Brachial plexopathy in carcinoma of the prostate: An uncommon presentation of a common malignancy

C. Danny Darlington*

INTRODUCTION

Carcinoma prostate is a common malignancy in men over 50 years of age. In India, data from cancer registries indicate a rising trend in the incidence of the disease secondary to lifestyle changes and improved diagnostic facilities and documentation.[1] Prostatic cancer usually presents with lower urinary tract symptoms (LUTS) or metastatic symptoms. Metastatic neurological symptoms and signs are rarely seen in carcinoma prostate. Spinal cord compression causing limb paralysis and rarely cranial nerve paralysis due to metastatic deposits at the base of skull have been reported but in patients already diagnosed with carcinoma prostate. Rarely, metastatic neurologic symptom can be the only presentation of the disease. We present such a case of carcinoma prostate presenting with brachial plexopathy.

CASE REPORT

An 88-year-old man presented with a 6 months history of progressive loss of extension at the proximal interphalangeal joints (PIPs) of the right little, ring and middle fingers. It had gradually progressed to a fixed flexion deformity at the PIP joints and an extension deformity at the distal interphalangeal (DIP) joints of these three fingers. There was no past history of trauma to the neck or hands. There were no associated urological complaints or bone pains.

General examination of the patient was unremarkable. On examination of the right hand, there was wasting of small muscles and thenar eminence of the hand. The medial three fingers were flexed at the PIP joints and extended at the DIP joints. Passive movements were not possible at these joints due to fixed deformity caused by the long-standing paralysis [Figure 1]. There was loss of sensation in C8 and T1 dermatomes. Rest of the upper limb was normal. Examination of the right cervical region revealed a 5 cm nontender hard, fixed swelling occupying the right posterior triangle of the neck. Lymph nodes at other sites in neck and elsewhere were not palpable.

Digital rectal examination (DRE) revealed a hard, enlarged prostate gland. His routine biochemical and hematological workup (blood urea, creatinine, electrolytes, complete...
blood counts and liver function test) was within normal limits. His serum prostate-specific antigen (PSA) was 184 ng/ml. Ultrasound of the kidney, ureter, and bladder region revealed bilaterally normal kidneys and bladder and the prostate weighted 60 cc with an intravesical protrusion of 5 mm. A transrectal ultrasonography-guided 12-core biopsy of the prostate was performed which showed adenocarcinoma of the prostate with Gleason score of 7 (4 + 3) occupying >50% in nine of the twelve cores with perineural invasion (PNI). Computed tomography (CT) of the neck showed a 6 cm soft-tissue mass occupying the paravertebral region on the right side of the neck with extension into the foramina of C6, C7, and T1 vertebra along with osteoblastic metastases [Figure 2]. Biopsy from this mass revealed adenocarcinomatous deposits. There was no evidence of lesions in the cervical spinal cord. Contrast CT abdomen showed extraprostatic disease with multiple pelvic and extensive retroperitoneal lymph node enlargement. In view of the symptomatic bony and visceral metastases and old age, the patient underwent complete androgen blockade (CAB) with bilateral orchidectomy and bicalutamide. On follow-up, the patient was asymptomatic, but the neurological manifestation did not resolve. He developed castration-resistant carcinoma prostate at 1 year and was started on enzalutamide. However, the patient succumbed to the disease within 2 years of diagnosis.

**DISCUSSION**

Carcinoma prostate is the sixth leading cause of cancer deaths worldwide. The diagnosis of carcinoma prostate has significantly increased with the advent of PSA testing. Patients usually present with LUTS; however, late presentation with high burden metastases are common in developing countries like India with largely unscreened population. Atypical neurological presentations due to perineural spread or paraneoplastic syndromes are rarely reported.

Brachial plexus supplies sensory and motor nerves to the upper limb and is formed by ventral rami of C5 to T1 segments of the spinal cord. Brachial plexopathy usually presents with both sensory and motor disturbances of the upper limb. It can be involved in malignancies such as lung cancer, lymphoma, or metastatic cervical lymphadenopathy. Brachial plexopathy due to malignant compression usually causes painful paresthesia with motor weakness of the upper limb. The present case is peculiar in that it is a malignant nerve infiltration with a painless neuropathy. Magnetic resonance imaging forms the mainstay of radiological investigation, but its use is limited in developing countries due to financial limitations. In the present case, CT was performed due to cost constraints.

PNI is defined as infiltration of cancer cells into the epineurium, perineurium, or the endoneurium. Its presence on needle biopsy reports is an important prognostic factor as it signifies a high risk of extraprostatic disease due to spread of cancer cells through the nerves. PNI in needle biopsy is correlated with higher grade and stage in radical

![Figure 1](image1.png)

**Figure 1:** Clinical picture of the right hand showing fixed flexion deformity of the fingers and wasting of small muscles of the hand

![Figure 2](image2.png)

**Figure 2:** Computed tomography CT scan of the cervical region showing bony destruction involving cervical vertebral foramina (yellow solid arrows) and a soft-tissue mass compressing the intervertebral foramina of cervical vertebrae in the right side (white solid arrows)
Carcinoma prostate with brachial plexopathy

prostatectomy (RP) specimens and a higher risk of cancer recurrence after RP. High serum PSA levels and Gleason score in prostatic needle biopsy are predictors of PNI.\(^3\) Our case is peculiar in that it is a metastatic plexopathy secondary to perineural spread of prostatic adenocarcinoma. Surprisingly, our patient did not have any urological complaints.

Peripheral nerve involvement in carcinoma of the prostate is very rarely reported. The present case is peculiar in that it involved peripheral nerves of the upper limb which was the inaugural symptom. This case is the first report of such a presentation. Such patients should be offered early treatment to prevent loss of sensory-motor function of the limb. Our patient however presented late. He preferred surgical castration, and hence, bilateral orchidectomy was performed and he was started on bicalutamide and zolendronic acid.\(^4\) Radiotherapy to the cervical spine and enzalutamide were added later as he progressed while on CAB. The prognosis was dismal despite treatment.

**CONCLUSION**

The case has been presented to emphasize the fact that carcinoma prostate can present with isolated brachial plexopathy in the absence of urological symptoms. Hence, a high index of suspicion and thorough clinical examination including DRE is mandatory in all elderly men presenting with acute-onset peripheral nerve palsy.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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