Accuracy of biopsy for the preoperative diagnosis of superficial nonampullary duodenal adenocarcinoma

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Background and Aims: Endoscopic biopsy sampling for the diagnosis of duodenal adenocarcinoma is not perfect. We investigated the accuracy of biopsy specimen diagnoses of superficial nonampullary duodenal epithelial tumors (NADETs).

Methods: Clinicopathologic data were retrospectively reviewed for 95 superficial NADETs from 95 patients who underwent endoscopic resection. Preoperative diagnoses based on biopsy specimens were compared with histologic diagnoses of resected specimens.

Results: Among the 21 lesions with biopsy specimen diagnoses of carcinoma, 12 (57.1%) were histologically diagnosed as adenomas after resection. Among the 74 lesions with biopsy specimen diagnoses of adenoma, 15 (20.3%) were histologically diagnosed as carcinomas after resection. The duodenal biopsy specimen predicted final histologic diagnoses of carcinoma with a sensitivity of 37.5% (95% CI, 18.8-59.4), specificity of 83.1% (95% CI, 72.3-91.0), accuracy of 71.6% (95% CI, 61.4-80.4), positive predictive value of 42.9% (95% CI, 21.8-66.0), and negative predictive value of 79.7% (95% CI, 68.8-88.2). Among 61 cases considered suitable for EMR, treatment modality was converted from EMR to endoscopic submucosal dissection because of the nonlifting sign in 15 cases (24.6%).

Conclusions: The accuracy of duodenal biopsy sampling was relatively low. Duodenal biopsy sampling may induce unexpected fibrosis. New endoscopic modalities that can improve preoperative diagnosis yield of NADETs are eagerly awaited. (Gastrointest Endosc 2017;86:329-32.)

Epithelial duodenal tumors are relatively rare, with primary duodenal carcinomas comprising only approximately .5% of malignant GI tumors.[1] However, the incidence of duodenal carcinoma has been increasing in the past 2 decades. Surgical treatment of nonampullary duodenal epithelial tumors (NADETs) is invasive because of anatomic complexities.[2] Recent developments in endoscopic technology, such as high-resolution endoscopy and image-enhanced endoscopy, could increase the chances of detecting superficial NADETs.[3] Early detection by endoscopy promotes minimally invasive treatment such as endoscopic resection.[4] Preoperative diagnosis of superficial NADETs is important to determine the treatment strategy. However, the accuracy of biopsy sampling is not perfect. Because of the low incidence rate of superficial NADETs, there are few large-scale studies.[5,6] The accuracy of duodenal biopsy sampling still remains unknown. In the present study, preoperative diagnoses based on biopsy specimens were compared with histologic diagnoses of resected specimens, and the accuracy of duodenal biopsy sampling was assessed.

Abbreviations: CI, confidence interval; ESD, endoscopic submucosal dissection; NADET, nonampullary duodenal epithelial tumor.

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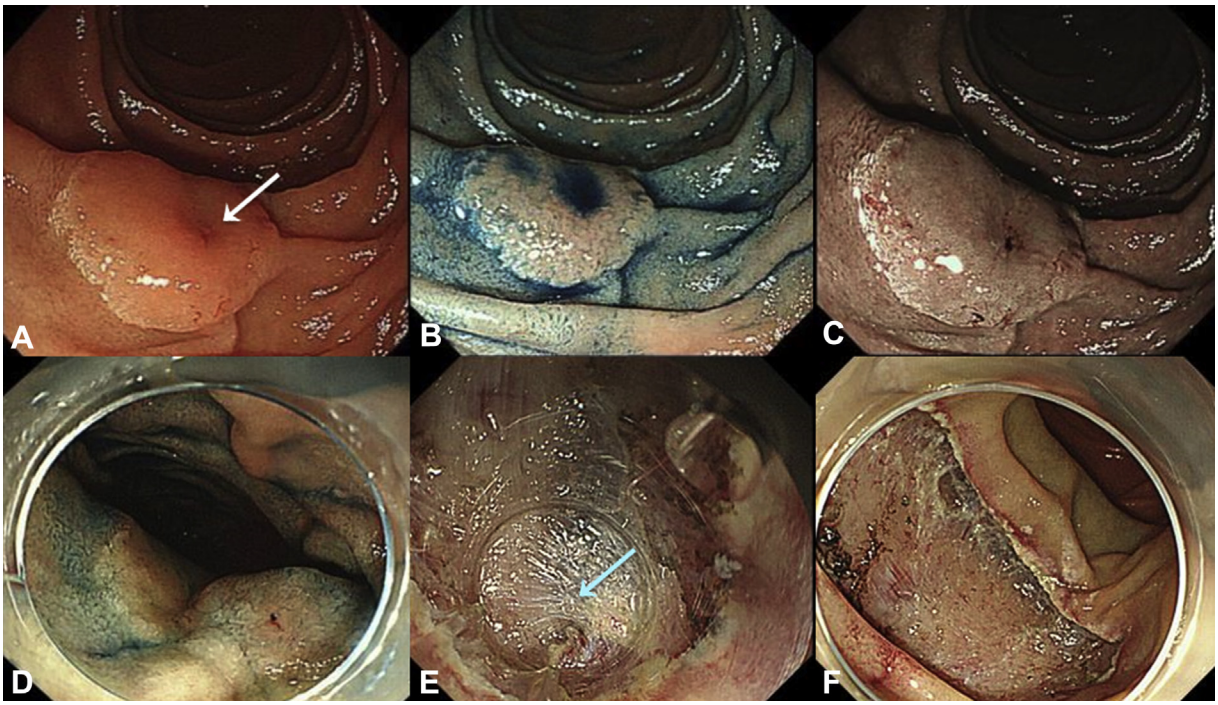

Figure 1. Duodenal biopsy sampling could induce unexpected fibrosis. **A,** A small elevated lesion was located in the second part of the duodenum. A biopsy sample had been taken before endoscopic treatment, and the lesion had a biopsy scar (*arrow*). **B,** Chromoendoscopy with indigo carmine. **C,** Narrow-band imaging. **D,** We tried to perform EMR, but nonlifting was overt after submucosal injection. **E,** We had no choice but to perform ESD. Submucosal fibrosis (*arrow*) was recognized in accordance with the biopsy site during the ESD. **F,** Mucosal defect after ESD. *ESD*, endoscopic submucosal dissection.

METHODS

Patients

Clinicopathologic data were retrospectively reviewed for 120 superficial NADETs from 120 consecutive patients who underwent endoscopic resection between January 2014 and February 2016 at the Division of Research and Development for Minimally Invasive Treatment, Cancer Center, Keio University Hospital. Twenty-five patients had not undergone preoperative biopsy sampling before the endoscopic resection. Ninety-five superficial NADETs in 95 patients with preoperative biopsy sampling were evaluated for the accuracy of preoperative diagnoses.

Clinicopathologic assessment

Clinicopathologic findings, including age, sex, tumor size, location, macroscopic type, preoperative diagnoses based on biopsy sampling, and histologic diagnoses of resected specimens, were reviewed. The endoscopic modality was standard, whereas light endoscopy and chromoendoscopy with indigo carmine and/or narrow-band imaging with magnification. Biopsy samples and resected specimens were pathologically assessed by experienced pathologists and were graded according to the revised Vienna classification.[7] Duodenal tumors less than 15 mm were considered suitable for EMR. However, we sometimes have to convert treatment modality from EMR to endoscopic submucosal dissection (ESD) because of a nonlifting sign (Fig. 1). The frequency of conversion was also reviewed.

Statistical analysis

Preoperative diagnoses based on biopsy sampling were compared with histologic diagnoses of resected specimens. Sensitivity, specificity, and accuracy of preoperative diagnoses based on the biopsy specimen were assessed. Among 25 patients without a preoperative biopsy specimen, the diagnostic accuracy of endoscopy was assessed. The data were analyzed using the Stat Mate IV software (Atoms, Tokyo, Japan).

Ethics

This study protocol was approved by the Institutional Review Board of Keio University School of Medicine (20150221).

RESULTS

The clinicopathologic features of patients and lesions are shown in Table 1. Mean patient age was 64.7 ± 11.1 years. Most lesions (82.7%) were located in the second part of the duodenum. The mean size of tumors was 17.8 ± 13.4 mm. Endoscopic procedures used were ESD