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Case Report

Laparoscopy-Assisted Distal Gastrectomy of Carcinoid Tumor of the Duodenum

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Abstract

We report a case of carcinoid in the duodenum, which was managed by laparoscopy assisted distal gastrectomy. An 87 year old man admitted for hematemesis. A submucosal tumor at the anterior wall of the duodenal bulb was found by gastrointestinal endoscopy. The tumor was 20mm in diameter and the biopsy revealed only atypical cell nests. Therefore, we diagnosed the carcinoid tumor or gastrointestinal stromal tumor. Laparoscopy-assisted distal gastrectomy was performed. The tumor was confirmed carcinoid tumor in duodenum and classified as a well differentiated neuro endocrine carcinoma by WHO 2000 and classified as a NET G2 by WHO 2010. Cytological atypia of this tumor was low grade. However, metastasis in perigastric lymph node was found. This patient was doing well without recurrence 1 year after surgery. Laparoscopy-assisted distal gastrectomy may be one option for curative excision of carcinoid in duodenum.

Keywords: *Carcinoid; Duodenum; Neuroendocrine Tumor; Laparoscopic surgery; Distal gastrectomy*

Introduction

We report a case of carcinoid in the duodenum which was managed by laparoscopy-assisted distal gastrectomy.

Case Report

An 87 year old man was referred to our hospital because of hematemesis. A submucosal tumor in the duodenum had been found by the gastrointestinal endoscopy at a nearby hospital. He had a history of chronic renal failure due to diabetes mellitus and of fibromyalgia. Hematological examination on admission showed slight anemia (RBC: 370 × 10^4/mm^3, Hb: 12.6 mg/dL, Hct: 37.9%), and also deterioration of renal function (BUN: 48.5mg/dl, Cr: 1.6mg/dl).

Gastrointestinal endoscopy showed a submucosal tumor with a diameter of nearly 20mm at the anterior wall of the duodenal bulb (Figure 1). The result of boring biopsy was atypical cell nests, so we could not make a definitive diagnosis. Gastrointestinal contrast radiography also showed protruded lesion with central depression at the anterior wall of the duodenal bulb (Figure 2). An abdominal computed tomography scan showed no metastasis and no other tumor in the abdomen. Therefore, we made a diagnosis of carcinoid tumor or gastrointestinal stromal tumor.

On April, 2011, the patient underwent laparoscopy-assisted distal gastrectomy, to excise this tumor. Pathological examination of a respected specimen revealed an endocrine tumor, about 15mm with a central depression in the duodenum near the pylorus.

Microscopic examination showed it was the classical type of carcinoid showing increased atypical cells with rosette formation (Figure 3). These cells were increasing mainly in submucosal layer, but also partly in muscle layer. CD56 immuno histochemical staining of this tumor showed a strong positive (Figure 4). Chromogranin A and synaptophysin also showed positive. Therefore, we confirmed the diagnosis of carcinoid tumor in duodenum. Cytological atypia of this tumor was low grade and Ki-67 immuno staining showed about 1% positive. Therefore, this tumor was classified into well-differentiated neuroendocrine carcinoma by WHO 2000 [3] and classified into NET G2 by WHO 2010 [4]. This patient had an uneventful postoperative course and was discharged from 12 days after the operation.

Discussion

Carcinoid tumors are neuro endocrine neoplasias and relatively rare. They are found in the lung, ovary and biliary and gastrointestinal tract [1]. According to the distribution of carcinoid tumors as determined by an analysis of 11842 reported cases, the most frequent site is the respiratory system (19.8%), followed by the rectum (15.0%), jejunoileum (12.0%), stomach (11.4%), appendix (9.6%) and duodenum (8.3%) [2].

Carcinoid tumors are slow growing, originating in the cells of the neuroendocrine system. These have been mostly detected everywhere in the gastrointestinal tract, from esophagus to rectum and also in bronchus, which are lined with mucosa containing.

In reports from Japan, rectum (36.2%) is the most frequent site of the gastrointestinal carcinoids, followed by stomach (26.7%) and duodenum (14.9%) [5]. Most carcinoid tumors are discovered insidentaly, through an endscope or in surgery for unrelated reasons. About 5% of carcinoids cause flushing, diarrhea and wheezing, which we call carcinoid syndrome, because of excessive levels of serotonin (5-HT) [6]. Regarding the duodenal carcinoid, the incidence of the carcinoid syndrome is 3.1% [7]. Other symptoms are epigastralgia, abdominal distension and hematemesis like this case.

Histologically, the carcinoids arise from neuroendocrine cells in lamina propia and then there are no typical cells on the mucosal surface. Therefore the proper diagnostic rate of carcinoid is about 20%, and the others are diagnosed postoperatively [8]. In this case, the carcinoid was suspected, but we could not make a definitive diagnosis before surgery.

The duodenal carcinoid is treated with surgical resection, appropriate to the case. The relation between the size of carcinoid and metastasis in lymph node or in liver was reported by Soga *et al.* According to their study, the tumor less than 10mm is associated with 4.6% metastasis in lymph node and with 3.1% in liver. Like our case, the tumor more than 10mm and less than 20mm is associated with 16.6% metastasis in lymph node and with 11.1% in liver [9]. Besides, the relation between the size of carcinoid and invasion depth was reported by Iwafuchi., *et al.* The tumor less than 10mm is localized in sub mucosal layer and that more than 10mm penetrates muscle layer [10]. In our case, the tumor needed lymph node dissection, because it had probability of metastasis and of muscle invasion. He was 87 year old and had complications, so we chose laparoscopy assisted distal gastrectomy, for minimally invasive surgery.

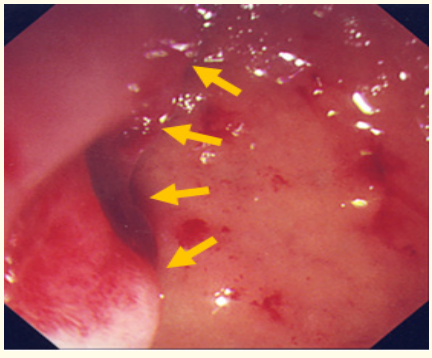

Figure 1*: Endoscopic View Showing a Submucosal Tumor at the Anterior Wall of the Duodenal Bulb (See arrows).*

Pathological examination showed that this tumor was classified into NET G2 and that cytological atypia of this tumor was low grade. However, he had metastasis in perigastric lymph node and then he had been followed up once every two months as an outpatient. Fortunately he has been surviving almost one year without any evidence of tumor recurrence. We need to continue to follow-up carefully.

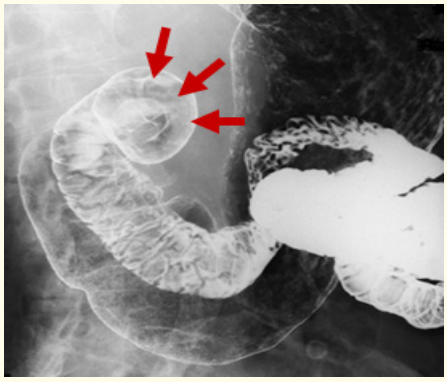

Figure 2: *Gastrointestinal Contrast Radiography Revealed Protruded Lesion with Centrally-Depression at the Same Area (See Arrows).*

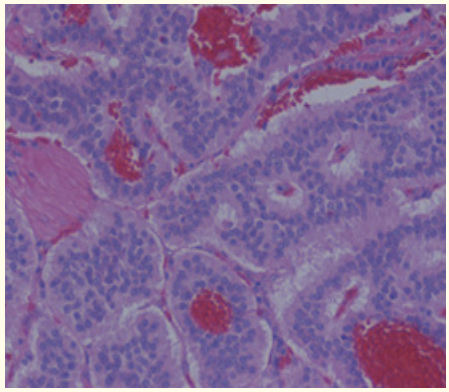

Figure 3: *Tumor Cells with Rosette Formation Mostly in Submucosal Layer (HE Stain × 200).*

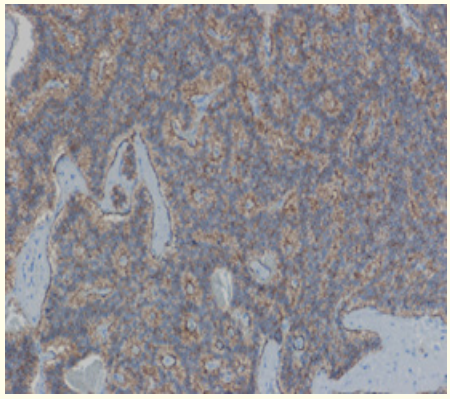

Figure 4: *CD56 was a Quite Positive (×50).*

Conclusion

We had an experience with a relatively rare case of carcinoid in the duodenum which was managed by laparoscopy-assisted distal gastrectomy. This procedure seemed to be one option for curative excision of carcinoid in duodenum.

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