

The optimal endoscopic screening interval for detecting early gastric neoplasms CME

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Background: The optimal interval between endoscopic examinations for detecting early gastric neoplasms, including gastric adenomas, has not previously been studied.

Objective: To clarify the optimal interval between endoscopic examinations for the early diagnosis of both gastric cancers and adenomas.

Design: Retrospective study.

Setting: University-affiliated tertiary-care hospital, Seoul, Korea.

Patients: Patients who were treated for gastric neoplasms between January 2008 and August 2013.

Interventions: Questionnaire survey for interval between the penultimate endoscopy and diagnosis of a gastric neoplasm. A total of 846 patients were divided into 5 groups according to the interval between endoscopic examinations.

Main Outcome Measurements: The proportion of gastric neoplasms treated with endoscopic submucosal dissection and the proportion of advanced gastric cancers according to the interval between endoscopic examinations.

Results: In total, 197, 430, and 219 patients were diagnosed with gastric adenoma, early gastric cancer, and advanced gastric cancer, respectively. In multivariate analysis, the proportion of gastric neoplasms treated with endoscopic submucosal dissection was significantly higher in the ≤ 12 months, 12 to 24 months, and 24 to 36 months endoscopy interval groups than in the no endoscopy within 5 years group (all $P < .001$). In addition, the proportion of advanced gastric cancers was significantly lower in the ≤ 12 months and 12 to 24 months endoscopy interval groups than in the no endoscopy within 5 years group (all $P < .001$).

Limitations: Retrospective study and recall bias.

Conclusion: Annual endoscopy cannot facilitate the detection of endoscopically treatable gastric neoplasms compared with biennial or triennial endoscopy. We recommend biennial endoscopic screening for gastric neoplasms in order to increase the proportion of lesions discovered while they are still endoscopically treatable and to reduce the number of lesions that progress to advanced gastric cancer. (Gastrointest Endosc 2014;80:253-9.)

Abbreviations: AGC, advanced gastric cancer; EGC, early gastric cancer; ESD, endoscopic submucosal dissection.

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Gastric cancer is one of the major causes of cancer-related death worldwide, and almost 990,000 cases of gastric cancer are detected annually.¹ The prognosis of patients with gastric cancer depends on the tumor stage.²⁻⁴ In Korea and Japan, a mass screening program that uses upper endoscopy and gastric fluoroscopy has been introduced to detect gastric cancer while it is still at an early stage.^{5,6} In addition, a regional population study revealed that deaths from gastric cancer decreased after the introduction of mass endoscopic examination,⁷ and a previous United Kingdom-based study showed that annual endoscopic surveillance in patients with atrophic gastritis or intestinal metaplasia could detect most new tumors sufficiently early to allow a major improvement in survival.⁸ The National Cancer Screening Program in Korea recommends biennial gastric cancer screening for adults aged 40 years and older.⁶ In addition, many reports suggested that 2 to 3 years is an optimal screening interval.⁹⁻¹² However, these studies only included patients who were diagnosed with gastric cancer. As endoscopic resection has become increasingly used for the treatment of gastric neoplasms, it is becoming increasingly important to determine whether an interval of ≤ 1 year between endoscopies would facilitate the detection of early gastric neoplasms that could be treated by using endoscopic resection. One study from Korea revealed that annual screening improved the detection of early stage and endoscopically treatable gastric cancer.¹³ That study, however, included a relatively small number of patients with gastric cancer and no patients with gastric adenoma. It is important to include adenoma in these studies for several reasons. First, almost all adenomas that were resected by endoscopic submucosal dissection (ESD) were diagnosed by endoscopic screening.¹⁴ Second, endoscopic screening aims both to reduce gastric cancer-related mortality and to detect gastric neoplasms that can be treated in a way that better preserves organs, compared with surgery. As far as we are aware, no previous studies on optimal endoscopic screening intervals have included gastric adenomas. We aimed to evaluate the optimal interval between endoscopic examinations for the early diagnosis of both gastric cancers and adenomas.

METHODS

Patients

We obtained demographic and clinical data prospectively and analyzed them retrospectively. Our data were derived from patients diagnosed with gastric neoplasms including gastric adenoma and gastric cancer in Severance Hospital, Seoul, Korea, between January 2008 and August 2013. In order to determine the optimal interval between endoscopy screening examinations for gastric neoplasms, we conducted a questionnaire survey, in part to establish the period from the penultimate endoscopy to the diagnosis and the identification of GI symptoms, by interview at outpatient

Take-home Message

- Annual endoscopy could not facilitate the detection of gastric neoplasms treated with endoscopic submucosal dissection compared with biennial or triennial endoscopy.
- Biennial endoscopy is recommended for increasing the proportion of gastric cancers detected while still endoscopically treatable and for reducing the number of lesions that progress to advanced gastric cancers.

clinics or by a telephone poll. Questionnaires were completed by 917 patients. Of these, 39 patients aged < 40 years were excluded. In addition, 32 patients who underwent a penultimate endoscopy within 6 months of the diagnosis of a gastric neoplasm were excluded because of the possibility that they could have undergone endoscopy because of a misdiagnosis of symptomatic gastric cancer or an uncertain diagnosis of gastric cancer. The remaining 846 patients were enrolled in this study and were classified according to the endoscopy interval as follows: (1) ≤ 12 months, (2) 12 to 24 months, (3) 24 to 36 months, (4) 36 to 60 months, and (5) no endoscopy within 5 years. These patients were then grouped by diagnosis (gastric adenoma, early gastric cancer [EGC], and advanced gastric cancer [AGC]). The study flow diagram is shown in [Figure 1](#). The Institutional Review Board of our hospital approved this study.

Treatment method

The standard treatment modality for gastric cancer without evidence of distant metastasis is radical gastrectomy. However, EGCs that appeared to meet the indication for ESD were treated with ESD. The indications for ESD, as proposed by Gotoda et al,¹⁵ are as follows: (1) differentiated intramucosal adenocarcinoma < 3 cm in diameter without lymphovascular invasion, irrespective of ulcer findings; (2) differentiated intramucosal adenocarcinoma without lymphovascular invasion and negative for ulceration, irrespective of tumor size; (3) undifferentiated intramucosal cancer < 2 cm without lymphovascular invasion and ulcer findings; and (4) differentiated adenocarcinomas < 3 cm with minimal submucosal invasion (< 500 μm) and without lymphovascular invasion. All lesions were assessed by endoscopy and biopsy before ESD or surgery. Therefore, some lesions, treated with ESD as an initial treatment, were known to be beyond indication after ESD. These patients subsequently underwent surgery as treatment for gastric cancer. Gastric cancers with distant metastasis were treated with palliative chemotherapy. Patients who were diagnosed with adenoma underwent ESD.

Gross and histopathologic evaluation

Tumor location was endoscopically evaluated and classified by the Japanese Gastric Cancer Association

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