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Gastric Preparation for Upper Endoscopy

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See "Effectiveness of Premedication with Pronase for Visualization of the Mucosa during Endoscopy: A Randomized, Controlled Trial" by Gyu Jin Lee, Sun Jung Kim, Seun Ja Park, et al., on page 161-164

Rapid technological advancements have been noted in endoscopy in recent years.¹ Current standard endoscopes can increase magnification up to 30 times and provide excellent images of mucosal surface of bowel wall. Zoom endoscope can optically magnify an image far more, up to 150 times. High-definition endoscopes generate images of more than one million pixels and provide much clearer images than those produced by standard endoscopes. Moreover, endoscopes with enhanced imaging technology such as narrow-band imaging (NBI) or multiband imaging further assist diagnosis and characterization of gastrointestinal mucosal lesions. Despite these advancements of technological aspects, the unclean mucosal surface of the stomach can make these high-end pieces of equipment virtually useless.

The importance of bowel preparation is highlighted in colonoscopy.² Poor preparation of the colon leads to prolonged examination time, incomplete procedures, and more importantly, missed significant lesions. Likewise, an unclean gastric mucosal surface may cause similar problems in upper endoscopy. Foams and bubbles are frequently encountered in an unprepared stomach, thus most of the upper endoscopy examinations are preceded by premedication with defoaming agents such as dimethylpolysiloxane (DMPS). Mucus on the gastric surface is another problem in visualization of the target lesion. Pronase is a proteolytic enzyme isolated in 1962 from the culture filtrate of *Streptomyces griseus*, which has been used as a raw material to prepare anti-inflammatory and

digestive enzymes.³ Initially, this enzyme was used as a premedication to remove gastric mucus for roentgenographic examinations of the stomach.⁴ Then, the enzyme was suggested to improve visibility during conventional upper endoscopy and chromoendoscopy.^{5,6} It has also been reported that premedication for conventional endoscopic ultrasound by using a mixture of pronase and bicarbonate decreases the number of gastric wall and luminal hyperechoic artifacts mainly caused by mucus of stomach.^{7,8} A recent study assessed whether endoscopic flushes of pronase with bubble-bursting agent (gascon) is as effective as their use as a premedication to decrease inconvenience.⁹ The study showed, however, that endoscopic spraying of these bubble-bursting and mucolytic agents was not able to offer equivalent improvements in endoscopic mucosal visibility when compared with their standard pre-endoscopic drink of these agents.

In a paper published in *Clinical Endoscopy*, Lee et al.¹⁰ reported a study that evaluated the effectiveness of premedication with pronase for improving visibility during upper endoscopy. The authors showed that 20 minutes of premedication with DMPS, pronase, and sodium bicarbonate significantly lowers mucosal visibility scores (i.e., produces better visibility) than methods without pronase. Because flushing frequency was also the lowest and the duration of the examination was the shortest with the addition of pronase, the burden on the endoscopist was also decreased with that regimen. The authors elaborated this study by reviewing previous reports in deciding the pronase concentration and water amount.

This study has several limitations. First, the authors used a visibility scoring system utilizing three grades rather than the system consisting of four grades, which has been adopted by most of the previous studies. The problem of this simplified three grade system is that it could over- or under-estimate the visibility of the mucosa. Second, a small difference in the

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score might not translate into a clinically meaningful change. Third, pronase should be accompanied by sodium bicarbonate intake because the resultant neutralization of gastric acid is necessary for the enzyme to be active. However, the taste of these premedications is not palatable. This may affect compliance and a patient's willingness to undergo future endoscopies, a matter which was not considered in this study. Fourth, mucus production is more prominent in corpus-dominant gastritis caused by *Helicobacter pylori* infection. Thus, infection rates of the organism in each group should be addressed as a baseline characteristic. Lastly, the duration of premedication is uncertain. The authors insisted that their study is the first to statistically evaluate the effect of the duration of premedication. There was no significant difference in the mean visibility score between the 10- and the 20-minute premedication group. Thus, their recommendation for a 20-minute premedication seems somewhat vague.

There are several points to be addressed for a further study. One is that the effectiveness of pronase should be evaluated in terms of clinical outcomes such as detecting meaningful gastric lesions or early gastric cancers. Such a study should be a much larger one that is performed as a multi-center trial. Another point to be addressed is that similar studies are needed for endoscopes with enhanced imaging technologies such as NBI or magnifying endoscopy.

In conclusion, premedication for endoscopy using pronase seems to be effective. However, it should be emphasized that further improvement is needed in respect to the inconvenience caused by this premedication. Selecting subgroups that can benefit from this premedication, and finding methods that can be used during endoscopy rather than as a pre-

medication need to be addressed in the future.

Conflicts of Interest

The author has no financial conflicts of interest.

REFERENCES

1. ASGE Technology Committee, Varadarajulu S, Banerjee S, et al. GI endoscopes. *Gastrointest Endosc* 2011;74:1-6.
2. Froehlich F, Wietlisbach V, Gonvers JJ, Burnand B, Vader JP. Impact of colonic cleansing on quality and diagnostic yield of colonoscopy: the European Panel of Appropriateness of Gastrointestinal Endoscopy European multicenter study. *Gastrointest Endosc* 2005;61:378-384.
3. Chang CC, Chen SH, Lin CP, et al. Premedication with pronase or N-acetylcysteine improves visibility during gastroendoscopy: an endoscopist-blinded, prospective, randomized study. *World J Gastroenterol* 2007;13:444-447.
4. Koga M, Arakawa K. On the application of enzymatic mucinolysis in X-ray diagnosis of the stomach. *Nihon Igaku Hoshasen Gakkai Zasshi* 1964;24:1011-1031.
5. Ida K, Okuda J, Nakazawa S, et al. Clinical evaluation of premedication with KPD (pronase) in gastroendoscopy: placebo-controlled double blind study in dye scattering endoscopy. *Clin Rep* 1991;25:1793-1804.
6. Fujii T, Iishi H, Tatsuta M, et al. Effectiveness of premedication with pronase for improving visibility during gastroendoscopy: a randomized controlled trial. *Gastrointest Endosc* 1998;47:382-387.
7. Sakai N, Tatsuta M, Iishi H, Nakaizumi A. Pre-medication with pronase reduces artefacts during endoscopic ultrasonography. *Aliment Pharmacol Ther* 2003;18:327-332.
8. Han JP, Hong SJ, Moon JH, et al. Benefit of pronase in image quality during EUS. *Gastrointest Endosc* 2011;74:1230-1237.
9. Bhandari P, Green S, Hamanaka H, et al. Use of gascon and pronase either as a pre-endoscopic drink or as targeted endoscopic flushes to improve visibility during gastroscopy: a prospective, randomized, controlled, blinded trial. *Scand J Gastroenterol* 2010;45:357-361.
10. Lee GJ, Kim SJ, Park SJ, Kim HH, Park MI, Moon W. Effectiveness of premedication with pronase for visualization of the mucosa during endoscopy: a randomized, controlled trial. *Clin Endosc* 2012;45:161-164.