Cutaneous metastases of prostatic adenocarcinoma

ABSTRACT
Prostatic adenocarcinoma (PA) is a common visceral malignancy of elderly men. Cutaneous metastasis of PA is rare. The incidence is <1%. A 55-year-old man presented with urinary symptoms and multiple cutaneous nodules around suprapubic region, inner aspect of both thighs and scrotum. Fine-needle aspiration cytology (FNAC) of cutaneous nodules was suggestive of metastatic adenocarcinoma. Skin and prostatic biopsies confirmed the cytological diagnosis. Serum level of prostate specific antigen was raised. Total prostatectomy revealed adenocarcinoma of Gleason’s score 7 (3 + 4). Though rare, cutaneous metastases of PA must be known to cytopathologists. Meticulously performed FNAC in such cases may help in early diagnosis.

Key words: Adenocarcinoma; fine needle aspiration cytology; prostate; prostate specific antigen; skin

Introduction
Prostatic adenocarcinoma (PA) is a common malignancy in elderly men. Lymph node and bone are the two most common metastatic sites of PA while lung is the other common site of metastasis. However, cutaneous metastasis of PA is rare, occurring in < 1% cases.[1] Diagnosis of cutaneous metastasis of PA by fine-needle aspiration cytology (FNAC) has been rarely reported.[2,3] We herein report the rare cytodiagnosis of cutaneous metastases of PA in an elderly man.

Case Report
A 55-year-old gentleman presented with papulonodular lesions and urinary symptoms since last 8 months. The papulonodular lesions were present in the suprapubic region, inner aspects of both the thighs and the scrotum. The lesions were subcutaneous in location, ranging from 0.3 to 1.5 cm in diameter, erythematous, firm, smooth surfaced and nontender [Figure 1]. FNAC was done from multiple nodules and smears were air-dried and fixed in 90% ethanol for Giemsa and Papanicolaou stains, respectively. Microscopic examination showed cellular smears comprised of loose clusters and scattered malignant cells having hyperchromatic nuclei, mild nuclear pleomorphism, occasional conspicuous nucleoli and scanty cytoplasm. Formation of glands by few overlapping clusters of malignant cells was also seen [Figure 2a]. A cytological diagnosis suggestive of adenocarcinoma was given, and a biopsy for confirmation was advised. Since the patient had urinary symptoms, skin metastasis of prostate cancer was suspected, and further investigations were done accordingly. Digital rectal examination of the patient revealed an enlarged prostate which was hard, nodular, and fixed to the rectal wall. His serum prostate specific antigen (PSA) level was 45.4 ng/mL (normal value <4.0 ng/mL). Other laboratory investigations were unremarkable. Subsequently, skin and prostatic needle core biopsies were taken and submitted for histopathological examination. Hematoxylin and eosin-stained sections of skin biopsy showed infiltration by malignant cells and few atypical glands in the mid dermis. Fused ill-formed glands with ragged margins were found infiltrating in the deeper dermis and subcutis [Figure 2b-c]. Skin epithelium and superficial dermis were free of tumor infiltration. Prostatic needle core biopsy showed adenocarcinoma of Gleason’s score 7 (3 + 4). Later on, radical prostatectomy was done, which was also diagnosed as adenocarcinoma of the prostate, Gleason’s score 7 (3 + 4). Immunohistochemistry
of skin and prostatic biopsies showed strong cytoplasmic expression of pancytokeratin [Figure 2d] and negative expression of high molecular weight cytokeratin 34βE12. A diagnosis of PA Gleason score 7 (3 + 4) with metastasis to the skin was made.

Discussion

Prostatic adenocarcinoma is a common visceral malignancy of elderly men. In more than 81,000 reported cases of primary visceral malignancies, the incidence of cutaneous metastasis is 2.9% whereas cutaneous metastasis of PA is very rare with an incidence of 0.36%. Therefore, because of its rarity, most of the practicing cytopathologists are not aware of this entity. This case report highlights utility of FNAC as an initial investigation and role of cytopathologist in the diagnosis of cutaneous metastases of PA. In this case, FNAC provided earliest clue for diagnosis, which was later confirmed by serum PSA level along with biopsy and immunohistochemistry.

Presence of skin metastases may be the initial sign of underlying primary genitourinary malignancy as noticed, in this case. On clinical examination, metastatic lesions of primary genitourinary malignancies typically appear on the skin as discrete, round to oval plaques or nodules of variable sizes. Often these metastatic lesions are multiple while single metastatic lesion is uncommon. Metastatic lesions of the skin are seen with primary PA as well as with carcinomas of the urinary bladder and kidney. In these cases, metastatic dissemination to the skin occurs by one of the following four mechanisms:

a. Direct invasion from underlying cancer;
b. Implantation from operative scar;
c. Hematogenous spread and/or;
d. Spread through the lymphatics.

The abdominal skin is the most common metastatic cutaneous site for all genitourinary malignancies. Cutaneous metastasis to abdominal skin occurs due to spread through dermal lymphatic or blood vessels.

Although rare, cytology of cutaneous metastasis of PA has been reported. Cytological examination of PA shows scattered malignant cells with formation of glands at places and cells showing hyperchromatic nuclei and prominent nucleoli. Histopathogical examination of cutaneous metastases often involves dermis with sparing of the superficial dermis from the epidermis forming grenz zone. Infiltration of epidermis is seldom seen in visceral nonmelanomatous malignancies. Histopathological examination should distinguish cutaneous metastasis of primary visceral malignancies from primary skin adnexal tumors. In comparison to primary skin adnexal tumors, metastatic carcinomas show infiltrative growth pattern of malignant epithelial cells in collagen bundles and are arranged singly, in narrow cords or in large clusters. Demonstration of lymphovascular invasion favors a diagnosis of cutaneous metastasis over primary skin adnexal tumor.

Since cutaneous metastasis of PA is uncommon, a high index of suspicion is required for diagnostic work-up. FNAC may prove to be easy, cost-effective and reliable investigation.
for an early diagnosis. Definite diagnosis requires a skin biopsy and immunohistochemistry. The tumor cells show positivity for prostate specific antigen and cytokeratin. The serum PSA levels are also markedly elevated in these cases. Cutaneous metastasis, of underlying primary malignancy, represents an advanced stage of the disease and associated with poor prognosis. Recognition of cutaneous metastasis of PA is important for practicing cytopathologists. Thus, cutaneous metastasis of PA must be considered in an elderly male patient with raised serum PSA levels and multiple papuonodular lesions over the lower abdomen, pelvic and pubic areas.

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