EDITORIAL

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Mucolytics as Adjuvant Agent to Improve *Helicobacter pylori* Eradication Rate: Still Long and Winding Road to Positive Results

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See "Additive Effect of Pronase on the Eradication Rate of First-Line Therapy for *Helicobacter pylori* Infection" by Chang Seok Bang, et al. on page 340, Vol. 9. No. 3, 2015

Adjuvant agents to the *Helicobacter pylori* eradication regimen have been continuously studied to improve the efficacy of eradication therapy. One of these adjuvants consists of a material that destroys biofilm since several studied demonstrated that *H. pylori* forms biofilm that likely helps it survive on the gastric mucosa epithelium.[1,2] Antibiofilm agents could be divided into several categories: enzymes/degrading substances, quorum-sensing inhibitors, peptides, disinfectants/detergents, and others.[3]

Pronase is a kind of proteolytic enzyme and it has been used as endoscopic premedication for the enhanced visibility of gastric mucosa during several decades. Based on the idea that this agent causes degradation of gastric mucus and breaking the barrier of surface mucous gel layer, in this issue of *Gut and Liver*, Bang *et al*.[4] investigated the adjuvant effect of pronase on standard triple therapy for *H. pylori* infection. The authors randomly allocated 116 *H. pylori*-infected patients to receive either the 7-day standard triple therapy, which consists of proton pump inhibitor with amoxicillin (1,000 mg) and clarithromycin (500 mg) twice a day or the pronase (20,000 tyrosine units) twice a day combined with standard triple therapy. Unfortunately, the main results of this study were in conflict with a previous study.[5] In the intention-to-treat analysis, the eradication rate of standard triple therapy group and pronase-combination group were 76.4% and 56.1%, respectively (p=0.029). In the per-protocol analysis, the eradication rate were 87.5% and 68.1%, respectively (p=0.027).

Although the results of this study were negative, this information is useful for some clinicians who are exploring potential candidate for biofilm-destroying agents to improve *H. pylori* eradication rate. Recently, we evaluated the adjuvant effects of N-acetylcysteine on first-line sequential therapy for *H. pylori* infection since there were several reports which suggested the benefit of this mucolytic agent to *H. pylori* eradication therapy in a mouse model and human.[6,7] The *H. pylori* eradication rate was numerically higher in N-acetylcysteine-added group than in sequential therapy group (unpublished data). Antibiofilm agents might be considered as fascinating adjuvants for *H. pylori* eradication regimen. However, it is very difficult to prove their efficacy in the real field. Furthermore, in case of mucolytics, there is a concern that it might impede healing of peptic ulcer, which is a main indication of *H. pylori* eradication.

In conclusion, in-depth studies are required regarding the clinical meaning of biofilm formed by *H. pylori* and antibiofilm agents.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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