

## Gastric Neuroendocrine Carcinoma Presenting as a Wandering Exophytic Mass: A Case Report<sup>1</sup>

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We describe a case of poorly differentiated gastric neuroendocrine carcinoma presenting as a wandering exophytic mass. CT imaging revealed a 14.5 × 10.0 × 8.0 cm, lobulated, solid mass with a multifocal necrotic portion at the right of the peritoneal cavity. It was attached to the antrum of the stomach by a broad stalk, and shown by MR imaging to be well-defined, lobulated and solid, with a multifocal necrotic portion, and at the left of the peritoneal cavity. Isointensity was apparent at T1-weighted imaging, and slightly hyperintensity at T2-weighted imaging, and after gadolinium injection, enhancement was stronger than at precontrast imaging.

**Index words :** Stomach, neoplasms  
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Gastric endocrine tumors are currently classified on the basis of their differential status as (1) well differentiated: argyrophil cell tumors, mainly composed by enterochromaffin-like cells or gastrin-producing cells, or (2) poorly differentiated: neuroendocrine carcinomas (NECs) (1). Poorly differentiated gastric NECs are rare, aggressive, and have an extremely poor prognosis (1), and to our knowledge, their imaging findings - they present as a wandering abdominal mass at magnetic resonance imaging (MRI) and computed tomography (CT) - have not been previously described. In this article, we describe a case of poorly differentiated, exophytic gastric NEC presenting as a wandering mass, and include the finding of CT, MRI, and upper gastrointestinal (UGI)

examination.

### Case Report

A 62-year-old woman with a hard, palpable mass and pain in the right upper quadrant was admitted to our hospital. The results of routine laboratory tests, including blood chemistry, urinalysis, and liver function were normal.

CT examination of the abdomen revealed a 14.5 × 10.0 × 8.0 cm, lobulated, solid mass with a multifocal necrotic portion at the right of peritoneal cavity (Fig. 1A). It was attached to the antrum of the stomach by a broad stalk, and was shown by unenhanced CT to be isodense relative to gastric wall. Contrast-enhanced CT demonstrated slight enhancement, and MR imaging performed two days later depicted a well-defined, lobulated, solid mass with a multifocal necrotic portion at the left of the peritoneal cavity. Isointensity was apparent at T1-weighted imaging and slight hyperintensity at T2-weighted imaging (Fig. 1B); after gadolinium injection,

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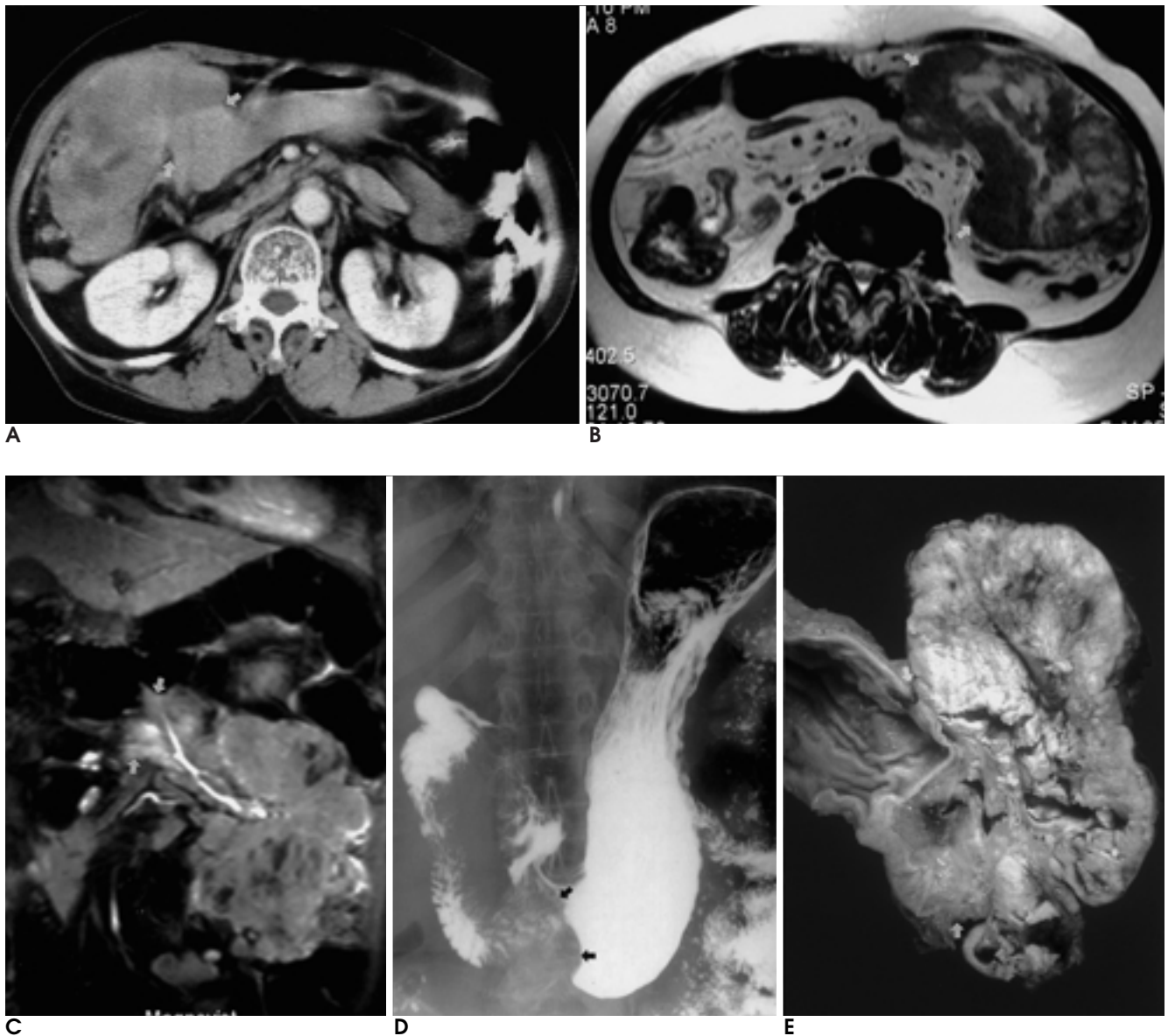
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enhancement was stronger than at precontrast imaging (Fig. 1C). Coronal imaging indicated that the mass was attached to the stomach by a broad stalk. UGI study showed a subtle, extrinsic mass effect along the inferior wall of greater curvature (Fig. 1D).

The mass was removed via distal radical subtotal gas-

trectomy, at which time multiple scattered nodules were found in the pelvic peritoneum and mesentery. The gross specimen was a lobulated, soft, grayish mass with a multifocal necrotic portion (Fig. 1E), and was attached to the stomach by a broad stalk. Microscopic examination showed it to be a poorly differentiated neu-



**Fig. 1.** A 62-year-old woman with gastric neuroendocrine carcinoma presenting as a wandering exophytic mass.

**A.** Contrast-enhanced CT shows a lobulated, solid mass with a multifocal necrotic portion at the right of the peritoneal cavity. Note attachment to the antrum of the stomach (arrows).

**B.** On T2-weighted imaging, the tumor shows a well-defined, lobulated mass with a multifocal necrotic portion at the left of the peritoneal cavity (arrows).

**C.** On coronal, gadolinium-enhanced MR imaging obtained at 90 seconds after injection of contrast material, the mass shows strong enhancement. Note attachment to the stomach by a broad stalk (arrows).

**D.** Upper gastrointestinal examination shows a subtle, extrinsic mass effect along the greater curvature side of the gastric antrum (arrows).

**E.** Gross specimen shows a lobulated, grayish mass with a necrotic portion. Note attachment to the antrum of the stomach (arrows).

roendocrine carcinoma with local invasion, lymph node metastasis and peritoneal seeding.

## Discussion

Gastric endocrine tumors account for about 0.3% of all gastric tumors (1, 2) and 11 - 41% of all gastrointestinal endocrine tumors (3). Poorly differentiated gastric neuroendocrine carcinomas (NECs) represent a small minority (approximately 5.9%) of gastric endocrine tumors (1). Poorly differentiated gastric NECs and well-differentiated carcinoids are separate entities. The former are composed of poorly differentiated, small to medium-sized cells forming solid sheets or large trabeculae, with characteristically dispersed foci of necrosis and a high rate of mitosis (3, 4). Generally large, and showing extensive local infiltration, they have been considered as aggressive cancers with poor prognosis, and are associated with metastases to local lymph nodes or distant sites (1, 5). They occur in older patients, with male predominance (4, 5).

In-depth invasion of the gastric wall occurs, extending to the muscularis propria and the serosa (1). In our patient, a pedunculated, large exogastric mass resembling a gastric stromal tumor was present a finding of NECs which is, to our knowledge, extremely rare. In addition the mass wandered from right to left within the peritoneal cavity during CT and MRI examinations. An abdominal mass which can move freely is generally thought to originate in the small bowel or mesentery, though Rha SE et al (6) reported that a pedunculated exogastric mass presented as a wandering mass. Due to the stalk, as in our case, the mass was freely movable during various radiologic examinations, among which CT and MRI are more helpful for detecting the stalk between the mass and the stomach.

To our knowledge, the literature to date does not include the imaging findings of poorly differentiated gastric NECs, though in the case of the gastric NEC we describe, these findings are indistinguishable from those of other frequently occurring exogastric tumors such as the

stromal variety. Histopathologically, poorly differentiated gastric NECs have been shown to be characterized by abundant mitosis and prominent necrosis, with cells containing abundant cytoplasm and large, moderately hyperchromatic nuclei (7); poorly differentiated gastric NECs thus demonstrate isointensity at T1-weighted imaging and slight hyperintensity at T2-weighted imaging, and form a solid mass containing necrotic areas. Most such tumors are, in addition, angioinvasive (5), Thus showing strong enhancement after gadolinium injection. These findings are, however, indistinguishable from those of a gastric malignant stromal tumor presenting as an exogastric mass.

Poorly differentiated NECs occur infrequently. In our case, the tumor was a large, solid, pedunculated exogastric mass with a necrotic portion. Due to the stalk, the mass moved freely during radiologic examinations. Although an abdominal mass arising from the small bowel or mesentery is freely movable, a pedunculated exogastric mass, of the kind occurring in our case, may also be movable.

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