World Journal of Gastroenterology

Submit a Manuscript: http://www.wjgnet.com/esps/
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
DOI: 10.3748/wjg.v2.i1.34

World J Gastroenterol 1996 March 25; 2(1): 34-35
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

Comparison between biopsy and brilliant blue chromo-endoscopy in gastric cancer

Lu Su, Min Shi, Bin Liu, Mei-Yan Hong, Hong-Zhen Pan

Lu Su, Min Shi, Bin Liu, Mei-Yan Hong, Hong-Zhen Pan, Department of Digestive Diseases, Hainan Provincial Worker's Hospital, Haikou 570311, Hainan Province, China

Author contributions: All authors contributed equally to the work.

Correspondence to: Dr. Su Lu, Associate Professor, Department of Digestive Diseases, Hainan Provincial Worker's Hospital, Haikou 570311, Hainan Province, China
Telephone: +86-898-8668355

Received: March 3, 1995
Revised: June 16, 1995
Accepted: December 17, 1995
Published online: March 25, 1996

Abstract

AIM: To increase the detection rate of early gastric cancer and the positive rate of biopsy, brilliant blue (BB) chromo-endoscopy and routine endoscopy were used to examine 54 patients with gastric cancer.

METHODS: The BB staining method and steps involved the examinee being injected intramuscularly with 20 mg of Anisodamini Hydromidum, taking oral BB solution and being examined by endoscope 40-60 min later. All of the examinees were also subjected to a routine endoscopic examination.

RESULTS: Sixteen of the total 54 patients were diagnosed with early gastric cancer; the detection rate of early cancer was 29.4%. Among those, 15 cases were discovered by BB chromo-endoscopy and only 5 cases were made by the routine endoscopy. The sensitivity of BB chromo-endoscopy was significantly higher than the routine endoscopy for early gastric cancer ($P < 0.01$). In addition, the BB chromo-endoscopy had a higher positive rate of biopsy than the routine endoscopy (70.4% (38/54) to 94.4% (51.54), $P < 0.01$)

CONCLUSION: The BB chromo-endoscopy is more useful than routine endoscopy for following-up gastric precancerous lesions.

Key words: Stomach neoplasms/diagnosis; Biopsy; Gastroscopy

Su L, Shi M, Liu B, Hong MY, Pan HZ. Comparison between biopsy and brilliant blue chromo-endoscopy in gastric cancer. *World J Gastroenterol* 1996; 2(1): 34-35 Available from: URL: http://www.wjgnet.com/1007-9327/full/v2/i1/34.htm DOI: http://dx.doi.org/10.3748/wjg.v2.i1.34

INTRODUCTION

Gastric carcinoma is typically diagnosed at a late stage and therefore has a poor prognosis, as reflected by the low 5-year survival rates which are reported at 30%-40%. In contrast, the 5-year survival rate for *in situ* adenocarcinoma of the stomach, which is more frequently detected at the early stage, is 95%. Detection of an early gastric carcinoma lesion, however, is difficult by traditional diagnostic methods. Therefore, many gastroenterologists and oncologists have sought the development and application of different methods in the hopes of raising the detection rate of early gastric cancer and the biopsy positive rate.

This paper presents the results of our investigation that was conducted from 1988 to 1994 on cases of gastric malignant lesions diagnosed by brilliant blue (BB) chromo-endoscopy and biopsy.

MATERIALS AND METHODS

Subjects

During the last 5 years, we examined a total of 458 patients with gastric cancer and gastric benign lesions and followed-up patients with gastric precancerous lesions using the BB chromo-endoscopy procedure as well as the routine endoscopy procedure (*i.e.*, GIF or video-endoscope). We collected the data in order to summarize the total 54 cases of gastric cancer that were diagnosed by both of the methods.

Methods

Each patient was first injected with 20 mg Anisodamini Hydromidum (to suppress gastric motility and acid secretion), and then drank a cup of BB solution that was composed of 150 mg of BB, 20 mg of g-chymotrypsin, 1.2 g of sodium bicarbonate, 5 mL of dimethypolysiloxane and 105 mL of distilled water. Afterward, the patient lay down on a bed equipped for rotation in a counterclockwise manner, so that the body would be shifted from prone to supine position for 10 min, with a 30-s pause in each; the objective of this physical manipulation was to facilitate distribution of the solution over the whole surface of the gastric mucosa. Forty to 60 min later, the endoscopic examination was performed.

RESULTS

Staining appearances of gastric mucosa

Normal mucosa showed a clearly observable gastric areola ditch, for which the areola appeared as a light blue regular network. Benign lesions, such as an ulcer or polyp, showed a light blue coloration on the surface of the polyp or on the edge of the ulcer, with normal areola construction. Malignant lesions showed clearly with a reddish coloration and a notable lack of normal areola construction.

Detection rate of early gastric cancer

Of the 54 patients that presented observable staining with BB, 17 were diagnosed as early gastric cancer. All of them were treated by operation, and the findings of which included involvement of the mucosa (n = 9) or the submucosa (n = 7) and extension to the muscle of the stomach wall (n = 1). Ultimately, 16 cases were demonstrated as early cancer, among which 1 was classified as stage Ⅱa, 4 as stage Ⅱb, 1 as stage Ⅱa + Ⅱc, 3 as stage Ⅱc, and 7 as stage Ⅲ or Ⅱc + Ⅲ. The detection rates of early gastric cancer by both endoscopic procedures was 29.6% (16/54).

It is noteworthy that the tumors of the 3 cases with Ⅱb cancer were situated in a benign gastric ulcer; staining with BB showed three flat red lesions near the ulcer. Four specimens were obtained from the lesion by biopsy; histological examination indicated that two were signet-ring cell cancer and the other was adenocarcinoma. The patients were treated by operation. The ulcer itself was demonstrated to be a benign lesion in each case, but the proximal mucosa (1.5-2.0 cm) was determined to be cancerous.

Five cases of early gastric cancer were diagnosed by routine endoscopy and confirmed by biopsy. Among them, 1 case had not been demonstrated by biopsy of BB endoscopy. Of 16 patients with early gastric cancers, 15 were discovered by BB endoscopy, yielding a sensitivity rate of 93.8% (15/16); the 5 cases discovered by routine endoscopy indicated a sensitivity rate of 31.3% (5/16). Thus, the BB chromo-endoscopy was more sensitive for discovering early cancer than the routine endoscopy ($P < 0.01$, by the McNemar χ^2 test).

All 54 patients were examined by BB chromo-endoscopy and biopsy specimens were obtained from the red-stained area. Fifty-one of those were determined to be malignant lesions by histopathology, with the remaining patients being diagnosed as early cancer (n = 1) and advanced gastric cancer (n = 2). Thus, the biopsy positive rate was 94.4% (51/54). The 54 biopsy specimens obtained by routine endoscopy showed 37 as malignant lesions by pathology; the remaining specimens were classified as early cancer (n = 11) and advanced cancer (n = 6). The positive rate of biopsy by BB chromo-endoscopy for gastric cancer was clearly superior to the routine endoscopy according to the statistical significance findings by the McNemar χ^2 test.

DISCUSSION

The routine endoscopy procedure has been widely used throughout clinics to examine and follow-up gastric lesions. However, some small lesions, especially the flat-type of early cancer, are very easy to miss by routine endoscopy. The magnifying endoscope can help to increase the detection rate of such early gastric cancers. Yokoyama, using magnifying endoscopy, has checked 84 cases of depressed-type early gastric cancer and found the positive rate to be 81.4%, with the rate from chromo-endoscopy as 84.9% and that from routine endoscopy as only 65%. Moreover, the positive rates of the magnifying and chromo-endoscopy procedures were significantly higher than that of the routine endoscopy procedure ($P < 0.01$). Chromo-endoscopy is an accurate, simple method and no special equipment is required. Ikeda reported an intra-arterial dye (IAD) method for diagnosing stomach cancer, and endoscopically diagnosed 40 cases of gastric cancer (15 early, 25 advanced) with it. Seventeen cases were similarly examined using a pharmaco-angiographic technique before dye injection (PIAD). The author concluded that these techniques permitted more precise endoscopic delineation of the size and extent of cancerous lesions, particularly those that were otherwise obscured by overlying intact epithelium. Herein, we describe our clinical efforts with chromo-endoscopy in examination of 54 cases of gastric cancer. Ultimately, 16 cases of early cancer were discovered, which included 3 remarkable cases of Ⅱb early cancers situated proximal to benign gastric ulcers ($P < 0.01$).

Because some malignant lesions are similar to benign lesions, especially micro gastric cancers, they are likely to be missed if the target region for biopsy is incorrectly chosen. Direct brushing, selective lavage and biopsy imprint can reportedly raise the positive rate of routine endoscopy from 70%-80% to 85%-90.7%[1], and the positive rate of re-biopsy to 91.8%[2], and even up to 93.6% when more biopsy specimens (> 8) are taken. The combined use of three techniques (endoscopy, biopsy and cytology) can reportedly increase the positive diagnosis rate to 95.4%. Our study showed that the BB chromo-endoscopy procedure is significantly more sensitive, at 94.4% (51/54), than the routine endoscopy procedure ($P < 0.01$).

Some pathologists have purported that moderate and severe dysplasia may coexist with the initial stages of cancer[3], while others have demonstrated that dysplasia regresses in the majority of cases and that progression occurs in only a minority of cases[4]. Indeed, among 46 patients who had severe dysplasia for more than 3 years, only 4 developed gastric carcinoma. In our study, early cancer coexisted with moderate or severe dysplasia and benign gastric ulcers coexisted with Ⅱb type early cancer. The BB chromo-endoscope is a safer and simpler procedure than that of other dye-based endoscopies. BB is also an additive material of food stuffs that is approved for human consumption by the World Health Organization, having no poisonous effect. Thus, the BB-based procedure provides a simple means of detection for gastric lesions. We recommend that the BB chromo-endoscope procedure should be used for frequent checking of precancerous lesions in order to facilitate the convenient and sensitive discovery of early gastric cancer.

REFERENCES

1 **Chambers LA**, Clark WE. The endoscopic diagnosis of gastroesophageal malignancy. A cytologic review. *Acta Cytol* 1986; **30**: 110-114 [PMID: 3457502]

2 **Gupta RK**, Rogers KE. Endoscopic cytology and biopsy in the diagnosis of gastroesophageal malignancy. *Acta Cytol* 1983; **27**: 17-22 [PMID: 6573825]

3 **Ming SC**, Bajtai A, Correa P, Elster K, Jarvi OH, Munoz N, Nagayo T, Stemmerman GN. Gastric dysplasia. Significance and pathologic criteria. *Cancer* 1984; **54**: 1794-1801 [PMID: 6478415 DOI: 10.1002/1097-0142 (19841101)54: 9 < 1794: : AID-CNCR2820540907 > 3.0.CO; 2-W]

4 **Hattori T**. Histological and autoradiographic study on development of group Ⅲ lesion (dysplasia grade Ⅲ) in the stomach. *Pathol Res Pract* 1985; **180**: 36-44 [PMID: 4034430 DOI: 10.1016/S0344-0338 (85)80072-8]

S- Editor: Filipodia **L- Editor:** Jennifer **E- Editor:** Liu WX

Published by **Baishideng Publishing Group Inc**
8226 Regency Drive, Pleasanton, CA 94588, USA
Telephone: +1-925-223-8242
Fax: +1-925-223-8243
E-mail: bpgoffice@wjgnet.com
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
http://www.wjgnet.com

ISSN 1007-9327