Neuroendocrine Tumors (NETs) of the Upper GI Tract in Korea

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Introduction

Gastric neuroendocrine tumors (NETs), which are relatively rare tumors that arise from enterochromaffin cells, have been reported increasingly in the last decade. Enterochromaffin-like (ECL) cells, the main endocrine cell types in type 1 and type 2 gastric NETs, are highly susceptible to gastrin trophic stimuli. Under circumstances that cause hypergastrinemia, such as chronic atrophic gastritis (CAG) in pernicious anemia (type 1) or gastrin-producing neoplasms in Zollinger-Ellison syndrome (ZES)/multiple endocrine neoplasia (MEN) 1 (type 2), multiple ECL cell carcinoids occur in the oxyntic corpus and fundus mucosa of the stomach. Type 1 and 2 gastric NETs are usually considered benign, with a low risk of malignancy. However, type 3 gastric NETs is composed of different endocrine cells, which grow sporadically, irrespective of gastrin, in an otherwise normal mucosa. Most of these tumors show lymphoinvasion, angioinvasion, and deep wall invasion at the time of diagnosis, and they often present with metastases, which are found in 50-70% of well-differentiated, and in up to 100% of poorly differentiated tumors.

Gastric NETs

Treatment of gastric neuroendocrine tumors is determined by type and size of the lesion. The Korean Society of Helicobacter and Upper Gastrointestinal Research group performed multicenter study to compare the long-term efficacy of observation and endoscopic resection for type 1 gastric neuroendocrine tumors without metastasis. In this study, a total 223 cases of gastric neuroendocrine tumors diagnosed between January 1996 and December 2011 was enrolled. Among these, 104 cases were type 1 gastric neuroendocrine tumors. Sixty-seven patients were treated endoscopically and 27 patients were observed without treatment. Endoscopic mucosal resection, endoscopic submucosal dissection, and polypectomy were the methods used for endoscopic treatment. Therapeutic efficacy and rates of complication and recurrence were evaluated retrospectively. In the endoscopic resection group, complete resection was observed in 53 patients (79.1%), and recurrence was observed in 14 patients (20.9%). On analysis of the observation group, no change was observed in 19 patients (70.4%), and tumor progression was observed in 8 patients (29.6%). Median follow-up duration was 49 months (31-210 months). No mortality was reported in either group during follow-up. They concluded that
observation of type 1 gastric neuroendocrine tumors without metastasis yields results similar to those produced by endoscopic resection and that observation alone may be a safe treatment.

Another study was performed to clarify the short and long-term results and to prove the usefulness of endoscopic resection in type 3 gastric neuroendocrine tumors (NETs). Of the 119 type 3 gastric NETs diagnosed from January 1996 to September 2011, 50 patients treated with endoscopic resection were enrolled in this study. For endoscopic resection, endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD) was used. Therapeutic efficacy, complications, and follow-up results were evaluated retrospectively. EMR was performed in 41 cases and ESD in 9 cases. Pathologically complete resection was performed in 40 cases (80.0%) and incomplete resection specimens were observed in 10 cases (7 vs 3 patients in the EMR vs ESD group, \( P = 0.249 \)). Upon analysis of the incomplete resection group, lateral or vertical margin invasion was found in six cases (14.6%) in the EMR group and in one case in the ESD group (11.1%). Lymphovascular invasions were observed in two cases (22.2%) in the ESD group and in one case (2.4%) in the EMR group (\( P = 0.080 \)). During the follow-up period (43.73; 13-60 mo), there was no evidence of tumor recurrence in either the pathologically complete resection group or the incomplete resection group. No recurrence was reported during follow-up. In addition, no mortality was reported in either the complete resection group or the incomplete resection group for the duration of the follow-up period. In conclusion, less than 2 cm sized confined submucosal layer type 3 gastric NET with no evidence of lymphovascular invasion, endoscopic treatment could be considered at initial treatment.

Conclusions

Observation without tumor resection in type 1 gastric NETs without risk factors is a reasonable treatment option. Also, if the tumor is confined in the submucosal layer, there is no evidence of lymphovascular invasion, and the tumor size is smaller than 2 cm, endoscopic treatment could be applied for the initial treatment of type 3 gastric NETs.

References