

CASE REPORT

Skin metastasis, an uncommon course of prostate carcinoma: a report of two cases

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Abstract

Prostate cancer is one of the most common cancers among men worldwide and in the USA. Most prostate cancer progression either locally invades to seminal vesicles or metastasizes distally to bone. Skin is not a common site of metastasis for the majority of malignancies including prostate cancer. This paper reports two extremely rare cases of prostate carcinoma metastatic to the skin: a 74-year-old man previously treated with radiation for prostate cancer with cutaneous metastases to the shoulder and a 68-year-old man with prostate adenocarcinoma and cutaneous metastases to the groin. Both patients were diagnosed with skin punch biopsy and later confirmed with immunohistochemical staining for PSA and prostate specific acid phosphatase, specific for prostatic carcinoma. Although unusual, development of multiple skin lesions in patients with prostate adenocarcinoma should raise the flags of cutaneous metastases.

Key words: Prostate cancer, cutaneous metastasis, immunohistochemistry, carcinoma

INTRODUCTION

Adenocarcinoma of the prostate is the most common form of cancer in men and is second only to lung cancer as the most common cause of cancer-related deaths.¹ Elevation of blood PSA levels is used as a non-invasive method of prostate cancer screening, as well as disease progression.² Prostate cancer is known for its excellent survival rates as 5-year overall survival data shows 98.9% between 2005 and 2011.¹ Disease progression, however, occurs and is inevitable. In the course of prostate cancer local invasion, lymph nodal, bone and lung metastasis are commonly seen. Skin is not a common site for cancer extension and rarely occurs. There are under 100 case reports in the published literature of skin metastasis from prostate cancer. However, with increased survival of patients, more cases might be reported in the future. Here we report on two cases of metastatic adenocarcinoma of prostate to the skin.

CASE REPORT

Case 1

A 74-year-old male presented with complains

of multiple skin nodules and bilateral lower extremity oedema to our urology clinic. He had a 9-year history of prostate adenocarcinoma treated with radiation therapy. Skin nodules and oedema were present for a period of 3 to 4 months prior to the clinic presentation. Nodules were increasing in size and number, with the largest (3×1.5cm) nodules located over the posterior aspect of the right shoulder. On physical examination, 30 to 40 brown, hard, verrucous skin nodules measuring 1 to 3 cm in diameter over the trunk and extremities were also noted. The serum PSA level was more than 20,000 ng/mL.

He was admitted to the hospital and cancer metastasis workup was performed. CT scan of the chest, abdomen and pelvic cavity revealed markedly diffuse bone metastasis, bilateral hilar, retroperitoneal and pelvic lymphadenopathy along with an enlarged prostate. CT scan of the head revealed suspected osseous metastatic disease within the calvarium and upper cervical spine. On follow-up MRI of the head, skull lesions were in favour of bony changes due to anemia of chronic disease rather than sclerotic metastatic lesions. Given the patient history and evidence for bone and lymph nodal metastases, skin nodules were suspected to be metastatic

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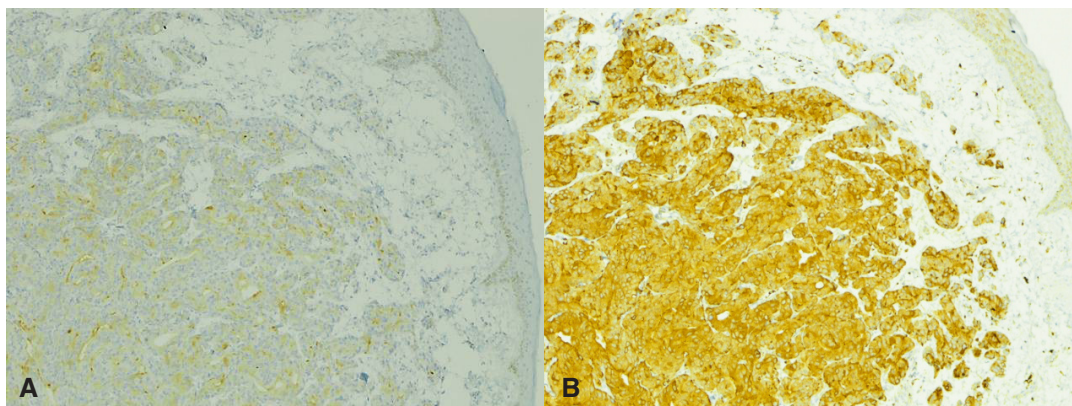


FIG. 1: Immunohistochemical examination of the right shoulder skin nodule. Prostate specific antigen (A) and prostate specific acid phosphatase (B) x10.

lesions as well. A skin punch biopsy was taken from a nodule in the right shoulder. Histological evaluation and immunohistochemical staining with PSA, prostate specific acid phosphatase (PSAP), cytokeratin 20 (CK20) and CDX2 were consistent with metastatic prostate adenocarcinoma (Fig.1). Immunohistochemical staining was diffusely weakly positive for PSA and PSAP with cytoplasmic pattern and negative for CK20 and CDX2. Epidermal structures were intact with malignant cells invading the superficial and deep dermis (Fig. 2). Neoplastic cells were seen as glandular structures with hyperchromatic nuclei and prominent nucleoli with fine granular cytoplasm.

The patient was started on daily Bicalutamide and monthly Lupron injection. Unfortunately, the patient succumbed to progression of his disease one year later.

Case 2

A 68-year-old male with a history of diabetes mellitus, hypertension, hyperlipidemia and atrial fibrillation presented with urinary retention. The patient previously had cardiovascular problems including mitral valve replacement, coronary artery bypass grafting, and placement of automatic implantable cardioverter-defibrillator. Following his admission to the hospital, the patient underwent transurethral resection of prostate (TURP) and was found to have adenocarcinoma of the prostate with a Gleason score of 5+5=10 involving approximately 60% of the submitted tissue. On further workup of the newly diagnosed prostate cancer, imaging studies revealed metastatic lesions to the bone and lung. The patient was subsequently treated with radiation followed by chemotherapy.

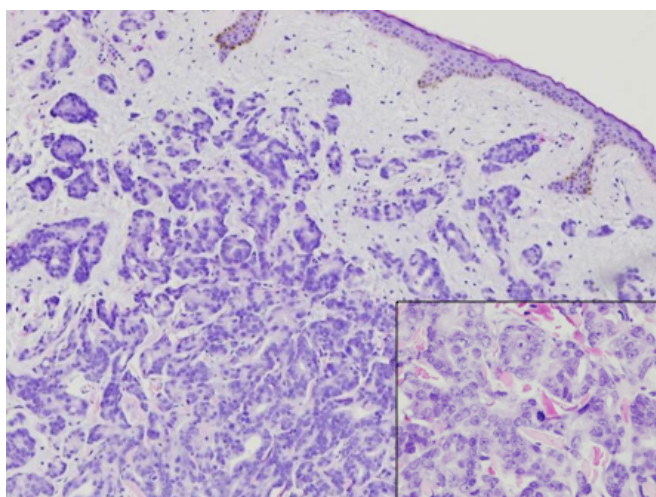


FIG. 2: Hematoxylin and eosin (H&E) examination of the right shoulder skin nodule punch biopsy x10. Inset image shows the same sample at x40.

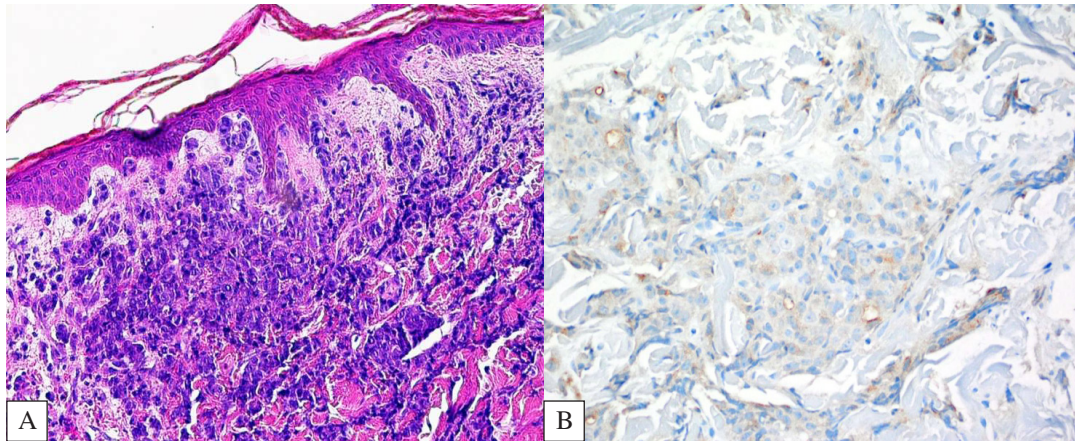


FIG. 3: (A) Hematoxylin and eosin examination of the groin skin punch biopsy x10. (B) Prostate specific immunohistochemical staining of the same skin sample.

One year later, the patient presented with worsening right groin pain and lower extremity swelling for the last month. Physical exam revealed scrotal oedema, right lower extremity oedema, tenderness and palpable nodularity in the groin region. A serum PSA level was found at 47.41ng/mL. The patient underwent right groin skin punch biopsy and was found to have metastatic prostatic adenocarcinoma to the skin, confirmed with immunohistochemical PSA staining of the specimens (Fig. 3). However, PSAP staining was negative in the skin samples. On examination of other parts of the biopsy, necrosis along with solid and glandular formation by the metastatic cells were noted. Epidermis structures were intact and invasion to the deep and superficial dermis was seen. The patient was lost to further follow-up and treatment plan.

DISCUSSION

Skin is a rare site of metastasis for prostate cancer and less than one hundred cases have been reported in the literature. Analyses of cancer registry data suggest that skin metastasis occur in 0.09% of prostate cancers; this ratio increases in patients with refractory or end stage prostate cancer.³

Biopsy of the skin lesions in both our cases showed normal appearing epidermis and diffusely infiltrating tumour cells in the superficial and deep dermis. Although PSA staining was positive in both cases, PSAP was only positive in the first case. The weak staining in both cases can be attributed to the poorly differentiated prostate carcinoma which stains weakly. As expected CK20 and CDX2, which are mainly used to diagnose metastatic

cell from intestinal origin stained negative. Our second patient had prostate cancer diagnosed by TURP which in theory may have caused tumour spread into lymphatics, with subsequent groin metastasis. However, the aggressive nature of this patient's tumour more likely resulted in this outcome.

Skin involvement in prostate cancer is found to present late in the disease and is associated with a poor prognosis.³ It is not predictable as which prostate cancer is going to metastasize and which is not. Although PSA level can help in detecting a recurrence of the primary tumour (as in our patients), metastasis is not predictable based on primary PSA levels.

When cutaneous prostatic metastases do occur, they usually appear as multiple nodules involving the suprapubic area and the anterior aspect of the thighs⁴ with limited case reports on involvement of the face, neck, scalp and umbilical nodules as Sister Mary Joseph nodules.^{5,6} Although other markers such as prostate specific membrane antigen (PSMA), and androgen receptor may have diagnostic roles, PSA and PSAP remain the key immunohistochemical markers. These stains are useful in confirming the diagnosis of prostate cancer, whether primary or metastatic. Nevertheless, a clinical suspicion and an alert mind are necessary to detect skin metastasis in prostate cancer patients.

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