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Clinical pathological characteristics of "crawling-type" gastric adenocarcinoma cancer: A case report

Abstract

BACKGROUND

Gastric cancer (GC) is a significant health problem worldwide, and early detection and accurate diagnosis are crucial for improving patient outcomes. Crawling-type gastric adenocarcinoma is a rare subtype of GC that has unique histopathological and clinical behavior, and its diagnosis and management can be challenging. This pathological type of GC is also rare.

CASE SUMMARY

Here, we report a case of a patient who after ordinary endoscopy, narrow-band imaging technique, endoscopic ultrasonography to determine the scope of tumour invasion and upper abdominal enhanced computed tomography examination determine whether there is tumour metastasis. Then endoscopic submucosal dissection was performed. After pathological and immunohistochemical examination, the pathological diagnosis was crawling-type gastric adenocarcinoma. This is a very rare and special pathological type. This case highlights the importance of using advanced endoscopic techniques and pathological examination in diagnosing and managing gastric crawling-type adenocarcinoma. It also underscores the need for continued research and clinical experience in this rare subtype of GC to improve patient outcomes.

CONCLUSION

The "crawling-type" GC is a rare common and specific tumour pathology. It is difficult to identify and diagnose under endoscopy. The tumour is ill-defined, with a flat appearance and indistinct borders due to the lack of contrast against the background

mucosa. The pathological manifestation of tumour cells was hand-like, so it was diagnosed as “crawling-type” gastric adenocarcinoma.

Key Words: Clinicopathological; Crawling-type gastric; Pathology; Gastric cancer; Gastric adenocarcinoma cancer; Case report

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Core Tip: “Crawling type” gastric cancer is a rare variant of early GC. It was once called “Shaking-Hands Structure”, “WHYX Pattern” or “shaking-hands pattern”, which is an important subtype of gastric gland cancer. It is also difficult to diagnose. From an endoscopy perspective, the tumour lacks contrast with the surrounding mucosa, giving it a flat appearance and hazy edges. As a result, early diagnosis of the condition might be challenging.

INTRODUCTION

Gastric cancer (GC) is a major public health issue worldwide. China’s annual GC cases account for more than 40% of the total number of GC deaths in the world[1]. The increase in the incidence of GC seriously impacts people’s quality of life. According to the World Health Organization GC, tissue type can usually be divided into four types. The first type is called adenocarcinoma, including papilloscanic, tubular gland, and mucus adenocarcinoma. The most common tissue pathological subtype is tube-shaped cancer, which is divided into highly differentiated or neutralized adenocarcinoma[2]. The second is called undifferentiated cancer. The third type is called mucous cancer, also known as printing cell carcinoma. Special types of cancer include gland squamous, squamous cell, and cancer. However, this type of crawling-type gastric adenocarcinoma did not record it.

"Crawling type" GC is an uncommon type of earlier GC, accounting for 2%-3% of early GCs[3]. It was once called "Shaking-Hands Structure", "WHYX Pattern", or "shaking-hands pattern", which is an important subtype of gastric gland cancer[4]. It is also difficult to diagnose. Endoscopically, the tumour is ill-defined, with a flat appearance and indistinct borders due to the lack of contrast against the background mucosa[5]. As a result, early diagnosis of the disease might be challenging. Positive lateral margins and high rates of incomplete resection are common outcomes of endoscopic resection.

Early detection and treatment of GC, including the crawling type, is important for improving patient outcomes. Endoscopic submucosal dissection (ESD) treatment and the pathological examination confirmed the diagnosis of crawling-type GC. This highlights the importance of using a combination of diagnostic tools and techniques to diagnose this type of GC accurately. So, we encountered GC of the "crawling type", which proved challenging for endoscopic diagnosis. This case mainly introduces the diagnosis, endoscopic features, and pathological characteristics of "Crawling type" GC.

We hope that through this case we could improve clinician's understanding of GC pathology and enrich clinical experience and treatment. It is conducive to clinical treatment. Continued research and collaboration among healthcare professionals are essential for improving GC diagnosis, and treatment.

CASE PRESENTATION

Chief complaints

A male, 72 years old. No physical discomfort, a physical examination, and gastroscopy are required.

History of present illness

Due to a regular physical examination, the gastroscopy found that the lower end of the stomach was marked with shallow depression near the antrum, with surface flushing and a tuberosity bulge in the centre (Figure 1A). Then a biopsy. The indigo carmine

staining is shallow depression, and the surrounding boundary is clear (Figure 1B). Consider the patient's atrophic gastritis with gastric antrum erosion and gastric antrum body junction lesions.

History of past illness

In the past medical history of patients, he had a history of hypertension and diabetes. Now blood pressure and blood glucose are perennial oral drug control. They denied others the history of chronic diseases, and the history of infectious diseases such as hepatitis, tuberculosis, and schistosomiasis.

Personal and family history

The patient denied any family history of malignant tumours. No H. pylori infection.

Physical examination

Physical examination revealed no fever, heart rate 77 bpm, blood pressure 141/85 mmHg, and other examinations all have discomfort.

Laboratory examinations

After admission, the patient improved the examination of tumour indicators, and the results were negative (Table 1).

Imaging examinations

No obvious abnormality in the upper abdominal enhanced computed tomography (CT). It did not show any concomitant distant metastases or lymph nodes (Figure 2A).

Endoscopy examinations

The results of the pathological examination showed that high-grade intraepithelial neoplasia was in the mucosa. Then the patient was examined after admission. The narrow-band imaging (NBI) technique examination after admission found that a station

membrane hyperemia lesion was seen on the posterior wall of the gastric antrum. The staining showed that the lesion was a shallow depression with a not clear boundary. At the outer layer of the tumour, the micro glandular tube structure was disorganized and varied in size. The microvessels were slightly tortuous and expanded, forming a bright boundary with the periphery, endoscopic lesion range of 5 mm × 6 mm (Figure 3).

Endoscopic ultrasonography (EUS) to check the source of the stomach wall of the gastric stomach. The local area is slightly thickened, and the other levels of the stomach walls are continuous and complete, and there are no obvious abnormal echoes. The diagnosis is the lesion was in the gastric mucosa (Figure 2B).

Pathological examinations

The immunohistochemical examination can see Ki-67 positivity in tissue (Figure 4A), MUC2 partially positive (Figure 4B), MUC5AC negative (Figure 4C) and MUC6 partially positive (Figure 4D). The hematoxylin and eosin were detected (Figure 5) then the poorly differentiated adenocarcinoma cells were detected.

From the HE staining we can find that at the level of the neck of the gland and continues with the surface epithelium. Determining the tumour's boundaries is hard. There were "crawling type" glands everywhere in the tumour's vicinity. Not in the stomach glands, however, in the layer of lamina propria, it spreads laterally.

FINAL DIAGNOSIS

The final diagnosis was crawling-type gastric adenocarcinoma.

TREATMENT

Considering that the lesion was in the mucosa, ESD treatment was performed. After circumferential marking along the normal mucosa around the lesion, submucosal injection was performed to lift the lesion, and the non-lifting sign was negative. Then, the FLUSH knife was used to perform circumferential incision along the normal mucosa at the outer edge of the lesion marker point. Submucosal dissection was performed

along the submucosa until the lesion was completely stripped and resected. The resected lesion was recovered and sent for pathological examination. A well-to-moderately differentiated adenocarcinoma that was limited to the mucosa. And that showed no vascular or lymphatic invasions were found upon histological investigation. It was only in the submucosa and was restricted at the low elevated lesion. Both horizontal and vertical margins were negative.

OUTCOME AND FOLLOW-UP

Then the patient was followed up for one year without any additional treatment (Figure 6).

DISCUSSION

The gastric "crawling-type" adenocarcinoma is a tumour that typically spreads laterally within the mucosal and is histologically characterized by irregularly united glands with low-grade cellular atypia. Initially, it was classified as a neoplasm "mimicking intestinal metaplasia", by Endoh *et al*[6], and later Yao *et al*[7] reported 9 additional cases of ''extremely well-differentiated adenocarcinoma''.

There are many pathological types of GC. Gastric ''crawling-type'' adenocarcinoma is a special pathological type. Low-grade nuclear atypia and morphology resembling intestinal metaplasia with a laterally spreading pattern were its defining features. "Crawling type" glands are known as one of the characteristics of extremely well-differentiated adenocarcinomas of the stomach[8].

The tumour exhibits poorly fused glands and low-grade cellular atypia, which are histologically distinguished by a tendency to migrate laterally within the mucosal. Because it is in the mucosal layer, it is difficult to find by general endoscopy, usually shallow lesions (Figure 1) and it is easy to miss the diagnosis. Previous cases only introduced the characteristics of pathology. This case not only introduced the characteristics of patients' pathology but also introduced the characteristics of gastric ''crawling-type'' adenocarcinoma from the realization of imaging and EUS.

After admission, there was no obvious abnormality in the tumour index examination (Table 1) and upper abdominal enhanced CT examination (Figure 2A). The EUS found that the lesion was in the mucosal layer without submucosal infiltration and lymph node metastasis (Figure 2B). Routinely use chromoendoscopy, magnifying endoscopy, and NBI techniques to find that the structure of the gastric mucosal gland duct was disordered and the boundary around the tumour was clear (Figure 3). The tumour in question was a superficial depressed (IIc) type that was in the middle third of the stomach of this case. The NBI and indigo carmine stains revealed that the tumour's borders were quite well-defined. The tumour grants called "crawl" cannot be detected in the superficial layer but in the epithelial proliferative zone. Such a characteristic may be because gastric "crawling-type" adenocarcinoma glands "crawl" into the epithelial proliferative zone where they are often at least partly covered by non-neo-plastic foveolar epithelium.

The traits are visible in the irregularly fused glands. However, due to the exceedingly low cellular atypia, roughly 50% of the initial biopsies are misinterpreted as either inconclusive for neoplasia or reactive intestinal metaplasia[9,10]. Because of this, pathologists use structural atypia for diagnosing this kind of GC in hospitals and clinics. It is challenging to identify the "crawling type" GC endoscopically. It is known that extremely well-differentiated adenocarcinomas are frequently found in the middle third of the stomach[7]. Due to the surface flat or superficially depressed kind of tumour, and the frequently hazy edge. And the gland tube disorder of the lesion. These characteristics demonstrate a discrepancy between endoscopic and pathological examinations, which leads to misdiagnosis.

It is difficult to identify cellular atypia through histological exams; therefore, pathologists should make the diagnosis based on structural atypia. This kind frequently receives false diagnoses for benign lesions like intestinal metaplasia[11]. The most accurate method for diagnosing "Crawling-type" cancer is pathology. Except for the surface layer, most tumour glands have significant MUC6 immunohistochemistry positivity. MUC5AC is expressed in both the deeper and superficial layers, with a

tendency toward positivity in the former. In this case, MUC5AC is negative. MUC2 is generally negative in these tumours[12]. And Ki-67 (partial positive) (Figure 4). Changes in cell structure can be observed by HE staining for diagnosis. So, according to pathological diagnosis, the irregularly fused glands are the most important diagnostic clue for "crawling type" GC. The shapes of the letters "H", "X", "W", and "Y" are recreated by the pattern of the fused glands with architectural traits such as branching, anastomosing, distention, abortive and spiky forms, glandular overgrowth, and discohesive neoplastic cells[3] (Figure 5). T The shapes of the letters "H", "X", "W", and "Y" are recreated by the pattern of the fused glands with architectural traits such as branching, anastomosing, distention, abortive and spiky forms, glandular overgrowth, and discohesive neoplastic cells. Therefore, to identify the abnormally fused glands in the deeper sites, biopsies from all layers of the mucosal tissue, not just the upper mucosal tissue, need to be collected. After the patient was discharged from the hospital, a regular gastroscopy was performed and no tumour recurrence was found (Figure 6).

CONCLUSION

In conclusion, we described a GC case of the "crawling type" that was found by ESD therapy, despite being extremely hard to identify preoperatively. Due to the lack of symptoms in the earliest phases of this disease, endoscopic and histological diagnosis of this kind of GC remains difficult. A thorough examination combined with many mucosal layer biopsies and a repeat biopsy is essential to getting the correct diagnosis. This variation is something to consider, particularly if we notice a superficial flat-type or superficially depressed tumour in the middle of the stomach.

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Figure Legends

Figure 1 History of present illness. A: Gastroscopy shows that the mucosa of the gastric sinus is thickened, red and white, and the sheet is congested; B: Indigo carmine staining is shallow depression and the surrounding boundary is clear.

Figure 2 Imaging examinations. A: Results of upper abdominal enhanced computed tomography examination after admission; B: Ultrasound gastroscopy suggests that the lesion is located within the mucosa.

Figure 3 Narrow-band imaging endoscopy. A: Under narrow-band imaging endoscopy, the lesions were dark tea-coloured and the boundary was clear; B: Under magnifying endoscopy, the micro glandular structure on the surface of the lesions was, of different sizes, and the microvessels were slightly tortuous and expanded, forming a bright boundary with the periphery.

Figure 4 Immunohistochemical examination results. A: Ki-67 positivity in tissue; B: MUC2 partially positive; C: MUC5AC negative; D: MUC6 partially positive (× 10).

Figure 5 Hematoxylin and eosin stain of pathological tissue. A: Poorly differentiated adenocarcinoma cells were detected only in the submucosa and were restricted at the low elevated lesion; B: The density of the gastric submucosal gland is low, and the basement membrane of the gland is discontinuous.

Figure 6 After endoscopic submucosal dissection treatment, the patient reviewed their endoscopic findings. A: Common endoscopic findings after Endoscopic submucosal dissection treatment; B: The endoscopic findings after Indigo carmine staining.

Table 1 Results of tumour index examination after admission

Laboratory tests	Result	Reference values
Pro-GRP	54.60	28.3-65.7 pg/mL
AFP	3.47	0-7.0 ng/mL
CEA	3.79	0-6.5 ng/mL
CA19-9	12.60	0-27.0 U/mL
CA72-4	5.43	0-6.9 U/mL

AFP: Alpha-fetoprotein; CEA: Carcinoembryonic antigen; CA19-9: Carbohydrate antigen-199; CA72-4: Carbohydrate antigen-724; Pro-GRP: Pro-gastrin-releasing peptide.

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