

# Gastric cancer revealed by a pathologic fracture due to bone metastasis

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## Abstract

Gastric cancer rarely disseminates to the bone. Initial clinical presentation of bone metastasis without any preceding gastrointestinal symptoms in gastric cancer patient is also extremely infrequent. Herein, we report an original case of gastric cancer revealed by a pathologic fracture due to bone metastasis.

## Gastric cancer revealed by a pathologic fracture due to bone metastasis

**Key clinical message:** Lectors should keep in mind that bone metastases can also be due to digestive, especially gastric tumours. Therefore, upper endoscopy should be performed in cas of gastric pain or other evocative sign.

**Abstract:** Gastric cancer rarely disseminates to the bone. Initial clinical presentation of bone metastasis without any preceding gastrointestinal symptoms in gastric cancer patient is also extremely infrequent. Herein, we report an original case of gastric cancer revealed by a pathologic fracture due to bone metastasis.

**Keywords:** Gastric cancer, bone metastasis

**Introduction:** Gastric cancer frequently spreads to the regional lymph nodes, liver and lungs following surgery or late in the clinical course (1). However, bone metastasis is rare, and is associated with a poor prognosis. Initial clinical presentation of bone metastasis without any preceding gastrointestinal symptoms in gastric cancer patient is extremely rare. A case of gastric cancer revealed by a pathologic fracture due to bone metastasis is reported.

## Case presentation

A 77-year-old man presented to our hospital with a six-month history of anorexia and weight loss. Past medical history included arterial essential hypertension. Previous surgeries included a left inguinal hernia. He had a tobacco smoking history of 30 pack years. No malignancies were noted in familial history. He denied abdominal pain, nausea, vomiting, hematochezia or melena. Physical examination revealed no abnormalities. No cervical lymphadenopathy or hepatosplenomegaly was objectified. Right arm was mildly swollen and tender to palpation but neurological examination was normal. Biological investigations showed Hb of 7,4 g/dl, WBC count 12 940/mm<sup>3</sup>, hyperneutrophilia of 10 010/mm<sup>3</sup>, platelets 502 000 /mm<sup>3</sup>, C-reactive protein 10 mg/L. Renal profile and electrolyte level were normal. Serum calcium level and alkaline phosphatases were also within normal ranges. Serum level of carcinoembryonic antigen (CEA) was normal (11.3 ng/ml).

Radiographs showed a pathologic fracture on a lytic lesion in his right humerus suggestive of bone metastasis (figure 1).

A computed scan was performed and objectified another lytic lesion in the eleventh right rib. (figure 2) A neoplastic origin was first suspected, confirmed by the presence on CT scan of a bulky gastric mass. (figure 3).

An upper endoscopy confirmed these findings by showing a fragile gastric mass in the level of the antrum sized 4 cm in greatest diameter. Biopsies taken from the stomach concluded to a well differentiated gastric adenocarcinoma.

An intramedullary nailing of the right humerus was proposed by orthopaedic surgeons, followed by systemic chemotherapy. Unfortunately, the patient lost to follow-up.

## Discussion

Gastric cancer is still the second leading cause of cancer-related deaths worldwide. (2). It rarely shows dissemination to the bone, as it portends a poor prognosis. In fact, mean survival time is 4-5 months with bone metastasis from gastric cancer. (3) In addition, initial or simultaneous presentation of bone metastasis particularly in asymptomatic gastric cancer is extremely rare. (4) Our patient had initially no specific symptoms in regard to the primitive tumour nor bone metastasis.

The most frequent sites of bone metastasis are the vertebrae (66%), the costa (59%), the pelvic bone (43%), the femur (30%) and the scapula and clavicle (17%) (5). Humeral bone metastases, such as in our case, are exceptional. Bone pain, pathologic fracture and spinal cord compression are the most common symptoms and complications. In bone metastasis, the cancer cells diffusely proliferate in the bone marrow and thus induce bone destruction as well as haematological complications.(6) Therefore, laboratory abnormalities that could suggest the possibility of bone metastasis include elevated alkaline phosphatase (ALP), increased LDH, anaemia or thrombocytopenia. Studies suggest that ALP is the most predictive biological marker for the presence of bone metastasis in gastric cancer. (7) However, serum ALP can be normal, like in our case.

Bone scintigraphy could detect bone metastasis at the time approximately 3 months earlier than that with using plain X-ray. (8). But, the main limitation of scintigraphy is low specificity as it could detect non neoplastic lesions as hot uptake lesions in many conditions (Paget's disease, degenerative arthritis, infectious bone diseases ...). Further investigations may be required to increase accuracy of the diagnosis (positron emission tomography computed tomography, magnetic resonance imaging, bone marrow tapping or bone marrow histological tests). In our case, the presence of an adenocarcinoma of the stomach and a concomitant lytic lesion in the rib supported the diagnosis of bone metastasis. Unfortunately, bone scintigraphy was not done because the patient lost to follow-up.

Gastric cancer patients with bone metastasis have the poorest median survival time compared with those with metastasis in other sites including the thorax, liver or other regions of the abdomen. (9) In addition, survival time following diagnosis of bone metastasis in gastric cancer is slightly longer in the initial bone metastasis patient compared with that in those with late-phase bone metastasis. (4) Systemic chemotherapy could improve survival among patients with initial bone metastasis of gastric cancer. Pain management for patients with bone pain is important and radiation may be quite effective(10). Bisphosphonate has also been used for the treatment of clinical symptoms. As for progressive or recurrent gastric cancer guidelines recommend S1-based chemotherapy (11). On the other hand, since bone metastasis can cause disseminated intravascular coagulation, the poor general condition of the patient or the presence of thrombocytopenia and severe anaemia may make the patient ineligible for chemotherapy (12).

## Conclusion:

The present case indicates that gastric cancer may have unusual pathological behaviour. The diagnosis should always be suspected in patients initially presenting with single or multiple bone metastasis, even in the absence of gastrointestinal symptoms.

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## Author contributions

M.Sabbah and Z.Benzarti: wrote the paper. N.Bibani: performed the upper endoscopy. C.Chammakhi contributed by the CT scan pictures. D.Gargouri: The head of the gastroenterology department in the Habib Thameur Hospital and contributes in the therapeutic decisions.

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