

Prevalence of Helicobacter Pylori Infection Among Patients With End-Stage Chronic Renal Failure on Hemodialysis Programme

KRONİK BÖBREK YETMEZLİĞİ OLAN DİALİZ HASTALARINDA HELICOBACTER PYLORİ PREVALANSI

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SUMMARY

The incidence of peptic ulcer and related complications is high among patients with end stage chronic renal failure especially following renal transplantation. The role of Helicobacter pylori (Hp) in the increased risk of peptic ulcer disease in this group is not known. The incidence of Hp infection among patients with chronic renal failure who were being prepared for transplantation is investigated in this study. Histological examination of the antral biopsy specimens, Hp culture and urease tests were carried out in all patients. Among 16 patients who were on regular hemodialysis 10 patients (62%) had positive Hp cultures in the antral biopsies. Conversely, only 3 (37%) of the 8 non-uremic control patients had positive cultures for Hp. Although the difference is not statistically significant, this is the highest incidence of Hp infection reported in uremic patients.

Key Words: Helicobacter pylori, Renal failure, Chronic hemodialysis, Peptic ulcer

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Peptic ulcer is as frequently observed complication in patients with chronic renal failure and although there are conflicting results about the ulcer incidence in patients on regular hemodialysis, it is definitely increased following renal transplantation (1,2). On the other hand, the incidence of serious complications, i.e. bleeding or perforation significantly decreases if prophylaxis with H₂ blockers or vagotomy is performed in these patients (3,4).

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ÖZET

Kronik böbrek yetersizliği olan hastalarda ve özellikle böbrek nakli sonrasında peptik ülser ve bunun komplikasyonları sıklığı. Bu hastalardaki peptik ülser sıklığında Helicobacter pylori (Hp)'nin rolü bilinmemektedir. Çalışmamızda kronik böbrek yetmezliği olan ve böbrek nakli için hazırlanan hastalarda Hp enfeksiyonunun sıklığı araştırıldı. Tüm hastalarda antrum biyopsisinde histolojik muayene, Hp kültürü ve üreaz testi yapıldı. Düzenli hemodiyalizde olan 16 hastanın 10'unda (%62) antrum biyopsisinde Hp kültürü pozitif bulundu. Buna karşın 8 non-üremik hastanın sadece 3'ünde (%37) pozitif Hp kültürü tespit edildi. Fark istatistikî olarak anlamlı olmamakla birlikte, bu üremik hastalarda tespit edilmiş en yüksek Hp enfeksiyonudur.

Anahtar Kelimeler: Helicobacter pylori, Böbrek yetmezliği, Kronik hemodializ, Peptik ülser

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In recent years a close correlation between helicobacter pylori (Hp) and peptic ulcer disease has been demonstrated in various studies (5,8).

The aim of this study is to investigate the incidence of Hp infection in the antrum of patients with chronic renal failure who were on regular hemodialysis and were being prepared for transplantation.

PATIENTS AND METHODS

Sixteen patients, 9 male and 7 female with a mean age of 33.5 years (range 16-59) were enrolled to the study. The control group consisted of 8 patients who underwent upper GI endoscopy for causes other than acid related diseases, such as foreign body, mid-esophageal carcinoma, gastric lymphoma and achalasia. Three biopsy samples were obtained from the an-

trum, with an Olympus GIF 1T20 endoscope. The first sample was put in formaline 10% for histologiaal examination. Paraffin processed sections were stained with hematoxylin eosin and modified giemsa for in 0.5 ml of 20% glucose and than transferred to urease media which consisted of 10% urea and 0.001% phenol red and incubated at room tmeperature for 18 hours. The third specimen was put until processed (for a maximum of 4 hours). The specimen was homogenized in transport medium, and then inoculated to 10% sheep blood agars containing vancomycin 10 mg/l, trimethoprim lactate 5 mg/l, polymyxin B 2500 IU/l, amphotericin 6 mg/l. The plates were incubated in anaerobic jars with microaerophilic conditions (Campy-Pak Gas Generating Kit, Oxoid) at 37°C for 7 days. Colonies showing Gram negative spiral or curved microorganisms which were oxidase, catalase and urease positive were accepted as Hp.

Statistical analysis were made with Student's t test and Fishers exact chi-square test.

RESULTS

Patients

In 7 patients endoscopy revealed mild gastritis. In 10 patients the antral biopsy specimens were positive for Hp in Hp culture (62%) and in only four of them endoscopic diagnosis was mild gastritis. In 9 patients with positive Hp culture, histologic examination revealed mild to moderate PNL and mononuclear infiltration with the peresence of helicobacter-like organisms. These organisms were detected in only one specimen which was negative for both culture and urease test. In all of the patients with positive Hp culture, the urease test was also positive.

Control group

Helicobacter pylori culture and urease test were both positive in the antral specimens of 3 (37%) of the 8 controls. Although the incidence of Hp infection in chronic renal failure patients is higher than controls (62% vs 37%), the difference was not statistically significant.

DISCUSSION

The incidence of peptic ulcer disease in patients with chronic renal failure on maintenance hemodialysis is a subject of debate. Recent studies could not demonstrate a higher prevalence of peptic ulcer as compared to general population, in spite of some earlier reports showing a higher incidence rate (7). However, there is no doubt upon the increased risk of peptic ulcer following transplantation. Moreover, peptic ulcer prophylaxis is recommended in this group of patients in order to prevent serious complications such as bleeding or perforation (3,4).

Helicobacter pylori is an urease producing bacteria. In rat, it has been shoqn that chronic uremia

causes proliferation of endogenous urease positive gastric bacreteria (8). Such an event has not been demonstrated in humans. Although there are few studies investigating the incidence of Hp infection in uremic patients, most of them are serologic studies searching IgG antibodies to Hp and studies based upon Hp culture are indeed very few and made in small groups of patients (9,10,11). Offerhaus et al, in a study carried out in ten patients with chronic renal failure, demonstrated that only two of these were positive for Hp culture and concluded that the prevalence of this infection in such patients is not higher than normal population (10). In another histological study 31 % of 322 uraemic patients showed Helicobacter like organism in the antrum (13). The only study showing high incidence rate of Hp in uremic patients belongs to Tielemans et al. and was made by urea-C14 breath test (12). In a very recent study, among 19 patients with chronic renal failure, only 3 showed culture positivity (13).

We found that 10 of the 16 patients (62%) with chronic renal failure had Hp infection in the antrum. This is the highest incidence reported in the literature. The difference, although almost twice, is not statistically significant comparing with non-uremic population, but the reason for that may be the small number of the control group. These findings suggest that the antral mucosa of uremic patients constitutes a favorable media for Hp growth. In addition, Hp infection, a long with surgical stress or corticosteroid treatment, may be a factor in patients with chronic renal failure for the increased risk for peptic ulcer after transplantation.

In conclusion, studies in larger groups are required to estimate the contribution of Hp in the development of peptic ulcer and its complications in patients with chronic renal failure.

REFERENCES

1. Hadjiyannakis EJ, Evans JB, Smellie WAB, Caine RY. Gastrointestinal complications after renal transplatation. *Lancet* 1971;2:781-5.
2. Spanos PK, Simmons RL, Rattazi C, Kjellstrand CM, Buselmeier TJ, Najarian JS. Peptic ulcer disease in the transplant recipient. *Arch Surg* 1974; 109:193-7.
3. Walther S, Andersen JT, Christensen U, Loekkegaard H, Kjersem H, Dahlager Joergensen JI, Stadil F. Effect of Cimetidine on upper gastrointestinal bleeding after renal transplantation: a prospective study. *Br Med J* 1984; 289:1175-6.
4. Linder MM, Kösters W, Rethel R. Prophylactic gastric operations In uremic patients prior to renal transplantation. *Wld J Surg* 1979; 3:501-4.
5. Vaira D, Holton J, Dowsett J, Oderda G, Barbara L. Helicobacter pylori: Its role in gastric disease. *Dig Dis* 1990; 8:322-6.

6. Marshall BJ, Goodwin CS, Warren JR. Prospective double blind trial of duodenal ulcer relapse after eradication of *Campylobacter pylori*. *Lancet* 1988; 2:1437-42.
7. Kang JY, Wu AYT, Sutherland IH, Vathsala A. Prevalence of peptic ulcer in patients undergoing maintenance hemodialysis. *Dig Dis Sci* 1988; 33:774-8.
8. Dial EJ, Romero JJ, Lichtenberger LM. Effect of chronic uremia on gastrin release and bacterial urease activity in rat. *Gastroenterology* 1991 ;100(5):A54 (abs).
9. Ragnaud JM, Brassens- Rabbe MP, Kazim M, Megraud F, Knefati Y, Wone C. Serological study of *c. pylori* infection in a cohort of patients with chronic renal failure. In: Megraud F, Lamouliatte H (eds). *Proceedings of European Campylobacter study group*. Gist-Brocades, 1988:157.
10. Offerhaus GJA, Kreuning J, Valentijn RM, Salvador Pena A, Hubert Endtz PH, Van Duyn W, Lamers CB. *Campylobacter pylori*: Prevalence and significance in patients with chronic renal failure. *Clinical Nephrology* 1989; 32:239-41.
11. Wee A, Kang JY, Ho MS, Choong AYT, Wu IH, Sutherland H. Gastroduodenal mucosa in uraemia: Endoscopic and histological correlation and prevalence of helicobacter-like organisms. *Gut* 1990; 31:1093-6.
12. Tielemans C, Verhas M, Glupczynski Y, Nyst JF, Deltenre M, Dratwa M. Urea C14 breath test screening for *Campylobacter pylori* infection in uraemic patients. In: Megraud FH, Lamouliatte H (eds). *Proceedings of European Campylobacter study group*. Gist-Brocades, 1988:160.
13. Watson RG, Bhatt BM, McCaughey C, Huges DE, Porter KG, Wilson TS, Doherty CC, Biggart JD. *Helicobacter pylori* and chronic renal failure. *Eur J Gastroenterology&Hepatology* 1991;3:235-8.