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LETTER TO EDITOR

Intramuscular Metastasis of Renal Cell Carcinoma: A Rare Occurrence, Diagnosed on Fine-Needle Aspiration Cytology

Dear Sir,

Renal cell carcinoma (RCC) is associated with aggressive behavior and a strong tendency for metastatic spread.[1] The common metastatic sites are lungs, liver, bone, and brain, while the rare sites are head and neck, heart, skin, ovaries, uterus, testis, and joints.[1] Skeletal muscle metastasis is an unusual occurrence and its prevalence is just 1.6%.[2,3]

A 41-year-old male presented with a rapidly growing swelling located in the posterior compartment of the left arm, for 2 months. It measured 4 cm × 2 cm in size and was firm, slightly tender, and free from the overlying skin. On ultrasonography (USG), a hypoechoic highly vascular lesion was seen within the head of triceps, and a diagnosis of neural tumor, possibly malignant, was suggested. Aspiration under USG guidance was done, following the standard procedure using a 24-G needle and a 10 cc syringe. Hemorrhagic material was obtained. Both air-dried and alcohol-fixed smears were made and stained with Giemsa and Papanicolaou stains, respectively. The smears were moderately cellular with a hemorrhagic background and comprised loosely cohesive clusters of cells adhering to thin strands of myxoid stroma [Figure 1a]. The myxoid stroma was easily identified as magenta-colored wispy strands on Giemsa smears. The cells were large and had abundant pale cytoplasm with fine vacuolations while occasional showed granular cytoplasm [Figure 1a and b]. The nuclear-cytoplasmic ratio was low, the nuclei were moderately pleomorphic, and few showed prominent nucleoli [Figure 1b]. Occasional intranuclear cytoplasmic inclusions were also seen. The cytomorphologic appearance was very typical of RCC, and on questioning, the patient gave a history of a nephrectomy done 6 years back. The old report was retrieved by the patient, and it showed grade 1 clear cell RCC. Subsequently, the patient underwent a positron emission tomographic scan that showed metastasis in the ribs and lungs as well. He was put on sunitinib, and 8 months later, the arm swelling had disappeared while those in ribs and lungs had decreased in size.

Majority of RCC are histologically of the classic clear cell type.[4] The diagnostic cytomorphological feature is the loosely cohesive clusters of pale vacuolated cells with low nuclear-cytoplasmic ratio adhering to the fine strands of myxoid stromal material. The fibrillary stroma probably represents the delicate vasculature within the tumor and appears magenta in colour with May Grunwald Giemsa (MGG) stain.[4,5] These findings are better appreciated in low and intermediate grade as compared to poorly differentiated end of the spectrum. The background is typically hemorrhagic.[4] It is the occurrence at unusual sites that often becomes a diagnostic challenge for a cytologist, especially in the absence of history, and needs to be differentiated from other primary and metastatic clear cell tumors common at that site.[5] Likewise, in the current case of intramuscular lesion located at arm, it should be differentiated from clear cell sarcoma (CSS), adnexal tumors with clear cell morphology, and metastasis of other clear cell carcinomas.[5] CSS is usually located around the knee, commonly occurs in young adults, shows dispersed oval cells with large prominent nucleoli on cytology, and is positive for melanocytic lineage markers, such as S-100 and HMB-45.[5] Most adnexal tumors are superficial and skin is not pinchable. Sebaceous carcinoma additionally shows abundant, variable-sized intracellular and extracellular lipid vacuoles.[5] Metastasis from other sites of primary malignancy such as lung and colon can be differentiated on the basis of the characteristic cytomorphology of RCC, and immunocytochemistry would be of help in cases of difficulty. A simultaneous expression of keratin and vimentin is diagnostic for the renal origin of tumor. Care must also be taken not to mistake the cells of a low-grade tumor for histiocytes, and careful attention to the nuclear morphology is important.

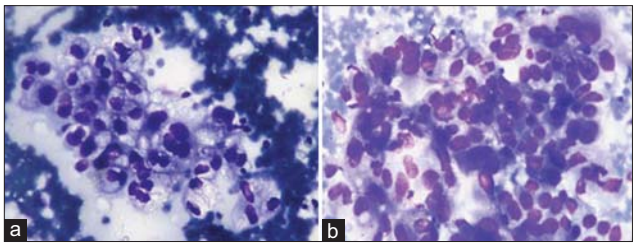

Figure 1: (a) Cells displaying abundant cytoplasm with fine vacuolations and adherent to fine strand of stromal material (Giemsa, ×400). (b) Cell showing intranuclear inclusion (Giemsa stain, ×400)

The present case thus highlights the classical morphology of RCC and also its propensity for metastasis to unusual sites.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his 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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Conflicts of interest
There are no conflicts of interest.

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