



Superficially Spreading Signet-Ring Cell Carcinoma Perpendicularly Colliding with Gastric Adenoma: a Rare Case Report

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Introduction

Nodular lesions within 0-IIc undifferentiated type of early gastric cancer are usually remnant normal mucosa, regenerated epithelia, or cancer growths [1]. Moreover, intestinal types of gastric adenomas generally originate from gastric mucosa with intestinal metaplasia [2]. Herein, we report a rare case of superficially spreading signet-ring cell carcinoma perpendicularly colliding with a gastric adenoma.

Case Report

A 70-year-old man visited our hospital for examination of a gastric abnormality. Blood examination found neither anemia nor elevation of either carcinoembryonic antigen or carbohydrate antigen 19–9. An endoscopy showed a wide irregularly-shaped erosion with multiple nodular protrusions in the posterior wall of the upper stomach (Fig. 1a, b), which showed a tubular pattern according to magnified endoscopy with narrow-band imaging. A biopsy of the erosion revealed signet-ring cell carcinoma. However, biopsies from the protruding lesions revealed the presence of a gastric adenoma. Due to the extensive spread of the malignancy, surgical resection was indicated. Total gastrectomy with D2 lymphadenectomy was performed. The resected specimen showed an irregularly-shaped depressed lesion (70 × 60 mm) located in the upper stomach with aggregate nodular lesions (Fig. 2).

Histopathological examination confirmed a superficially spreading gastric cancer composed of mucosal signet-ring cell carcinoma (Fig. 3a, b). The nodular lesions within the extensive 0-IIc lesion were composed of round-shaped glands and atypical cells, indicating intestinal-type gastric adenoma (Fig. 4a, b, c). The mucosal signet-ring cell carcinoma perpendicularly collided with the gastric adenoma with clear borders, but without transition features (Fig. 4b). Intestinal metaplasia was observed around the extensive 0-IIc lesion. The distribution of signet-ring cell carcinoma and gastric adenoma is shown in Fig. 5. Finally, the erosion with nodular lesions was diagnosed as followed: type 0-IIc, 70 × 60 mm, signet-ring cell carcinoma with gastric adenoma, M, ly0, v0, N0, ly0, v0, and stage 1, according to the Japanese Classification of Gastric Carcinoma [3]. Currently, the patient is alive without recurrence, 5 years from the date of diagnosis.

Discussion

Herein, we describe a case of intestinal-type gastric adenoma surrounded by extensive 0-IIc superficially spreading mucosal signet-ring cell carcinoma. There was no admixture of the adenoma and the signet-ring cell carcinoma, suggesting that the two components arose separately, with the signet-ring cell carcinoma spreading around the adenoma. As a result, the mucosal signet-ring cell carcinoma perpendicularly collided with the gastric adenoma.

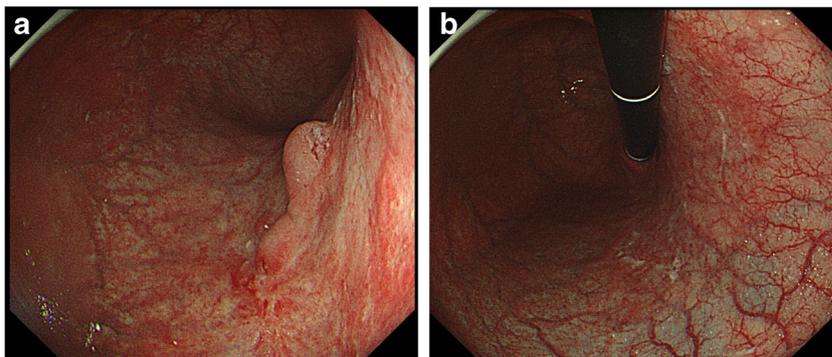
Small protruding lesions or granular mucosa within type 0-IIc undifferentiated early gastric cancer are called “island-like nodules,” literally indicating remnant normal mucosa [1, 4], but is occasionally composed of regenerated mucosa or cancer growth. The remnant normal mucosa appeared similar to the normal gastric area. The regenerated epithelium has different sizes, a rough surface, and reddish color. On the other hand, the protruding lesions composed of cancer growth can indicate submucosal invasion [1, 5].

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Fig. 1 Endoscopy showing a wide, irregularly-shaped erosion (b) associated with multiple nodular protrusions (a) in the posterior wall of the upper stomach



Intestinal-type gastric adenoma is usually a discolored, superficially elevated lesion, which is a non-invasive tumor composed of tubular glands with low-grade atypia. Moreover, this lesion generally originates from the gastric mucosa with intestinal metaplasia [2, 6]. Narisawa et al. reported that all 79 intestinal-type gastric adenomas resected from a cohort of 2494 patients were surrounded by the gastric mucosa with intestinal metaplasia [6]. However, gastric-type adenoma originates from gastric mucosa without intestinal metaplasia and has tall, villous elevations [7].

The reported case presented an elevated intestinal-type gastric adenoma, surrounded by a mucosal signet-ring cell carcinoma, which is an extremely rare pathology. To the best of our knowledge, there is only one other similar report, by Horiuchi et al., on an extensive search of the English and Japanese literature [8]. In the previously mentioned study, the histopathological examination of an endoscopic submucosal dissection specimen revealed a colliding tumor between an undifferentiated superficially spreading gastric cancer and an adenoma. Since the horizontal margin was positive for cancer, a distal

gastrectomy was performed. In our case, a total gastrectomy was performed for type 0-IIc signet-ring cell carcinoma according to the precise preoperative diagnosis of the extent of the lesion. In addition, we thoroughly examined the tumor specimen with histopathology.

We made several assumptions regarding the development of the two lesions. First, the gastric adenoma and signet-ring cell carcinoma may have arisen from stem cells, which could have bipolar differentiations. This is unlikely since stem cells that have bipolar differentiation usually do not have clear borders [9, 10]. Second, it is possible that the gastric adenoma might have transformed into signet-ring cell carcinoma. This is not likely because the intestinal-type gastric adenoma typically transforms to a differentiated carcinoma [11]. Third, the gastric adenoma may have originated from the regenerated epithelium, which may have arisen from the defects of the signet-ring cell carcinoma. However, this is not probable since the elevated lesions were entirely composed of adenoma, without regenerated epithelium. Fourth, the signet-ring cell carcinoma and the gastric adenoma might have been separate entities; the former extended through the mucosa and resulted in colliding below the latter. Signet-ring cell carcinoma originates from the glandular neck and often extends in the lateral direction through the lamina propria [12, 13]. In the present case, the signet-ring cell carcinoma and the gastric adenoma had histologically clear borders, with no transitions. Therefore, this hypothesis is the most probable explanation. Accordingly, we concluded that the signet-ring cell carcinoma horizontally extended and perpendicularly collided with the gastric adenoma.

Small protruding lesions within a 0-IIc undifferentiated type early gastric cancer are usually remnant normal mucosa, regenerated epithelium, or the proliferation of cancer. The present case is extremely rare and valuable for a morphological diagnosis of type 0-IIc lesions, since the histology of nodular lesions surrounded by early gastric cancer is an indicator of the tumor depth of invasion, and it yields useful information on the etiology of colliding neoplasm.

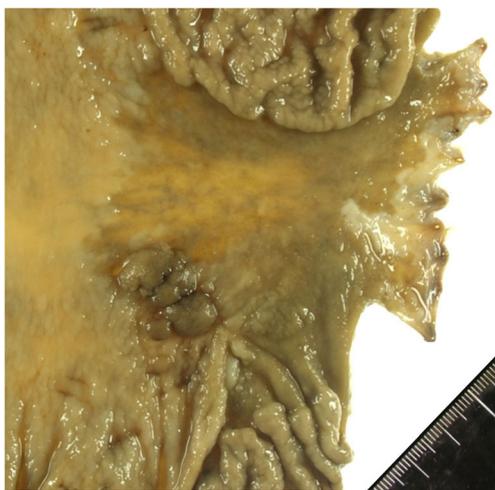


Fig. 2 Fixed resected specimen showing an irregularly-shaped depressed lesion in the esophagogastric junction, associated with aggregate nodular lesions

Fig. 3 Histopathological findings showing a mucosal signet-ring cell carcinoma (HE, **a** $\times 40$, **b** $\times 100$)

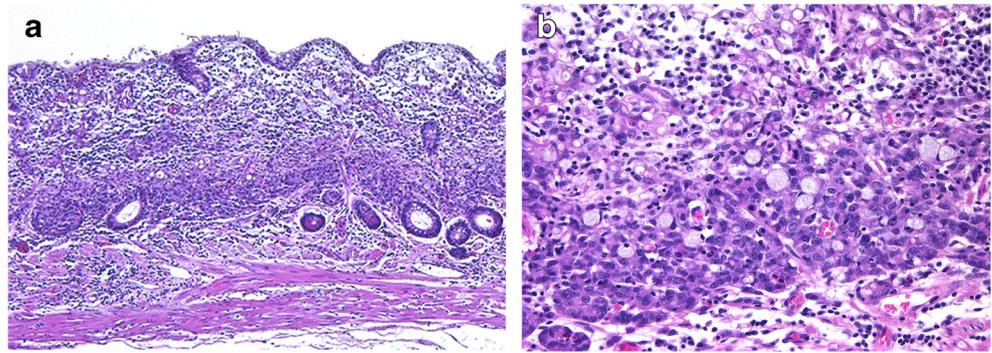


Fig. 4 Histopathological findings of a nodular lesion showing round shaped glands composed of atypical cells, which indicate intestinal-type gastric adenoma (**a**); mucosal signet-ring cell carcinoma was found to be collided with the gastric adenoma with clear borders and without transition features (**b**); atypical cells comprising adenoma showing no structural, but cellular atypia (**c**) (HE, **a** $\times 20$, **b** $\times 40$, **c** $\times 100$)

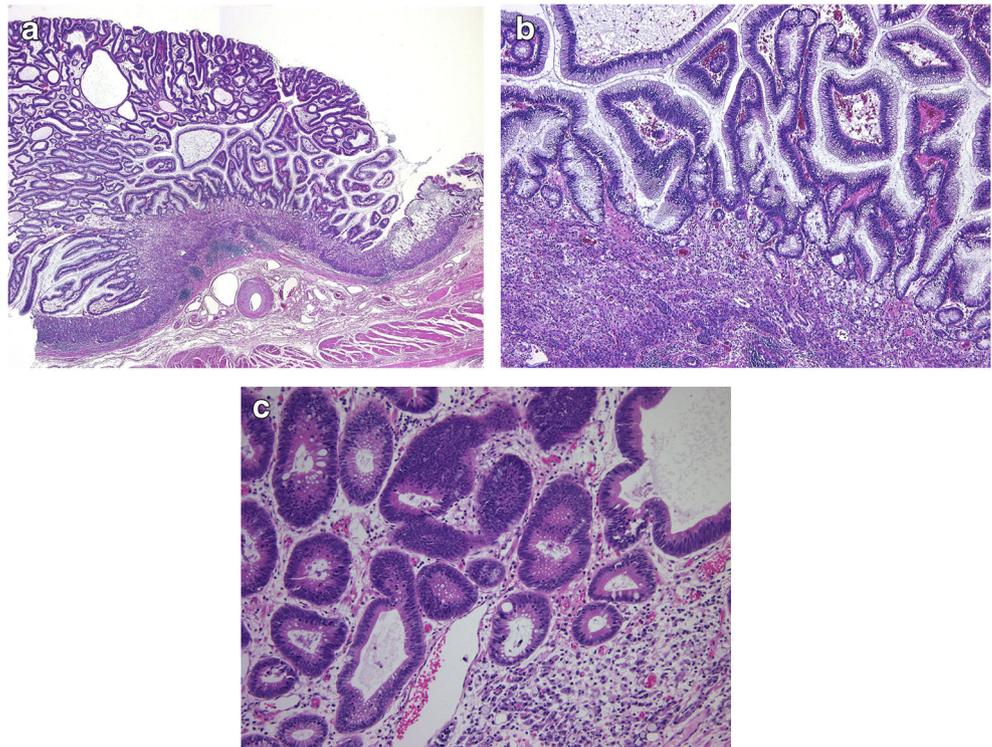
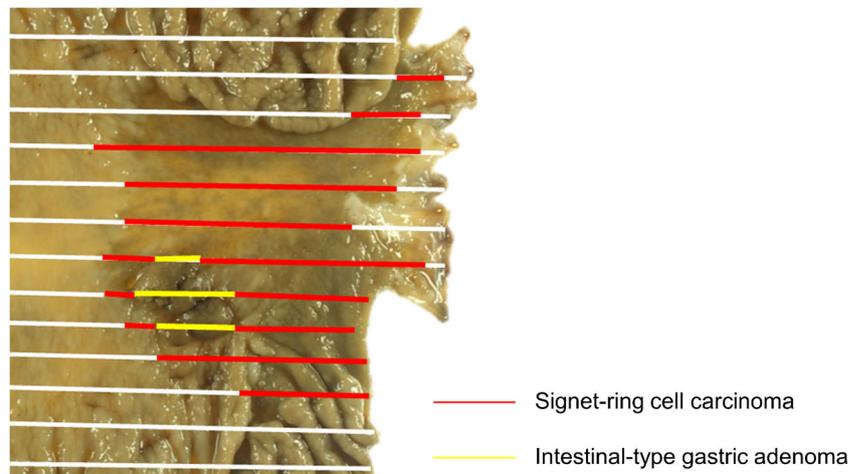


Fig. 5 Schematic distribution representing signet-ring cell carcinoma and gastric adenoma



Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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