

## Oncology

# Metastatic Adenocarcinoma of the Prostate Presenting as Supraclavicular and Bulky Generalized Lymphadenopathy with a Benign Digital Rectal Exam

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## ABSTRACT

A 63-year-old male presented with complaints of an enlarging left supraclavicular mass and weight loss. Computed tomography demonstrated a large retroperitoneal mass causing displacement of the adjacent organs, and moderate left hydronephrosis. Multiple pulmonary nodules, lytic spinal lesions, and generalized lymphadenopathy including the left supraclavicular region were seen. Serum prostate-specific antigen level was 2064.0 ng/mL. Digital rectal exam revealed an enlarged prostate without nodularity. Biopsy of the supraclavicular node demonstrated prostatic adenocarcinoma. The diagnosis of lymphoma may be initially suggested, however, prostatic origin should be considered even when the prostate exam is not grossly abnormal.

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## Introduction

Prostate cancer is the most common non-cutaneous malignancy in men in Western countries, and is the second leading cause of cancer death in men.<sup>1</sup> Commonly indolent, low risk disease is often discovered through routine prostate cancer screening. Without timely screening, some patients can present with advanced metastatic disease with limited and non-specific symptoms.

The axial skeleton is the most common site of distant metastases in prostate cancer. Visceral metastases may involve the lungs, liver, and adrenal glands. Lymphatic metastasis involves pelvic and retroperitoneal lymph nodes. Diffuse lymphadenopathy from prostate cancer is rare in the PSA era. Distant lymphatic spread beyond the retroperitoneum to Virchow's (supraclavicular) node is particularly rare.<sup>2–4</sup> This distribution is more commonly suggestive of lymphoproliferative disorders. Herein, we present a case of metastatic CaP with diffuse, bulky, and widespread lymphadenopathy involving the left supraclavicular (Virchow's) node despite having unremarkable DRE.

**Abbreviations:** ADT, androgen deprivation therapy; BMP, basic metabolic panel; BUN, blood urea nitrogen; CaP, cancer of the prostate; CT, computed tomography; DRE, digital rectal exam; DVT, deep venous thrombosis; PSA, prostate-specific antigen.

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## Case report

A 63-year-old male with history of hypertension and DVT presented with weight loss and non-tender left neck mass enlarging over several months. A CT chest, abdomen, and pelvis revealed a bulky retroperitoneal mass encasing the aorta, with anterior displacement of adjacent organs, inguinal, pelvic, mediastinal and supraclavicular lymphadenopathy, bilateral pulmonary nodules, lytic osseous spinal lesions, and moderate left hydronephrosis (Fig. 1). The prostate on CT scan measured 47.6 mm × 41.0 mm × 40.8 mm.

Urology was consulted for left hydronephrosis and acute kidney injury. The patient denied gross hematuria, dysuria, flank pain, or lower urinary tract symptoms. He denied prior CaP screening with PSA and his last medical encounter was 1 year prior to DVT. His father passed away from CaP at age 73. He endorsed a long history of tobacco use.

On exam, vital signs were normal and stable. There was a protuberant, non-tender soft tissue mass in the left supraclavicular space (Fig. 2). His cardiopulmonary exam was unremarkable. The abdomen was soft, non-tender, mildly distended, without palpable mass. The groin revealed bilateral palpable inguinal lymphadenopathy. Penile, scrotal, and testicular examinations were unremarkable. DRE revealed a 45 g, smooth, non-tender prostate without nodules.

His chemistry panel was significant for BUN 43 mg/dL and creatinine 3.1 mg/dL from a baseline of 1.6 mg/dL. Hematology demonstrated a white blood cell count of 12,700/mm<sup>3</sup>, hemoglobin



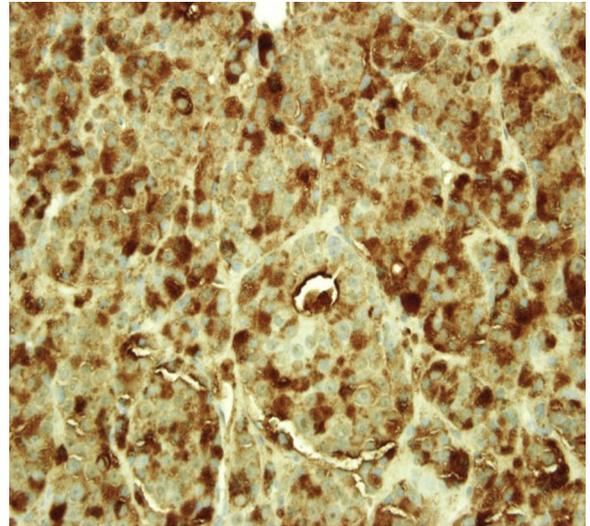
**Figure 1.** Computed tomography scan without contrast of the abdomen and pelvis demonstrating large volume retroperitoneal lymphadenopathy.

level of 8.6 g/dL, and platelet count of 351,000/mm<sup>3</sup>. Urinalysis revealed 3 RBC/hpf on microscopy. Urine culture was negative.

Serum tumor markers were obtained to identify the primary lesion. The PSA level was 2064 ng/mL, CEA 2.17 ng/mL, and CA19-9 ≤ 0.80 units/mL. Core needle biopsy of the left supraclavicular lymph node was subsequently performed and revealed CaP confirmed with PSA staining (Fig. 3). A bone-scan demonstrated diffusely increased uptake of bilateral ribs, sternum, thoracic spine, lumbar spine, and pelvis.



**Figure 2.** A soft tissue mass of the left supraclavicular region.



**Figure 3.** Immunohistochemical staining of the neoplastic cells from the left supraclavicular lymph nodes staining positive for prostate-specific antigen.

A left percutaneous nephrostomy tube was placed for drainage of the left collecting system with subsequent improvement in renal function. Degarelix 240 mg was administered to initiate ADT.

## Discussion

Metastatic CaP commonly involves the axial skeleton and the regional lymph nodes. While retroperitoneal and mediastinal lymphadenopathy has been reported in the literature, a chief complaint of distant lymphatic involvement in the setting of metastatic CaP is a rare finding. The majority of cancers involving a supraclavicular lymph node are a consequence of lymphoproliferative or primary head/neck, thoracic and gastrointestinal tumors.<sup>3</sup> The left supraclavicular lymph node, classically described as Virchow's node, is recognized for its association with distant metastasis. It was first documented in 1848 by pathologist Rudolf Virchow, referring to carcinomatous involvement of the left supraclavicular lymph node secondary to metastatic malignancy, particularly from the abdomen and pelvis.<sup>5</sup>

Lymphatic spread in CaP more commonly involves the pelvic lymph nodes, followed by progression to the retroperitoneal lymph nodes. The uncommon metastasis to the left supraclavicular node occurs through the rich lymphatic network of the retroperitoneal lymph nodes, cisternae chyli, and the thoracic duct. The thoracic duct reunites with systemic circulation at the left subclavian vein, where Virchow's node forms via lymphatic extension to the left supraclavicular fossa.<sup>5</sup> After review of the literature, this type of metastatic spread is a very rare manifestation of underlying CaP.<sup>2–4</sup> Despite its rarity, the presence of bone metastases and widespread retroperitoneal and supraclavicular lymphadenopathy merits evaluation for CaP.

Surprisingly, this patient had a grossly benign DRE despite the large tumor burden and a PSA of 2064.0 ng/mL. He did not have prior CaP screening with PSA, so there was no baseline PSA available. There are limited reports of patients with metastatic CaP that present with supraclavicular and generalized lymphadenopathy as their initial complaint. Butler et al described a case series of 19 CaP patients identified over a 12-year period who presented with an enlarged supraclavicular lymph node. Five patients had a benign DRE.<sup>2</sup> In the span of 15 years, Cho et al reported eight patients with

similar findings.<sup>4</sup> Unusual patterns of spread can present a diagnostic challenge, and efforts to identify the location of the primary tumor should be made. Surgical lymph node biopsy with immunohistochemical staining and PSA testing as performed in this case should be explored. These techniques have been demonstrated to be reliable in establishing prostatic origin.<sup>4</sup>

Our review of the literature indicates that a benign DRE is a rare finding in patients presenting with supradiaphragmatic lymphadenopathy from metastatic CaP.<sup>2</sup> We seek to share this rarely documented clinical presentation to heighten practitioners' awareness of atypical presentations of advanced CaP. Early diagnosis of disseminated CaP is critical to allow chemohormonal therapy which may be associated with improved progression-free survival rates.

### Conclusion

It is important for the clinician to maintain a high index of suspicion for CaP when generalized lymphadenopathy is the initial presenting complaint in middle-aged and elderly men, even in the

absence of an abnormal DRE. In such cases, the diagnostic difficulty is aided by immunohistochemical staining of lymphatic biopsy, prostatic biopsy, and serum PSA testing.

### Conflict of interest

There are no conflict of interest.

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