World Journal of Gastroenterology

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DOI: 10.3748/wjg.v2.iSuppl1.193

World J Gastroenterol 1996 September 25; 2(Suppl1): 193
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

Approach to quantitation of duodenogastric reflux by ultrasonography

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Author contributions: All authors contributed equally to the work.

Original title: *China National Journal of New Gastroenterology* (1995-1997) renamed *World Journal of Gastroenterology* (1998-).

Received: November 3, 1995
Revised: April 21, 1996
Accepted: July 19, 1996
Published online: September 15, 1996

Abstract

AIM: Duodenogastric reflux (DGR) would damage gastric mucosa and cause symptoms such as epigastric pain, nausea and vomiting. Obtaining an exact measurement of DGR in human still presents a problem. Previous methods were either invasive or radioactive. The criteria for evaluation were not well standardized. In order to search for a simple and applicable method for DGR, we developed a Doppler imaging contrast and investigated DGR in participants by means of color Doppler ultrasonography.

METHODS: Normal saline, meat soup and lipovenose were tested *in vitro* to select a suitable contrast. 10 healthy subjects and 16 patients with peptic ulcer or erosive gastritis were measured. After ingesting Lipovenose 20 g, the probe with 3.5 MHz transducer was positioned at the level of transpyloric plane. Measurements were performed by replaying videotape. Reflux frequency was defined as the number of episodes of DGR detected during 5 min observation. Reflux index was expressed as the multiplication of the frequency of DGR and mean distance of color signal from pylorus.

RESULTS: Color signal were clearly detected with Lipovenose but not with normal saline and meat soup in the vitro test color signals with meat soup was not clear because of the difficulty of an available oil concentration while no color signal with saline appeared. Detection of transpyloric flow by color Doppler was found in 25 of 26 participants. The mean level of reflux frequency and reflux index is 1.7 ± 0.5 and 4.6 ± 1.7 in 10 healthy subjects, but 8.7 ± 1.5 and 23.4 ± 4.5 in 16 patients as compared with healthy subjects.

CONCLUSION: Our result demonstrated that Lipovenose is a proper contrast for observing fluid reflux. Ultrosonography with color Doppler could be used to measure DGR noninvasing and quantitatively.

Key words: Duodenogastric reflux; Ultrasonography; Quantitative

Wu BY, Wang MW, Wang J. Approach to quantitation of duodenogastric reflux by ultrasonography. *World J Gastroenterol* 1996; 2(Suppl1): 193 Available from: URL: http://www.wjgnet.com/1007-9327/full/v2/iSuppl1/193.htm DOI: http://dx.doi.org/10.3748/wjg.v2.iSuppl1.193

E- Editor: Liu WX

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