



Isolated Abdominal Subcutaneous Nodules from Recurrent Gastric Adenocarcinoma after Curative Resection: A Case Report with Review of Literature

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Abstract

Cutaneous and subcutaneous metastases from gastric adenocarcinoma are rare and typically occur in the setting of metastatic visceral disease. Isolated abdominal wall metastasis following curative-intent resection is exceptionally uncommon, particularly in patients with signet-ring cell histology. A 67-year-old Hispanic male initially presented with a perforated gastric ulcer and underwent exploratory laparotomy, distal gastrectomy, and Billroth I reconstruction. Final pathology demonstrated poorly differentiated gastric adenocarcinoma with signet-ring cell features invading the serosa (pT4aN0M0) with negative margins and an inadequate lymph node harvest of 0/2 lymph nodes examined. Immunohistochemistry demonstrated positivity for pan-cytokeratin, CK20,

weak CK7, and CDX2, with negative HER2/neu expression. The patient declined adjuvant chemotherapy and was subsequently lost to follow-up. Three years later, he presented with progressively enlarging abdominal wall nodules. Ultrasound-guided biopsy demonstrated metastatic adenocarcinoma consistent with gastric origin. Molecular testing revealed HER2-negative, microsatellite stable disease with PD-L1 combined positive score of 1. Computed tomography imaging showed no evidence of visceral metastasis or lymphadenopathy. Upper and lower endoscopic evaluation did not identify recurrent intraluminal disease or a second primary malignancy. Multidisciplinary evaluation determined the disease to represent isolated abdominal wall metastasis from recurrent gastric adenocarcinoma, and the patient was

not considered a candidate for surgical resection. The patient received palliative systemic chemotherapy and immunotherapy but experienced progressive disease and treatment-related toxicity. He ultimately transitioned to hospice care and died 42 months after his original gastrectomy and 14 months after diagnosis of metastatic recurrence. This case highlights a rare presentation of isolated abdominal subcutaneous metastasis from signet-ring cell gastric adenocarcinoma following curative-intent resection. Recognition of atypical cutaneous or subcutaneous lesions in patients with prior gastric malignancy is critical, as these lesions may represent metastatic recurrence even in the absence of radiographic visceral disease.

Keywords: Gastric adenocarcinoma; Signet-ring cell carcinoma; Cutaneous metastasis; Abdominal wall metastasis; Gastric cancer recurrence

Background

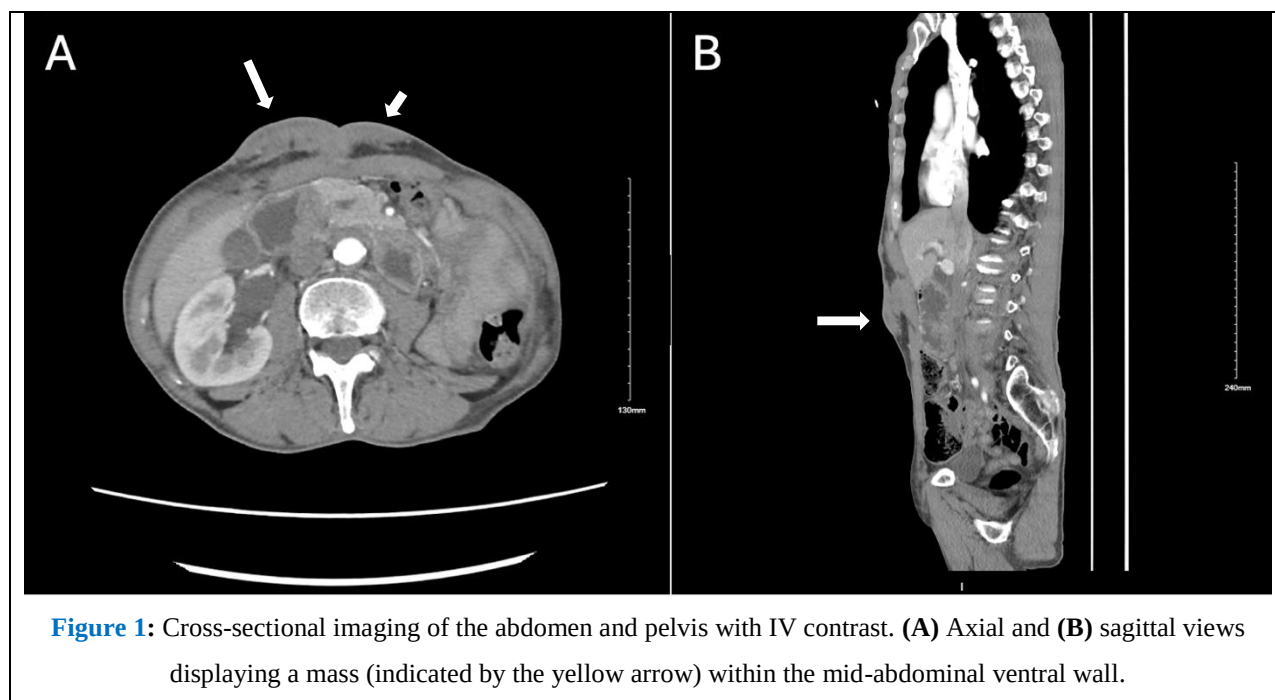
Gastric cancer is the fifth most frequently diagnosed malignancy and fourth leading cause of cancer-related mortality worldwide [1]. Despite treatment with curative-intent, recurrence of disease can occur in up to 40% of patients, with patients often presenting with metastasis to the liver, peritoneum, lung and bone [2,3]. Cutaneous and subcutaneous metastasis from gastric cancer are rare, with reported incidences ranging from 0.2% to 2%, and are typically associated with concurrent visceral

metastatic disease [4,5]. Among the gastric tumor subtypes, signet-ring cell exhibits aggressive biologic behavior and accounts for 66.1% of all reported cases with skin metastasis [5]. Presentations are variable and may mimic benign dermatologic or inflammatory conditions, which potentially delays diagnosis and treatment. We present a rare case of isolated abdominal wall subcutaneous metastases occurring three years after near R0 resection of signet-ring cell gastric adenocarcinoma in the absence of obvious concurrent visceral disease.

Case Presentation

A 67-year-old Hispanic male presented with a perforated gastric ulcer and underwent exploratory laparotomy, distal gastrectomy and Billroth I reconstruction. Pathology revealed poorly differentiated gastric adenocarcinoma with signet-ring cells invading the serosa (pT4aN0M0), with negative surgical margins and no evidence of metastatic malignancy in two lymph nodes examined. Histopathologic evaluation was positive for pan-cytokeratin, CK20, weak CK7 and CDX2 immunostains, with negative HER2/neu expression. The patient declined adjuvant chemotherapy and was subsequently lost to follow-up.

Three years later, he presented with one year of progressively enlarging, soft, flesh-colored abdominal wall nodules measuring 3 x 5 cm, 2 x 3 cm, and 2 x 3 cm (Figure 1).



Ultrasound-guided biopsy revealed desmoplastic stromal changes and atypical epithelioid cells with irregular hyperchromatic nuclei (**Figure 2**). Immunohistochemical analysis showed PanCK-Oscar

positivity, CK20+ positivity, CK7 negativity, CDX2 positivity, MOC31 positivity, consistent with metastatic adenocarcinoma of gastrointestinal origin (**Figure 3**).

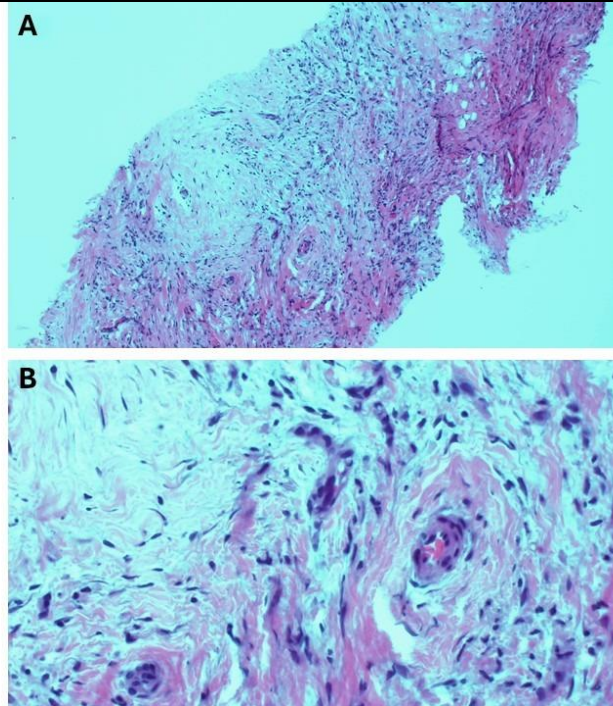


Figure 2: Abdominal wall biopsy specimen with evidence of poorly differentiated gastric adenocarcinoma. **(A)** Low power field and **(B)** high power field showing desmoplastic changes and atypical epithelioid cells with irregular hyperchromatic nuclei.

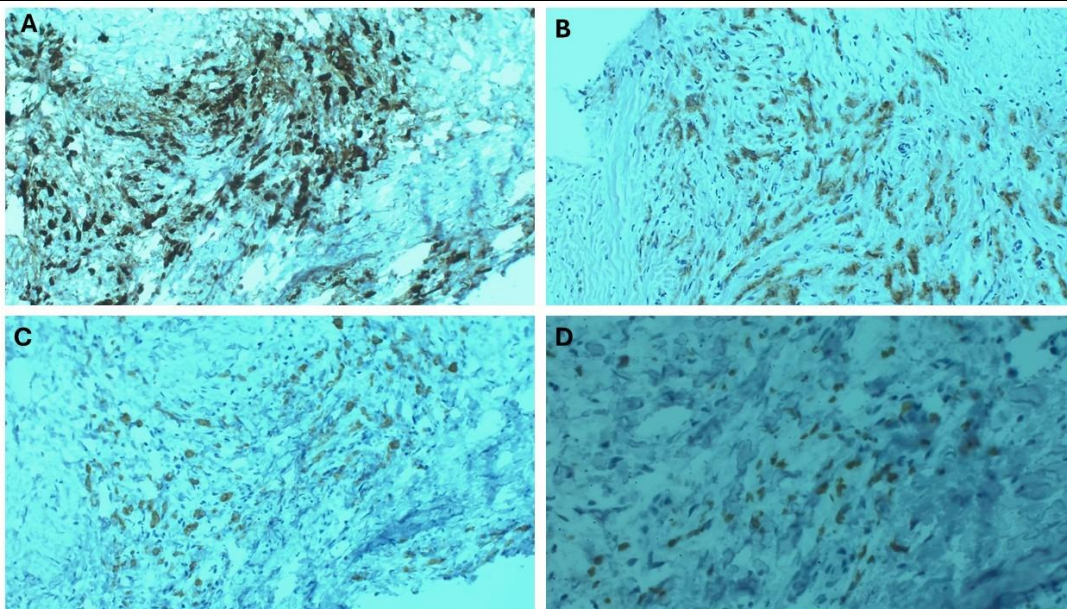


Figure 3: Immunostaining for **(A)** pancytokeratin, **(B)** epithelial cell adhesion molecule (MOC31), **(C)** cytokeratin 20 (CK20), and **(D)** caudal-related homeobox transcription factor 2 (CDX2).

Next generation sequencing showed HER2 negativity, PD-L1 combined positive score of 1, microsatellite stable disease, and negative CLDN18, BRAF, NTRK, and RET mutations. Computed tomography of the chest, abdomen, and pelvis demonstrated no obvious visceral metastasis or lymphadenopathy. Esophagogastroduodenoscopy and colonoscopy did not reveal recurrent gastric disease or a second primary malignancy. Following multidisciplinary tumor board discussion, the lesions were determined to be isolated metastatic recurrence from the patient's prior gastric adenocarcinoma, consistent with stage IV disease. Therefore, upfront surgical resection was not recommended. The patient underwent 13 cycles of palliative FOLFOX in combination with Nivolumab 240 mg every two weeks. Due to worsening peripheral neuropathy, treatment was transitioned to Paclitaxel 117 mg and Ramucirumab 360 mg monthly for four additional cycles. Therapy was ultimately discontinued because of small bowel obstruction and progressive clinical decline. The patient and family elected for hospice care. He died 42 months after initial gastrectomy and 14 months after the diagnosis of metastatic recurrence.

Discussion

Gastric adenocarcinoma develops through a multistep carcinogenic process driven by chronic inflammation and influenced by factors including *Helicobacter pylori* infection, dietary exposures, genetic predisposition, and Epstein-Barr virus infection [6-9]. Recurrence following treatment remains common and most frequently affects the liver, peritoneum, lung, and bone. Cutaneous and subcutaneous metastasis from gastric cancer are exceedingly uncommon and account for less than 1% of metastatic presentations

[4]. Several mechanisms have been proposed, including hematogenous spread, lymphatic spread, direct extension, and iatrogenic implantation during surgical intervention [10-16]. For gastrointestinal malignancies, hematogenous dissemination is believed to be the predominant mechanism. Clinical presentation of cutaneous or subcutaneous metastasis is widely variable and nonspecific. The classic appearance is a firm, painless dermal nodule, but erysipelas-like lesions, plaques, ulcers, eczematous eruptions, and cellulitic presentations have been reported [17-20]. A recent review of reported cases of cutaneous metastasis from gastric cancers demonstrated that nodular lesions represented the most common morphology, accounting for approximately 46% of cases, followed by erysipelas-like lesions and ulcerative presentations [5]. Almost 40% of presentations were noted to be single manifestations [15-23]. Signet-ring cell histology was present in majority of cases and is associated with aggressive tumor biology and poor prognosis. Due to the resemblance of benign dermatologic conditions, diagnosis and treatment may be delayed in an already advanced malignancy.

Management of metastatic gastric adenocarcinoma depends on disease burden, performance status, and molecular profile. Systemic chemotherapy remains the cornerstone of treatment for unresectable or metastatic disease [11]. Prognosis of cutaneous metastases is typically poor, with a median survival of approximately six months after diagnosis [5]. This case demonstrates a rare presentation of cutaneous metastases from a primary signet-ring cell gastric adenocarcinoma. Our patient presented with several unusual features. First, he developed isolated abdominal wall subcutaneous metastases without identifiable visceral recurrence or lymphadenopathy

on imaging. Second, recurrence occurred several years after presumed curative-intent resection. Third, despite aggressive signet-ring cell histology and lack of adjuvant chemotherapy, he experienced relatively prolonged survival after diagnosis of metastatic disease. The findings highlight the importance of maintaining clinical suspicion for metastatic recurrence in patients with prior gastric adenocarcinoma who present with new cutaneous or subcutaneous lesions, even in the absence of radiographic visceral disease. Early biopsy, pathologic evaluation, and multidisciplinary assessment are clinical for prompt diagnosis and management.

Conclusions

Isolated abdominal wall subcutaneous metastasis from gastric adenocarcinoma is exceptionally rare. This case highlights an unusual pattern of recurrence from signet-ring cell gastric adenocarcinoma without obvious visceral metastatic disease that occurred years after curative-intent resection. Recognition of cutaneous or subcutaneous lesions in patients with prior gastric malignancy is essential, as timely biopsy and multidisciplinary evaluation can facilitate earlier diagnosis and treatment.

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