



PROSTATE CARCINOMA RUNNING AMOK : A RARE CASE REPORT WITH REVIEW OF LITERATURE

Pathology

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ABSTRACT

Prostatic adenocarcinoma is the second most commonly diagnosed malignancy in males following lung cancer. It commonly metastasizes to bone. Prostate cancer metastasizing to testis is rare, and commonly detected as an incidental finding in orchidectomy specimen. Skin metastasis is exceptionally rare presentation and seen in cases of advanced prostate cancers. Here, we report a case of prostatic adenocarcinoma presenting with metastatic deposits in skin and incidentally found metastatic deposits in left testis, found during examination of bilateral orchidectomy specimen performed for hormonal management of advanced prostate cancer. The prostatic origin of metastasis was confirmed by immunohistochemical staining for NKX3.1, a nuclear marker specific for prostate epithelium.

KEYWORDS

Prostate cancer, Metastasis, Testis, Skin, NKX3.1

1. INTRODUCTION:

Prostatic adenocarcinoma is one of the most frequently diagnosed malignancies among males worldwide. The most common metastatic sites from prostatic adenocarcinoma are bone (84%), distant lymph nodes (10.6%), liver (10.2%) and thorax (9.1%) [1]. Testicular metastasis is uncommon, and mostly occurs as an incidental finding in 2-4% of orchidectomy specimens, performed for hormonal management of advanced prostate carcinoma [2]. Cutaneous metastasis from prostatic adenocarcinoma is extremely rare and occurs in only 0.36% of cases [3]. We report a case of prostatic adenocarcinoma presenting with cutaneous metastasis and incidentally identified testicular metastasis.

2. CASE REPORT:

An 80-year old man presented with the complaints of difficulty in passing urine for 1 month along with increased frequency of micturition and passage of blood in urine. CT imaging revealed an enlarged prostate (Fig 1a) with a volume of 43 cc and a vesical calculus. A clinical diagnosis of benign prostatic hyperplasia was made and trans-urethral resection of prostate (TURP) and cystolitholapaxy was performed. Microscopic examination of the TURP specimen showed prostatic tissue infiltrated by tumor composed of complex, cribriform, fused glands and poorly formed glands, with areas of confluent sheets of tumor with little intervening stroma. The cells show nuclear enlargement, irregular coarse chromatin with prominent nucleoli and moderate granular cytoplasm (Fig 1c). High grade prostatic intra-epithelial neoplasia and perineural invasion was identified. A diagnosis of prostatic adenocarcinoma, Gleason score (4+5), WHO grade group 5, with high grade prostatic intra-epithelial neoplasia and perineural invasion was made. Patient was lost to follow-up after discharge.

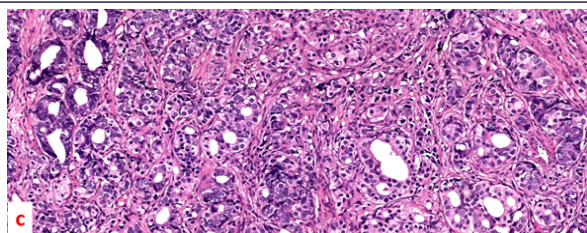


Fig.1-a) CT KUB showing prostatomegaly b) Photomicrograph showing prostatic tissue infiltrated by sheets of tumor cells (H&E, X40) c) Tumor cells forming fused glands and cribriform glands (H&E, X200)

Subsequently, he presented again after 7 months with complaints of difficulty in voiding for 1 month, history of sudden loss of weight, and a skin nodule over left thigh of 1 month duration. Bilateral completion orchidectomy was performed for hormonal management and excision biopsy of the skin nodule was done. On gross examination, the left testis showed a grey-white, firm lesion replacing the entire testicular parenchyma with absence of string sign (Fig 2a). Right testis was grossly unremarkable. Microscopic examination of left testis showed extensive tumor deposits composed of poorly formed glands and confluent sheets of tumor cells infiltrating between the seminiferous tubules, extending to the epididymis and involving the cord structures (Fig 2c). The cells show pleomorphic nuclei with prominent nucleoli and moderate eosinophilic cytoplasm (Fig 2b).

Immunohistochemistry for NKX3.1 showed diffuse nuclear positivity in the tumor cells (Fig 2d). The findings of light microscopy and immunohistochemistry corroborated the diagnosis of metastatic deposit from prostatic adenocarcinoma involving left testis.

Figure 1 :

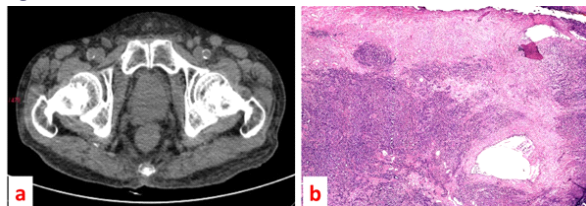
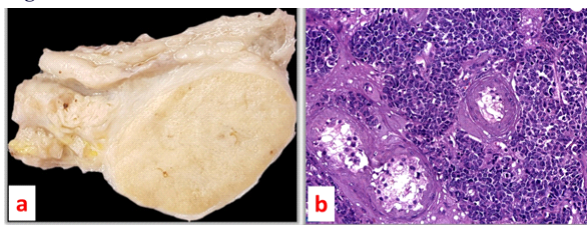


Figure 2 :



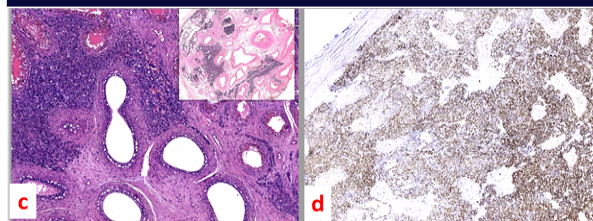


Fig 2-a) Gross image of left testis showing a grey-white, firm lesion replacing the testis b) Photomicrograph of testicular parenchyma infiltrated by sheets of tumor cells (H&E,X400) c) Tumor deposits involving epididymis (H&E,X100) and cord structures (inset,H&E,X40) d)IHC for NKX3.1 showing diffuse nuclear positivity in testicular tumor deposits.

Microscopic examination of the skin nodule showed an infiltrative tumor nodule involving the dermis, composed of sheets and nests of tumor cells with pleomorphic nuclei with extensive crush artefacts (Fig 3a).Immunohistochemistry for NKX3.1 showed diffuse nuclear positivity in the tumor cells (Fig 3b). A diagnosis of metastatic skin deposit from prostatic adenocarcinoma was made.

Figure 3:

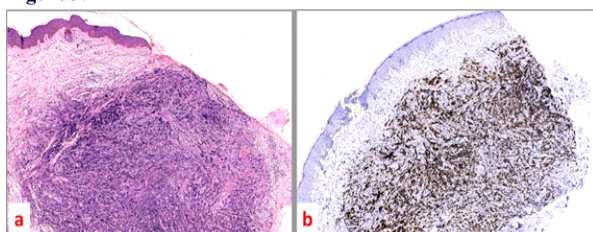


Fig 3-a) Skin nodule showing dermal infiltrate of tumor cells forming cords and sheets with extensive crush artefact, with sparing of grenz zone b)IHC for NKX3.1 showing diffuse nuclear positivity in cutaneous tumor deposits

3. DISCUSSION:

3.1 Testicular metastasis :

Secondary neoplasms of testis are very rare, with a reported incidence of 0.02-2.5% [4]. The most common primary site of testicular metastases is prostate (15%), followed by lung, melanomas, skin, colon, and kidney[5]. Testicular metastases of prostate cancer are mostly asymptomatic, and only found incidentally during autopsy or following bilateral orchidectomy for hormonal management in cases of advanced prostate cancer [6]. Patients may also present with testicular mass, with or without testicular pain as reported by Kusaka et al., who reported a patient presenting with testicular mass following radiation therapy and androgen deprivation therapy for advanced prostate cancer. Most of the patients developing testicular metastasis are elderly males (sixth to seventh decade) in contrast to primary testicular malignancies which occur in younger males. Thus, a testicular mass in older males with primary cancers should give rise to a suspicion of metastasis^[7].

The proposed routes of spread of prostatic malignancy to the testis are through (a) arterial embolism, (b) retrograde venous extension, (c) retrograde lymphatic spread, (d) direct extension and (e) through the lumen of the vas[5,8]. The prognostic significance of testicular metastases from prostate cancer , regardless of the route of spread, remains uncertain because of its rare occurrence . However, testicular metastases is accepted as a sign of advanced disease and is accompanied by multiple metastasis in other organs^[8].

3.2 Skin metastasis:

Cutaneous metastases are very rare (0.36% published incidence) , and are seen as a late event in advanced cancer , but sometimes, it may be the first sign of an internal malignancy [9]. Skin metastasis from prostate cancers most commonly involves the lower abdominal skin and groin region . Localization to lower abdominal skin and groin would favor a retrograde lymphatic or venous dissemination [9,10]. Other less common sites of cutaneous metastasis include chest, face and neck, scalp and limbs [11] . The patient we describe presented with an isolated nodule over left thigh which has not been earlier documented . Clinical presentation of cutaneous metastases can be extremely variable, ranging from single or multiple nodules, infiltrated

plaques and Sister Mary Joseph's nodules (a palpable nodule bulging into the umbilicus) to sclerodermiform lesions, vascular proliferations, and zosteriform lesions^[11].

Histopathological examination helps to differentiate cutaneous metastasis of primary visceral malignancies from primary skin adnexal tumors. Histological features include tumor deposits arranged as sheets of undifferentiated cells or tumor cells forming gland like structures, diffusely infiltrating the dermis ,with sparing of superficial dermis (conspicuous Grenz zone) [10,11]. Metastatic skin deposits from prostate cancer are rarely epidermotropic, and tend to be more infiltrative than the primary malignancy ,with cords of tumor cells dissecting the dermal collagen bundles^[10,12].

3.3 NKX3.1 as a marker for prostatic origin:

NKX3.1 is a highly specific marker for prostate epithelium, useful especially in metastatic prostate carcinomas, where PSA and PSAP have been known to be expressed at a significantly lesser extent . Being a nuclear marker , it can add diagnostic confidence when compared to cytoplasmic markers like PSA and PSAP which can show relatively weaker staining[13].

We document this case for the rarity of its occurrence and the twin metastatic deposit both in testis as well as the skin.

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CONFLICTS OF INTEREST: The authors declare that there are no conflicts of interest regarding the publication of this paper.

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