

# Probiotics in the treatment of peptic ulcer infected by helicobacter pylory and its safety

Fengzhen Ma<sup>1,2</sup>, Chao Zhou<sup>3</sup>, Jian Wang<sup>2</sup>, Tonggang Liu<sup>2</sup> and Jiyong Liu<sup>\*1</sup>

<sup>1</sup>Department of Gastroenterology, Affiliated Shangdong Provincial Hospital of Shandong University, Jinan, Shandong, China

<sup>2</sup>Department of Gastroenterology, Affiliated Hospital of Binzhou Medical University, Binzhou, Shandong, China

<sup>3</sup>Department of Gastroenterology, West China Hospital of Sichuan University, Chengdu, Sichuan, China

**Abstract:** This paper aimed to study the curative effect of probiotics in the treatment of peptic ulcer (PU) infected with Helicobacter Pylory (H. Pylory). A total of 132 cases of patients with PU infected by H. Pylory who were received and treated by department of gastroenterology from Binjiang Hospital, Guangxi from May 2013 to 2014 were recruited in the study. They were divided into observation group and control group based on random number table, 66 cases in each group. Patients in observation group were given probiotics combined with triple therapy while patients in control group were treated by traditional triple therapy. After one-month treatment, all the patients were examined by <sup>14</sup>C urea breath test for checking the treatment condition of H. Pylory and reviewed by gastroscop for checking union of ulcer. In addition, clinical effect and improvement of digestive tract symptom were compared between two groups. It was found that, the content of <sup>14</sup>C urea detected by breath test was 95.15 dpm/mmol±8.34 dpm/mmol in observation group after treatment; eradication rate of H. Pylory was 87.9%; symptom remission rate was 97%; adverse reaction rate was 4.5%; total effective rate of clinical treatment was 97%; while in control group, the content of <sup>14</sup>C urea was 100.3 dpm/mmol±10.34 dpm/mmol, eradication rate was 63.6%, symptom remission rate was 93.9%, adverse reaction rate was 18.2%, and total effective rate was 83.3%. These results demonstrated that, the symptom remission rate of the observation group and the control group was not obvious, but the content of <sup>14</sup>C urea, eradication rate of H. Pylory, incidence of adverse reaction and total effective rate were of significant significance in two groups (P<0.05). In conclusion, probiotics combined with triple therapy for treating PU infected by H. Pylory can greatly improve the eradication rate of H. Pylory and increase recovery rate of patients, with less adverse reaction. Therefore, the method is worth for promotion.

**Keywords:** Probiotics; helicobacter pylori; peptic ulcer; treatment.

## INTRODUCTION

In digestive system, peptic ulcer (PU), a chronic and frequently-occurring disease with complex pathogenesis, brings great influence to the health and living quality of people. To date, too much gastric acid and Helicobacter Pylory (H. Pylory) infection are considered as the primary factors for the occurrence and recurrence of PU (Hua, 2010; Weifeng, 2014; Pingru *et al.*, 2010). Therefore, the key for treating PU clinically is to adopt effective measurement to prevent H. Pylory infection and reduce the recurrence of ulcer. But gastroenterologist is always difficult to clear about the drug that can effectively treat PU but with no drug reaction, improve eradication rate of H. Pylory and union rate of PU and reduce recurrence rate of disease. In recent years, radical treatment of H. Pylory usually uses triple and quadruple therapy containing antacids or bismuth combined with two antibiotics as the first-line treatment. However, that method induces many adverse reactions and long-term application weakens curative effect and tolerance of patients (Fulian, 2007; Xiuzhen *et al.*, 2008). Therefore, a therapy that can improve eradication rate of H. Pylory and reduce adverse reaction is of great importance for clinical treatment.

\*Corresponding author: e-mail: ljy@ibhsedu.com

Probiotics is reported by TV, newspaper and network news about its benefits. Clinical research finds that probiotics not only has broad-spectrum antimicrobial activity and regulation function for intestinal flora, but also has inhibition function for planting and growth of H. Pylory on gastric mucosa and inflammation and immune response after H. Pylory infection (Chenxi and Gaifang, 2014). However, the ingredients and action mechanism of probiotics have not been confirmed. This study achieved satisfactory clinical effect through treating PU infected by H. Pylory with probiotics combined with triple therapy and performing comprehensive nursing interventions.

## MATERIALS AND METHODS

A total of 132 patients with PU infected by H. Pylory who were treated by department of gastroenterology from Binjiang Hospital, Guangxi from May 2013 to 2014 were recruited in the study. They were divided into observation group and control group, 66 in each group. In observation group, there were 43 males and 23 females, with age ranging from 22 to 65 years (mean 38.6±7.8 years) and disease course ranging from 0.4 to 15 years (mean 6.8±3.2 years). Of the 66 patients, 42 patients were examined with duodenal (DU), 18 with gastric ulcer (GU)

and 6 with compound ulcer through gastroscopy. In control group, there were 40 females and 26 males, with age ranging from 25 to 63 years (mean  $37.8 \pm 8.2$  years) and disease course ranging from 0.6 to 14 years (mean  $7.2 \pm 3.5$ ). Of the 66 patients, 38 patients were examined with DU, 21 with GU and 7 with compound ulcer. Patients in two groups were with active ulcer. It was proved that all the patients also had H. Pylory infection by carrying out histopathologic examination on mucosa taking from antrum and urease test immediately. Clinical symptoms include acid regurgitation, nausea, and emesis and so on. In addition, patients who were suffering from gastric cancer, severe liver, heart and lung function failure, acute gastrointestinal bleeding, hematological system diseases and psychosis were excluded from the study. All the patients have not taken antibiotics within one month. Probiotics was 100 pellets Puritan's Pride probiotic capsule produced by PURITAN'S PRIDE, INC. Holbrook, NY 11741 U.S.A, containing calcium hydrophosphate, gelatin, Lactobacillus acidophilus, silicon dioxide and magnesium stearate. No statistical significance was found in baseline data such as age, gender, disease course, clinical symptoms and type of ulcer between two group ( $P > 0.05$ ), therefore, these cases were comparable. Research programme has approved by the medical ethics committee from Binjiang Hospital, Guangxi. The patents involves have sign informed consent. No patients withdrew from the study halfway. Comparison of part of data is shown in table 1.

Patients in two groups were all treated by triple therapy. Once the patients were found bleeding in acute digestive system, the following methods were adopted after the bleeding was stopped by hemostasis. Treatment of observation group: patients in observation groups were given 20mg omeprazole (once a day), 500mg clarithromycin (twice a day), 400mg metronidazole (three time a day) and 2 pellets of probiotics (twice a day). It should be noticed that, more than 4h was requested between the time taking probiotics and antibiotics. Patients were treated for one week, and one week later, they continued to take omeprazole for three weeks. Treatment of control group: patients in control group were given 20mg omeprazole (one a day), 500mg clarithromycin (twice a day), and 400mg metronidazole (three time a day) and treated by probiotic placebo. Patients in two groups were given no nonsteroidal antibiotics or cortical hormone. After three weeks of treatment, patients in two groups were reviewed by  $^{14}\text{C}$  urea breath test and gastroscop for observing the recovery of ulcer and eradication of H. Pylory.

After one month of treatment, patients in two groups were examined by  $^{14}\text{C}$  urea breath test to confirm the eradication of H. Pylory and by gastroscop to observe the union of ulcer. Meanwhile, mucosa taken from antrum was detected for H. Pylory. Improvement of clinical symptoms in two groups were observed and compared.

Determination criteria of curative effect were as follows: (1) union of ulcer: union of all ulcer and formation of scar is determined as recovery; shrinking of more than a half ulcer area is determined as improvement; shrinking of no more than a half ulcer area was determined as not healed; total effective rate = (recovery +improvement)/ sum\* 100%; (2) eradication criteria of H. Pylory: after one month of drug withdrawal, gastric mucosa biopsy was carried out on patients by endoscope. If result of  $^{14}\text{C}$  breathe test  $< 100$  dpm/mmol, then the examination result was negative, which indicated H. Pylory had been eradicated.

SPSS16.0 software was used for data processing. Enumeration data was processed by  $\chi^2$  test and measurement by t test.  $P < 0.05$  was considered that the difference had statistical significance.

## RESULTS

### *Comparison of effective rate in two groups*

After one month treatment, 39 patients were cured, 25 patients received effective treatment and 2 patients received ineffective treatment in observation group. It could be found that, the curative effect of observation group was distinctly better than control group (table 2).

### *Comparison of indexes related to the treatment in two groups*

No statistical significance was found in the comparison of symptom relief in two group ( $P > 0.05$ ), but eradication rate of H. Pylory in observation group was remarkably higher than control group ( $P < 0.05$ ). Three patients in observation group occurred adverse effects such as nausea, emesis, dizziness and diarrhea in the process of treatment and 9 patients in control group also had the adverse effects above. Difference of incidence rate of advertise effects was statistically significant ( $P < 0.05$ ). The advertise effects all disappeared when patients stopped taking drugs, and severe complications were not found. All the patients completed the treatment successfully (table 3).

## DISCUSSION

Probiotics is not only widely applied in adjuvant therapy for disease but also functioning well in other fields such as food science (Quanxin *et al.*, 2013; Jie *et al.*, 2014; Dan *et al.*, 2014). People are willing to use probiotics as they know more and more about its functions. Probiotics is more effective in the adjuvant therapy for digestive tract disease. To be specific, it can effectively improve the structure of intestinal flora, inhibit the excessive growth of enterobacteriaceae and lower the level of endotoxin. Probiotics, as a kind of active microflora beneficial to the health of human, is added in yoghourt, drinks and baby formulas (Quanxin *et al.*, 2013). In clinic, probiotic drugs

**Table 1:** Comparison of general data of patients in two groups (n=66)

Grouping	Gender		Type of ulcer			Age (year)	Course (year)
	Male	Female	DU	GU	Compound ulcer		
Control group	40	46	38	21	7	37.8±8.2	7.2±3.5
Observation group	43	23	42	18	6	38.6±7.8	6.8±3.2

**Table 2:** Comparison of effective rate in two groups' n (%)

Group	Recovery	Improvement	Ineffective	Total effective rate
Observation group	35(53.1)	29(43.9)	2(3.0)	64(97.0)
Control group	23(34.8)	32(48.5)	11(16.7)	55(83.3)
X <sup>2</sup> value	-	-	-	8.861
P value	-	-	-	<0.01

**Table 3:** Comparison of indexes related to the treatment in two groups (n=66)

Group	Symptom relief n (%)	<sup>14</sup> C urea content (dpm/mmol)	Eradication of H. Pylory N (%)	Adverse effects n (%)
Observation group	64(97.0)	95.15±8.34	58(87.9)	3(4.5)
Control group	62(93.9)	100.32±10.34	42(63.6)	12(18.2)
X <sup>2</sup> /t test	0.175	3.162	9.281	4.814
P value	>0.05	0.002	<0.05	<0.05

are widely applied to cure symptoms such as diarrhea, constipation and dyspepsia induced by alteration of intestinal flora.

Patients with PU infected by H. Pylory is likely to suffer from mucosal atrophy due to the weakened defense capability of gastric mucosa. As a result, inherent cells and fundus gland reduces, thus the diameter of ulcer area increases as the patients get older. Therefore, long-term drug taking is required in PU treatment and patients are also suggested to be reviewed and followed up at fixed period. Strong disease and health consciousness and good daily route are also required after hospital discharge, in order to gain good curative effect. Researches (Qiuzan and Qian, 2012; Lei, 2012) at home draw the conclusion that is consistent with this study that, triple therapy assisted by probiotics can achieve ideal effect in the treatment of PU infected by H. Pylory.

Curative effect of H. Pylory clinically is considered as good according to the following criteria: eradication rate of H. Pylory is more than 90%; ulcer heal well and symptoms disappear rapidly; patients are with low drug resistance and high tolerance; the treatment method is simple with short treatment course; the price is reasonable for patients to afford. This paper treated the patients with PU infected by H. Pylory with probiotics combined with triple therapy. It could be seen from the treatment result that, the total effective rate in observation group (97%) improved significantly compared to control group (83.3%); eradication rate of H. Pylory in observation group also improved distinctly compared to control group, with little stimulation to gastrointestinal tract of patients. Reason is considered as: probiotics can inhibit

reproduction of H. Pylory, thereby decreasing the total amount of pathogenic bacterium; moreover, probiotics is also beneficial for recovery of intestinal flora, thereby strengthening the defense and immunity of gastric mucosa (Huizhen *et al.*, 2011).

## CONCLUSION

To sum up, this study treats patients with PU infected by H. Pylory with probiotics combined with triple therapy, and also adopts comprehensive nursing intervention. The treatment distinctly relieves clinical symptoms and greatly eliminates H. Pylory with few adverse effects, thereby being worth to be promoted and applied.

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