

Analysis of the Effect of Pantoprazole and Omeprazole on Pain Relief in Patients with Gastric Ulcer

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[Abstract] Objective: To analyze the effect of pantoprazole and omeprazole in the treatment of patients with gastric ulcer. **Methods:** The treatment effect, recurrence rate, helicobacter pylori negative conversion rate, adverse reaction status and pain relief time of the two groups were compared. **Results:** The total effective rate of the experimental group (97.78%, 44 / 45) was higher than that of the control group (84.44%, 38 / 45), $P < 0.05$; The recurrence rate (4.44%, 2 / 45) and Helicobacter pylori negative conversion rate (95.56%, 43 / 45) of the experimental group were significantly higher than those of the control group ($P < 0.05$); The incidence of adverse reactions in the experimental group (11.11%, 5 / 45) was lower than that in the control group (15.56%, 7 / 45) ($P > 0.05$); The pain relief time of the experimental group was (2.24 ± 1.16) d, which was shorter than that of the control group ($P < 0.05$). **Conclusion:** In the process of clinical treatment of gastric ulcer, pantoprazole has significant curative effect and low recurrence rate, which can eradicate Helicobacter pylori as soon as possible, shorten the pain time and make the treatment safer.

Key words: Gastric ulcer; Pantoprazole; Omeprazole; Analgesic effect; Influence

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1 Introduction

Gastric ulcer is a common disease for Department of Gastroenterology. According to the results of clinical researches, the main cause of peptic ulcer is helicobacter pylori infection, and diet, genetics and daily medication also have a certain impact to this disease^[1]. Epigastric pain is the main clinical manifestation of gastric ulcer, which concentrates in the epigastric or sternum, and the patients have dull pain or distending pain. The pain generally starts one hour after meal, and gradually relieve within 1-2 hours after meal. Some patients have no obvious clinical symptoms. Omeprazole and pantoprazole are the main drugs for treatment, but the efficacy of different drugs is different. Therefore, it is necessary to study and analyze the value of pantoprazole and omeprazole for the treatment of gastric ulcer.

2 Material and methods

2.1 Basic data

90 patients with gastric ulcer in our hospital from August 2018 to August 2020 were selected and divided into control group and experimental group by parity method with 45 cases in each group. In the control group, there were 23 males and 22 females with a median age of (44.26 ± 20.17) years and an average course of (1.12 ± 1.04) years; There were 25 males and 20 females in the experimental group, with a median age of (44.23 ± 20.14) years and an average course of (1.14 ± 1.05) years. The basic information of the two groups was $p > 0.05$, which was considered comparable.

2.2 Methods

Patients in both groups received quadruple therapy with clarithromycin twice daily (Sinopharmaceutical approval: H20083367 approved date: 2013-05-08), and amoxicillin (Sinopharmaceutical approval: H20073235 approved date: 2017-01-19), AMOX capsule and pectin bismuth (500 mg, 1000 mg, 150 mg, respectively), on the basis of which the

use of proton pump inhibitor was added for four consecutive weeks.

The control group was treated by orally taking omeprazole enteric-coated capsule twice a day with a dose of 20 mg each time for four consecutive weeks^[2].

The experimental group was treated by orally taking pantoprazole sodium enteric-coated tablets twice a day with a dose of 40 mg each time for four consecutive weeks. The dosage should be adjusted according to the patient's condition.

2.3 Evaluating indicator

(1) The therapeutic effects of the two groups were compared.

(2) The recurrence rate and negative conversion rate of

helicobacter pylori were evaluated.

(3) The adverse reactions including head distension, nausea, vomiting and rash were observed.

(4) The pain relief time of the experimental group and the control group was recorded.

2.4 Statistical analysis

SPSS 21.0 objectively analyzed the data, $P < 0.05$ as the basis of statistical difference expression.

3 Results

3.1 Comparison of treatment effect between experimental group and control group

The difference between the two groups was statistically significant ($P < 0.05$) (Table 1).

Table 1. Analysis of treatment effect (n /%)

Group	n	Remarkable effect	Effective	Invalid	Total effective rate
Experience group	45	26	18	1	97.78
Control group	45	22	16	7	84.44
χ^2					4.9390
P					0.0262

3.2 Recurrence rate and helicobacter pylori negative conversion rate of the two groups

Compared with the control group, the indexes of the

experimental group were significantly higher ($P < 0.05$) (Table 2).

Table 2. Recurrence rate and helicobacter pylori negative conversion rate of experimental group and control group ($\bar{x} \pm s$)

Group	n	Recurrence rate	Negative conversion rate of Helicobacter pylori
Experience group	45	2 (4.44)	43 (95.56)
Control group	45	9 (20.00)	37 (82.22)
T value		5.0748	4.0500
P value		0.0242	0.0441

3.3 Comparison of adverse reactions between experimental group and control group

The total incidence of experimental group was higher than that of control group ($P > 0.05$) (Table 3).

Table 3. Adverse reactions of patients (n /%)

Group	n	Head distension	Nausea and vomiting	Rash	Total incidence
Experience group	45	2	2	1	5 (11.11)
Control group	45	3	2	2	7 (15.56)
χ^2					0.3846
P					0.5351

3.4 Pain relief time of two groups

Data comparison between groups, $P < 0.05$ (Table 4).

Table 4. Analysis of pain relief time of experimental group and control group ($\bar{x} \pm s$)

Group	n	Pain relief time
Experience group	45	2.24±1.16
Control group	45	4.98±1.77
T value		8.6854
P value		0.0000

4 Discussion

Gastric ulcer is a digestive disease with a high incidence rate. The main causes of this disease include a large number of secretion of digestive juice, infection of helicobacter pylori and damage of gastric mucosa, which are prone to repeatedly attack and eventually cause a series of complications, such as gastrointestinal bleeding, ulcer perforation, pyloric obstruction and canceration, affecting patients' daily life^[3]. As people's lifestyle and diet structure have changed, the incidence of gastric ulcer increases. Therefore, it is necessary to reasonably explore safe and effective treatment methods in clinical practice, so as to improve the clinical symptoms, reduce the incidence of complications, and further optimize the quality of life of patients^[4].

According to the results of clinical studies, more than 80% of patients with gastric ulcer are infected with helicobacter pylori, which is likely to relapse after stopping medication if not completely eradicated. Therefore, in clinical treatment, we should pay attention on protection of gastric mucosa for reducing gastric acid secretion and eliminating helicobacter pylori. Now, quadruple therapy is the clinical choice for treatment, the effect of which is relatively ideal and safe. As helicobacter pylori becomes more and drug resistant, the effect of this program is declining. Therefore, in clinical practice, we should adjust the type and dose of drugs for better efficacy based on overall characteristics of the disease and the condition^[5].

Among them, pantoprazole is a kind of gastric acid secretion inhibitor, which belongs to one of proton pump inhibitors. It has outstanding effect on eradicating helicobacter pylori and treating reflux gastroesophageal and peptic ulcer. As a kind of alkaline drug, it decomposes in a short time under acidic conditions of secretory tubules after entering parietal cells, then forms the binding of proton pump and sulfhydryl, resulting in the loss of proton pump activity, by which the purpose of inhibiting gastric acid secretion is achieved as well as pH of gastric juice worth increases^[6]. Meanwhile, pantoprazole can also inhibit the

secretion of gastric acid, and the effect of inhibition of gastric acid secretion stimulated by gastrin and histamine is relatively ideal as well as more lasting. In the process of clinical treatment of gastric ulcer, it can also adjust the pH value of gastric acid, and the inhibition effect of gastric acid secretion is prominent, meeting the goal of improving clinical symptoms and relieving the disease in a short time. Beside that, animal experiments showed that pantoprazole can also protect the damaged gastric mucosa caused by aspirin and stress, but the mechanism has not been clear. In terms of helicobacter pylori resistance, pantoprazole has a significant antibacterial effect^[7].

Omeprazole is also a proton pump inhibitor, which can inhibit gastric acid secretion. The mechanism of action of omeprazole is to inhibit its enzyme activity when binding with hydrogen ion, ATPase and potassium ion, for inactivating it and controlling gastric acid secretion. In clinical application, omeprazole is mostly applicable to duodenal ulcer, peptic ulcer, gastrointestinal bleeding and gastric ulcer, with obvious therapeutic effect and more continuous efficacy.

Compared with omeprazole, pantoprazole has the following advantages.

First, it has a very strong selectivity, in particularly at the molecular level, it has a more accurate effect and can inhibit the secretion of gastric acid for a longer time, so the treatment effect of which is more reliable.

Secondly, the improvement effect of pantoprazole is more prominent in terms of pharmacokinetics and accuracy of action. After the first use of pantoprazole, it can significantly improve the bioavailability, which is stable even in weak alkaline environment, and can't be affected by acid fast drugs, food intake and other factors^[8].

Thirdly, pantoprazole does not have strong affinity with liver cytochrome P450, so it won't react with pantoprazole and cause oxidative failure.

Fourthly, in a strong acid environment, pantoprazole can choose to play its efficacy, and the probability of reaction with other drugs is not high, so the treatment is safer.

Fifthly, in the elimination of helicobacter pylori, the choice of new acid making drugs are better, and the clearance rate will also be improved. Amoxicillin is an anti-inflammatory and bactericidal drug of penicillin that can ensure the probability of removing helicobacter pylori, and can not be used alone, unless combined with pantoprazole, it's effect on removing helicobacter pylori will increase.

In the study, patients in the experimental group were treated with pantoprazole, and other indicators except adverse reactions were compared with those in the control group, $P < 0.05$. This shows that pantoprazole was better than omeprazole in the treatment of gastric ulcer with a recurrence rate that was not high, and also markedly shortened the time taken on eradicating helicobacter pylori as well the duration of pain, the treatment with which is safe and worth of great promotion.

Generally, in clinical treatments of gastric ulcer patients, the efficacy of pantoprazole and omeprazole both were relatively ideal, but the recurrence rate in patients having pantoprazole treatment was not high, and the helicobacter pylori eradication rate was high. Shortening the duration of patient's pain, for as well as having high safety, pantoprazole is worthy of clinical application.

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