ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA
VOL. XXIII, N 3, 27 SECTIO DDD 2010

Danylo Halytskyi Lviv National Medical University, Outpatient and Family Department, Ukraine

HELENA SKLYAROVA, IRENA SHALKO

The comparative effect of rabeprazole vs. omeprazole on gastric acid and mucoid-electrolite secretion in patients with peptic ulcer disease

Badania porównawcze wpływu rabeprazolu vs omeprazolu na wydzielanie kwasu żołądkowego i śluzowo-elektrolitowe u pacjentów z chorobą wrzodową

INTRODUCTION

Proton pump inhibitors (PPI) are widely used in the treatment of acid-related diseases. Admission of PPI results in a rapid removal pain syndrome and healing of erosive and ulcerous defects [1, 6].

Despite the fact that the pharmacological activity of PPI of first and second generations is identical, there is a big difference between omeprazole and rabeprazole [4]; including different time of activation due to pH of gastric juice, time interval of achieving desired pH for *H. pylori* eradication, antihelicobacter activity of prescribed drugs, bioavailability then taking additional dose, "first dose" effect [2, 3, 7]. These differences in omeprazole and rabeprazole are shown by different clinical presentations, "night rises of acidity" when taking omeprazole comparing to rabeprazole [10].

In the mechanisms of action, rabeprazole is more effective than omeprazole, lansoprazole or pantoprazole in acid suppression, increasing intragastric pH and maintaining pH>4 [5, 9]. The favourable phrarmacodynamic profile for rabeprazole has been shown to result in high eradication rates for *H. pylory* than other drugs of this group [8]. However, little it is still known about the mucoid-protecting action of rabeprazole vs. omeprazole.

The aim of the study was to evaluate the effects of rabeprazole vs. omeprazole on gastric acidity and mucoid-electrolyte secretion in patients with peptic ulcer disease after two weeks' treatment with these PPI.

MATERIAL AND METHODS

The examined group consisted of 42 patients. 6 (15%) of them had stomach peptic ulcer, 19 (47%) had duodenal ulcer and 17 (38%) had combined stomach and duodenal ulcers. The mean age was 34.0 ± 3.4 years. The mean time of illness was 5.0 ± 1.1 years. Patients were divided in 2

adequate groups by age and course of disease: first group – 27 patients, which took the following combination for 14 days: omeprazole – 20 mg/daily, amoxiciline – 1000 mg/daily, clarithromycine – 500 mg/ twice daily; second group – 15 patients, which took the following combination for 14 days: rabeprazole – 20 mg/daily, amoxiciline – 1000 mg/daily, clarithromycine – 500 mg/twice daily. All patients were confirmed positive *H. pylori* by 14 C urea breath test and urease test. The healing of ulcers was controlled by fibrogastroscopy after 2 weeks of treatment. The severity of ulcer pain was investigated during the treatment.

The volume of gastric aspirate, hydrogen ion concentration, pepsin concentration were measured and compared before and after treatment with rabeprazole or omeprazole. N-acetylneuraminic acids (NANA) and Na^+-ions concentrations were studied in gastric juice and insoluble mucus.

RESULTS

After 2 weeks' treatment with omeprazole and antibiotics, ulcers healed in 70% of patients, although all patients kept complaints about active antral gastritis.

Prescription of omeprazole led to the lowering of volumetric secretion by 54%, pepsin concentration by 13%, general acidity by 4%. During this treatment we did not observe significant changes of NANA concentration in gastric juice and insoluble mucus. In the majority of cases Na+-ions concentration was higher in gastric juice comparing to insoluble mucus.

After 2 weeks' treatment with rabeprazole healing of ulcerous defects controlled by gastroscopy was achieved in 100% cases, still with active antral gastritis and duodenitis.

Administration of rabeprazole led to lowering of volumetric secretion by 50%, general acidity by 72% and pepsin concentration by 82%. With the significant lowering of gastric acidity, the level of mucus-electrolyte secretion risen.

Taking into account the overall stability of NANA concentration and Na+-ions in insoluble mucus, the volume of those components in gastric juice almost doubled. After 2 weeks of treatment with rabeprazole, Na+-ions concentration was higher in gastric juice comparing to insoluble mucus, which correlates with increase in occurance of duodeno-gastric reflux.

DISCUSSION

During the treatment with omeprazole in some part of the patients with peptic ulcer there were the remaining symptoms of active antral gastritis and duodenitis. Omeprazole decreases gastric acidity by lowering volumetric secretion, at the same time without affecting general acidity, pepsin and NANA concentrations, which can be the reason for recurrent ulcers. Comparing to omeprazole, administration of rabeprazole leads to faster pain relief and better ulcer healing results, which can be explained by better lowering of volumetric secretion, practically full block of acid secretion and pepsin release. Another advantage of rabeprazole is its availability to increase mucus and electrolyte secretion. Rabeprazole is considered to be a more effective drug in peptic ulcers healing comparing to omeprazole.

CONCLUSIONS

Rabeprazole demonstrated a greater inhibition of acid secretion and peptic release than omeprazole. Another advantage of rabeprazole is its availability to increase mucoid secretion in comparison with omeprazole. At the same time, administration of rabeprazole or omeprazole increases the frequency of duodeno-gastric reflux.

REFERENCES

1. Dekkers C.P. et al.: Comparison of rabeprazole 20 mg vs. omeprazole 20 mg in the treatment of active gastric ulcer—a European multicentre study. The European Rabeprazole Study Group. Aliment. Pharmacol. Ther., 12, 789, 1998.
2. Horn J.: Review article: Relationship between the metabolism and efficacy of proton pump inhibitors—focus on rabeprasole. Aliment Pharmacol. Ther., 20, 9, 2004.
3. Ji S. et al.: Comparison of the efficacy of rabeprazole 10 mg and omeprazole 20 mg for the healing rapidity of peptic ulcer disease. J. Gastroenterol. Hepatol., 21, 1381, 2006.
4. Klotz U.: Clinical impact of CYP2C19 polymorphism on the action of proton pump inhibitors: a review of a special problem. Int. J. Clin. Pharmacol. Ther. 44, 297, 2006.
5. Miner P.Jr. et al.: Gastric acid control with esomeprazole, lansoprazole, omeprazole, pantoprazole, and rabeprazole: a five-way crossover study. Am. J. Gastroenterol., 98, 2616, 2003.
6. Ohning G.V. et al.: Rabeprazole is superior to omeprazole for the inhibition of pepton meal-stimulated gastric acid secretion in Helicobacter pylori-negative subjects. Aliment. Pharmacol. Ther., 17, 1109, 2003.
7. Saitoh T. et al.: Effects of rabeprazole, lansoprazole and omeprazole on intragastric pH in CYP2C19 extensive metabolizers. Aliment. Pharmacol. Ther., 16, 1811, 2002.
8. Sharara A.I.: Rabeprazole: the role of proton pump inhibitors in Helicobacter pylori eradication. Expert. Rev. Anti. Infect. Ther., 3, 863, 2005.
9. Shimatani T. et al.: Acid-suppressive efficacy of a reduced dosage of rabeprazole: comparison of 10 mg twice daily rabeprazole with 20 mg twice daily rabeprazole, 30 mg twice daily lansoprazole, and 20 mg twice daily omeprazole bu 24-hr intragastric pH-metry. Dig. Dis. Sci., 50, 1202, 2005.
10. Williams M.P.: Eradication of Helicobacter pylori increases nocturnal intragastric acidity during dosing with rabeprazole, omeprazole, lansoprazole and placebo. Aliment. Pharmacol. Ther., 15, 775, 2003.

SUMMARY

Rabeprazole provides superior acid suppression and inhibits pepsin release in comparison to omeprazole. Better ulcer healing results after management by rabeprazole are caused by its gastric mucosa protecting effect in compare with omeprazole.

Keywords: peptic ulcer, rabeprazole, omeprazole

STRESZCZENIE

Rabeprazol zapewnia lepszą supresję kwasu i hamowanie uwalniania pepsyny niż omeprazol. Lepsze wyniki leczenia wrzodów po zastosowaniu rabeprazolu w porównaniu z omeprazolem spowodowane są jego wpływem ochronnym na śluzówkę żołądka.

Słowa kluczowe: wrzód żołądka, rabeprazol, omeprazol