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Recurrent gastric cancer metastasizing to the bone marrow: A case report of a rare presentation

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ABSTRACT

INTRODUCTION: Gastric cancer notoriously recurs post curative surgical resection. While there may be visceral metastasis to peritoneal surfaces, bone marrow involvement may also occur although with rarity. We present a case report of recurrent gastric cancer with bone marrow metastasis in a patient with no evidence of systemic disease on follow-up for two years post surgical resection. This case demonstrates the need of heightened clinical suspicion in these patients.

METHODS: We reviewed the medical records of a patient who presented with metastatic gastric adenocarcinoma to the bone marrow two years post R0 subtotal gastrectomy with Roux-en-Y gastrojejunostomy without evidence of systemic disease on follow up for two years.

RESULTS: Laboratory and imaging studies of the patient on presentation two years post R0 subtotal gastrectomy with Roux-en-Y gastrojejunostomy is as follows; elevated alkaline phosphatase (ALP) of 472 U/L, CT chest/abdomen/pelvis that showed multiple new sclerotic lesions throughout osseous structures suspicious for metastasis, PET/CT that showed many sclerotic lesions throughout the axial and appendicular skeleton, some FDG-avid and suspicious for active osseous metastasis. Bone marrow biopsy showed metastatic poorly differentiated carcinoma consisted with known history of gastric cancer.

CONCLUSION: Gastric cancer has a high rate of recurrence post curative surgery. Despite the rarity of bone marrow metastasis, a high level of suspicion should be maintained in patients presenting with elevated ALP and evidence of pancytopenia post curative surgery.

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1. Introduction

Surgical resection is the mainstay of treatment for gastric cancer [1]. Recurrence of gastric cancer post curative resection is well documented [2–5] and is attributed most commonly to haematogenous spread and spread of cancer cells at the time of surgery [6]. Clinicopathological characteristics determine the type of recurrence in gastric cancer [7]. While overt bone and skeletal metastases are rare in gastric cancer, bone marrow involvement is more common than predicted by clinical findings [8]. Physicians working at both an academic and community centers were involved in the care of the patient reported. In line with the SCARE criteria, we present a case of recurrent gastric cancer with bone marrow metastases presenting with new onset pancytopenia in a patient who had no evidence of systemic disease on follow-up for two years post cura-

tive surgery [9]. This case demonstrates the need for heightened clinical suspicion in such patients.

2. Methods

We reviewed the medical records of a patient with metastatic gastric cancer to the bone marrow presenting two years post R0 resection of the primary tumor.

3. Results

Detailed case presentation is as follows: Patient is a 66-year old Hispanic female whose preoperative workup included an esophagogastroduodenoscopy (EGD) that showed a linear ulcer in antrum and a deformed pylorus with biopsy consistent with adenocarcinoma. Computed tomography (CT) of the abdomen and pelvis showed thickening of the distal portion of the stomach without evidence of metastasis or lymph node involvement. Positron emission tomography (PET) scan showed FDG-avid mass in the gastric antrum without evidence of loco-regional or distant metastasis (Fig. 1). The patient underwent subtotal gastrectomy with R0 resection with Roux-en-Y gastrojejunostomy. Pathology

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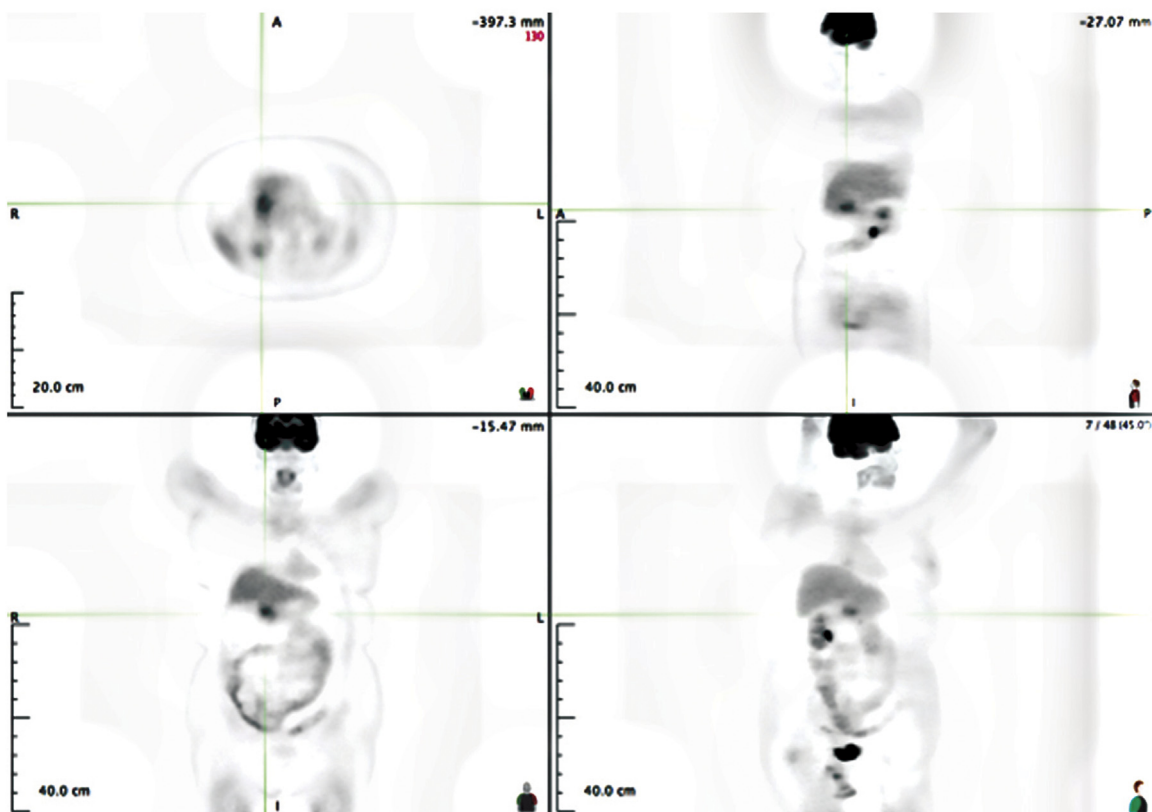


Fig. 1. PET/CT: FDG-avid mass in antrum.

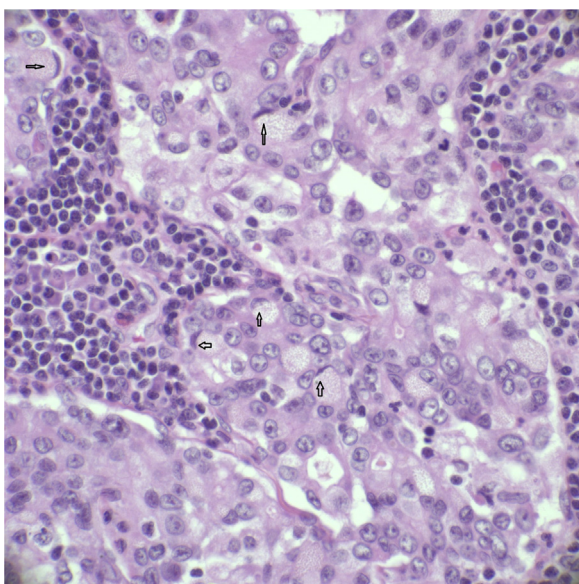


Fig. 2. Poorly differentiated gastric carcinoma, notice signet ring cells (arrows).

reported a G3 diffuse poorly differentiated gastric carcinoma with signet ring cell components; pT3, N3a, M0 consistent with stage III B (Fig. 2). A 4.0*3.5*1.1 cm tumor invading the muscularis propria was observed with metastasis involving 7/14 greater curvature and 1/1 lesser curvature nodes. Immediate postoperative recovery was uncomplicated. Further treatment included adjuvant 5-Fluorouracil infusion with concomitant radiation therapy. Chemoradiation therapy was delayed until resolution of dysphagia with nausea and vomiting that developed about a month postoperatively. Despite having normal blood counts on postoperative

follow-ups, she presented about two years later with new onset pancytopenia and severe mucositis requiring broad-spectrum antibiotics and Neupogen. Other significant labs include an elevated alkaline phosphatase (ALP) at 472 U/L and a sodium level of 138 mmol/L. Imaging studies during hospitalization include a CT of the chest/abdomen/pelvis that showed multiple new sclerotic lesions throughout osseous structures suspicious for metastases and a PET/CT that showed multiple sclerotic lesions throughout the axial and appendicular skeleton, some FDG-avid and suspicious for active osseous metastases (Fig. 3). Bone marrow biopsy showed metastatic poorly differentiated carcinoma consisted with known history of primary gastric cancer (Fig. 4). HER-2 was negative and patient was started on palliative chemotherapy with FOLFIRI (Folinic acid-Fluorouracil-Irinotecan) and Zoledronic acid that was well tolerated.

4. Discussion

Gastric cancer remains a significant source of cancer morbidity and mortality worldwide. Disease progression is usually loco-regional to systemic with distant metastasis. Systemic disease recurrence after curative surgical resection is estimated at 60% [10,11]. Gastric cancer typically metastasizes to visceral and peritoneal surfaces with liver and distant nodes among the most common sites [12].

While overt bone or skeletal metastases are rare with gastric cancer, bone marrow involvement occurs more often than clinical findings might predict [8]. Despite the rarity, bone marrow metastasis in gastric cancer is typically seen in younger patients and those with aggressive histology, i.e. presence of signet ring cells or poorly differentiated [13]. The incidence of metastatic gastric cancer to osseous structures is not well established; various studies report values ranging from 0.9% to 57% [14–16]. Surgical extirpation of

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