INTRODUCTION

Metastatic head and neck masses usually result from locoregional spread of mucosal squamous cell carcinoma. We report metastatic signet ring cell gastric carcinoma presenting as a painful Level V neck mass without Virchow node; carcinomatous spread spared supraclavicular nodes at the junction of the thoracic duct and left subclavian vein.

Although clinical practice guidelines have helped standardize evaluation and management of neck masses, the differential diagnosis of lateral neck masses is vast, encompassing inflammatory, congenital, and neoplastic etiologies. The presence of a painful, fixed neck mass in an adult patient should rouse suspicion of malignancy. While lymphatic spread of head and neck mucosal squamous carcinoma is common, fixed neck masses may arise from myriad etiologies, including distant spread of a visceral malignancy. Intraclavicular primary carcinomas that metastasize to the head and neck usually do so via lymphatics, classically manifesting an enlarged left-sided supraclavicular lymph node, or Virchow’s lymph node (VN). Muscle metastasis via
hematogenous spread has also been reported but is a far rarer event.\textsuperscript{4,5} We report signet ring cell gastric adenocarcinoma that bypassed Virchow’s node, presenting as a painful mass of the left posterolateral neck.

2 | CASE PRESENTATION

A 78-year-old white woman presented with a 6-month history of progressive left neck swelling and recent onset of left neck pain with lateral movement. Her medical history was also notable for a history of clear cell renal cell carcinoma that was removed in May 2014 and without recurrence. Otherwise, she was in good health with a negative history. She reported being a former smoker with successful tobacco cessation 15 years prior, and she consumed no alcohol. She adhered to a Mediterranean diet, was appropriately nourished, and consumed 2 L of water daily. She denied symptoms of poor appetite, weight loss, early satiety, dysarthria, dysphagia, or other head and neck or gastrointestinal symptoms. Her clinical examination showed a firm, hypomobile mass involving Level V of neck, with the absence of nodal enlargement in the supraclavicular fossa or any other regions of the head and neck. Flexible endoscopy revealed no lesions in the mucosa of the upper aerodigestive tract, and an ultrasound-guided biopsy of the left neck mass was nondiagnostic.

Because of the patient’s known cancer history, comprehensive imaging evaluation was then performed, including magnetic resonance imaging (MRI) with gadolinium, neck and thorax contrast computed tomography (CT), and total body positron emission tomography (PET) CT. Head and neck MRI (Figure 1A,B) and CT (Figure 1C,D) imaging identified an enhancing posterolateral neck lesion measuring $37 \times 35 \times 15$ mm. The mass was adjacent to and invading the sternocleidomastoid muscle. Thoracic CT scan demonstrated no pathological masses or enlarged lymph nodes. Repeat ultrasound-guided fine-needle biopsies were again nondiagnostic. The woman requested surgical removal of the neck mass, and she was therefore taken to the operating theater for rigid endoscopy of the upper respiratory tract and excisional biopsy of the left neck mass. Endoscopy revealed no abnormalities. Through a small neck incision, the neck mass was resected “in bloc,” also excising a small cuff of surrounding fibro-adipose tissue and sternocleidomastoid musculature.

Frozen section pathology demonstrated cellular atypia consistent with gastric carcinoma (Figure 2A,B,C). After obtaining consent from family, esophagogastroduodenoscopy with biopsy was performed with the patient under general anesthesia. This evaluation identified a gastric ulcer situated on the greater curvature of the stomach and the anterior wall of prepyloric region. Serial biopsies were performed of the primary lesion and the adjacent tissues. Final histopathology demonstrated HER2-negative signet ring cell carcinoma. Following multidisciplinary review, the patient started chemotherapy with folinic acid, 5-fluorouracil (5-FU), and oxaliplatin (FOLFOX) without a...
response. The treatment regimen was transitioned to folinic acid (leucovorin), 5-FU, and irinotecan (FOLFIRI). The patient experienced tumor regression and remission; as of the most recent follow-up in August 2020, the patient was without evidence of disease.

3 | DISCUSSION

Thorough evaluation for neck masses is critical, and rarely, distant primary tumors may present with metastasis to the head and neck.4 Our patient had no clinical signs of visceral disease4; she denied gastric pain, decreased appetite, or weight loss.6 Gastric carcinoma is insidious, with the epidemiological data showing that 80% of patients with gastric cancer have metastases at time of diagnosis.7 This metastatic gastric carcinoma was highly unusual in sparing the supraclavicular nodal basin. Because visceral malignancies are often initially asymptomatic at the primary site, biopsy of suspect lymph nodes may facilitate diagnosis.8 While metastasis of gastric cancer to the head and neck is uncommon,9 Virchow’s node (Troisier’s sign) is well-recognized.7

Virchow’s node in visceral malignancy results from tumor metastasis through the thoracic duct, and it is extremely rare for gastric carcinoma to bypass this lymph node basin.9,10 Virchow nodes may compress or invade adjacent neurovascular structures, causing thoracic outlet syndrome, brachial plexopathy, phrenic neuropathy, or Horner’s syndrome. Many sources of malignancy—gastrointestinal, hepatobiliary, ovarian, testicular, renal, and other origins—may present with a Virchow’s node, underscoring its importance across a broad range of medical and surgical specialties. Level V lymph node metastasis by gastric carcinoma without an associated Virchow’s node is extremely rare10; in fact, only one other case has been previously reported in the literature.11 This unusual case highlights enduring principles, including vigilance about the possibility of a distant primary tumor, while ensuring diligent surveillance for upper aerodigestive tract lesions.

CONFLICT OF INTEREST
The authors have no financial conflicts of interest relevant to this article to disclose.

AUTHOR CONTRIBUTIONS
ADS, LDA, and MB: designed the study and wrote the article; GL, PG, MP, and TT: collected the clinical data; and GR and MM: involved in the literature review, criticism, and review of the paper.
ETHICAL APPROVAL
The study was approved by the IRB of the hospital without releasing an authorization number. The patient signed a written consent before being included in the study.

PATIENT CONSENT FOR PUBLICATION
The patient is authorized to publish her data previous anonymization.

DATA AVAILABILITY STATEMENT
Original data are available under request to the corresponding author.

ORCID
Arianna Di Stadio https://orcid.org/0000-0001-5510-3814

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