]. Thirty two patients (44.4%) showed symptoms of nausea and vomiting, 11 patients (15.3%) presented with upper abdominal findings, 6 patients (8.3%) presented with gastric bleed, and 23 patients presented with dyspepsia (32%).

Table 2: Symptom profile

| Symptoms | Number & Percentage |
|----------------------|---------------------|
| Nausea and vomiting | 32(44.4%) |
| Upper abdominal pain | 11(15.3%) |
| Dyspepsia | 23(32%) |
| Gastric bleeding | 6(8.3%) |

Sixty two (86%) patients had endoscopic findings of gastritis and duodenitis, 48 (66.6%) had antral gastritis, and 14 (19.4%) had duodenitis .Two patients had duodenal ulcer.

Table 3: Upper gastro endoscopic finding

| Upper gastro endoscopic findings | Number | Percentage (%) |
|----------------------------------|--------|----------------|
| Antral gastritis | 48 | 66.7 |
| Duodenitis | 14 | 19.4 |
| Duodenal ulcer | 2 | 2.8 |
| Normal | 8 | 11.1 |

Fifty two patients (72%) were tested positive for *H. pylori* using rapid urease test. Of these tested positive for *Helicobacter pylori* 42(80.7%) were males and 10(19.3%) were females. Majority of them presented with antral gastritis [38 patients (73%)].

Table 4: Prevalence of *H. Pylori*

| Findings | Number | <i>H. pylori</i> number and percentage (%) |
|------------------|--------|--|
| Antral gastritis | 48 | 38(73%) |
| Duodenitis | 14 | 9(17.3%) |
| Duodenal ulcer | 2 | 2(3.84%) |
| Normal | 8 | 3(5.76%) |

DISCUSSION

Our study shows prevalence of *H. pylori* is 72% in CKD. Some studies show higher prevalence and others with lower prevalence. The prevalence of *H. pylori* infection is high, ranging between 20.6%–73% in hemodialysis patients.^[4,5] The anti *H. pylori* antibodies in patients with renal failure ranges from 21–64%.^[4-7] Another study shows *H. pylori* was detected in 62.5% of the patients with gastro

duodenal lesions and it is the single most factors for dyspepsia in uremic patients.^[8]

The possible explanations for higher prevalence are 1) presence of urease enzyme 2) impaired immune system function.

Urease constitutes 10% of total protein and is highly substrate dependent.^[9] Urease splits urea into ammonia and bicarbonate. Ammonia by promoting alkaline environment facilitates the survival and growth in acidic milieu. *H. pylori* makes use of ammonia for aminoacid synthesis and ammonia by cytotoxic effect on gastric epithelial cell promotes virulence of bacteria. There are alternate routes via amidases for ammonia production.^[10] Bicarbonate antagonize the bactericidal effect of peroxy nitrite, a nitric oxide metabolite.^[11]

The other explanations are impaired gastric blood supply,^[8] sluggish gastric motility, hypo and hyperchlorhydria,^[12] and immune dysfunction.^[13]

There are studies showed lower prevalence of *H. pylori* in CKD patients,^[14,15] main reason being implicated are the bactericidal effect of commonly used antibiotics and their higher concentration in renal failure. Dialysis patients have higher levels of proinflammatory cytokines, like interleukin 1b, 6, 8, and tumor necrosis factor from activated inflammatory cells, infiltrating the gastric mucosa resulting in gastric atrophy and create a change in acidic milieu. This has a negative impact in the survival of *H. pylori*.^[16]

Six patients (8.3%) presented with upper gastrointestinal bleed, 62 (86%) patients had endoscopic findings of gastritis. Forty eight (66.6%) had antral gastritis and 14 (19.4%) had duodenitis, two patients had duodenal ulcer. In an another study endoscopic findings were abnormal in 63 (90%) patients with CKD/ESRD showing antral gastritis in 29 (42%), duodenitis in 17 (24%).^[17]

CONCLUSION

The prevalence of *H. pylori* infection is higher in CKD patients with upper gastro intestinal symptoms and hence proper screening and treatment will be useful for them.

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