

# Muscular metastasis from gastric cancer

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**Abstract:** The association between gastric cancer and muscle metastasis is extremely rare. Few cases have been reported in the literature. We report a case of a 68-year-old man, with a diagnosis of gastric adenocarcinoma by endoscopy and biopsy. A painful nodule on the right thigh became noticeable during chemotherapy sessions, where positron emission tomography and percutaneous biopsy diagnosed a muscle metastasis of gastric adenocarcinoma. This report demonstrates the importance of further investigation of muscle lesion in patients with gastrointestinal cancer and how we can diagnose and treat these lesions.

**Keywords:** Stomach; adenocarcinoma; neoplasm metastasis

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## Introduction

Gastric cancer may metastasize to unusual sites, such as gums, iris, testis, muscle and meninges (1-4). Skeletal muscle metastasis is rare and few sporadic cases have been reported in the literature (5-7).

We report a case of a patient with adenocarcinoma of the stomach and peripheral skeletal muscle metastasis.

## Case presentation

A 68-year-old gentleman with a history of epigastric pain, dysphagia and weight loss for 2 months presented for oncologic evaluation. Upper digestive endoscopy demonstrated a 3 cm ulcerated lesion at the cardia and a large hiatal hernia (Figure 1). Biopsy showed a signet ring adenocarcinoma. A tomography scan disclosed a 6.5 cm × 7.5 cm × 5.0 cm tumor at the proximal stomach and multiple enlarged lymph nodes around the esophageal hiatus and the celiac artery (Figure 2). Neoadjuvant chemotherapy was started. A positron emission tomography (PET-CT) was not performed at this time.

A painful nodule on the middle third of the right thigh became noticeable during chemotherapy sessions. A 4.0 cm × 2.8 cm × 2.4 cm (volume =14 cm<sup>3</sup>) heterogeneous hypoechoic tumour in deep muscular planes was noticed



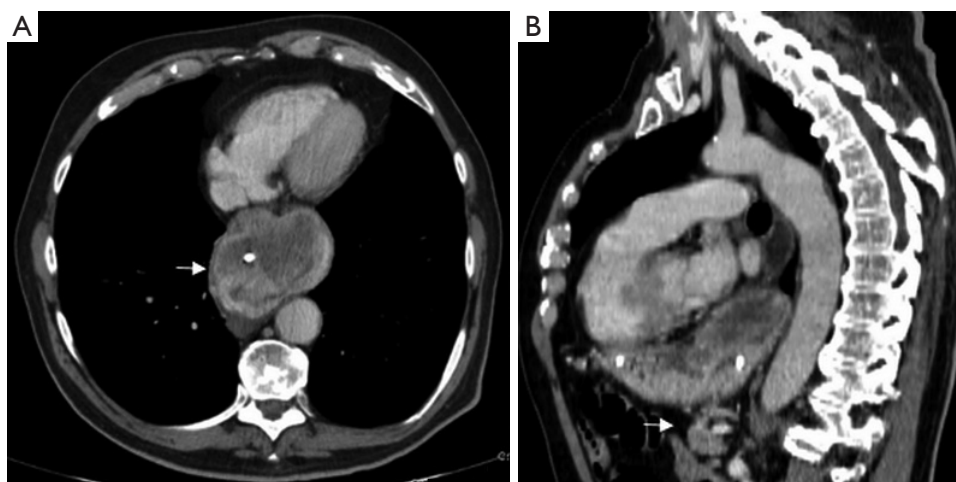
**Figure 1** Upper digestive endoscopy disclosing an ulcerated lesion at the cardia and a large hiatal hernia.

at the ultrasound. PET-CT showed elevated uptake at the gastric tumor site [standardized uptake value (SUV) =9.6 and right thigh (SUV =9.3)] (Figure 3). Percutaneous biopsy of the thigh lesion diagnosed a metastatic adenocarcinoma with the same characteristics of the gastric cancer.

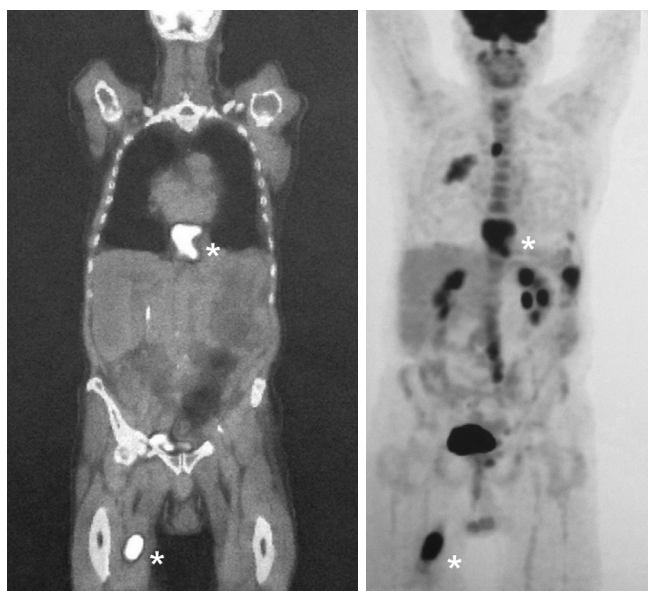
Patient is current under chemotherapy.

## Discussion

Muscular gastric metastasis is rare. Haygood *et al.* (8)



**Figure 2** Tomography tumor at the proximal stomach (A) (arrow) and multiple enlarged lymph nodes around the esophageal hiatus and the celiac artery (B) (arrow).



**Figure 3** Positron emission tomography showing an elevated uptake at the gastric tumor site and right thigh (\*).

reviewed 262 patients with skeletal muscular metastasis. The authors found that only 14% of the cases originated in the gastrointestinal tract and only one case originated in the stomach. In other study, Tuoheti *et al.* (9) reported two gastric metastasis out of 12 patients with muscular metastasis. The reasons for the rare incidence of muscle metastasis is still not certain since the muscular system

comprises around 50% of the body mass and is highly vascularized. It is believed that frequent changes of blood flow, the destruction of tumor cells by muscle movement, inhibition of tumor proliferation by lactic acid protease and muscle pH may be protective factors (6,7). Also, the portal filter may prevent peripheric spread of the disease without liver metastasis. The proximal location of the tumor may explain the dissemination via porto—azygos shunts in our case; however, the other reports does not state clearly the location of the neoplasm.

Muscle metastasis is usually asymptomatic, but depending on the location and degree of impairment may be associated with generalized muscle pain, muscle swelling, palpable mass, decreased range of motion, fever and weight loss (7). Diagnosis is made by imaging and histopathological examination of the lesion. Magnetic resonance imaging (MRI) is valuable for the detection of muscle metastasis (10). It shows a pattern of hypointense signal on T1 and hyperintense on T2. Some studies showed superiority of MRI compared to CT for detection of muscle metastases (5,7). Surgical resection may be used for symptomatic relief (5). Prognosis is usually poor (5).

In conclusion, skeletal muscle metastasis from gastric cancer is a rare finding. Painful nodules must bring awareness to the possibility of muscular metastasis.

### Acknowledgements

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