Case Report

Cytodiagnosis of calvarial metastasis of renal cell carcinoma masquerading as a cavernous hemangioma after a long latency

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ABSTRACT

Renal cell carcinoma (RCC) is noted for its unpredictable clinical behavior. It can present with metastatic disease at many unusual sites, even after a long latency. It can thus mimic many other lesions and pose a diagnostic challenge, especially in cases where prior history of RCC is not available. Fine-needle aspiration cytology (FNAC) can be very useful in arriving at a correct diagnosis of these lesions. We present an unusual case of RCC in a 55-year-old female who presented with frontal soft tissue mass. A history of nephrectomy 10 years back was not given at the initial presentation. Computed tomography suggested a diagnosis of cavernous hemangiomas. FNAC was suggestive of RCC. Avascular osteolytic lesion in the calvarium should raise the suspicion of metastatic RCC as one of the differential diagnosis.

Key words: Calvarium, fine-needle aspiration cytology, renal cell carcinoma metastasis

INTRODUCTION

Renal cell carcinoma (RCC) accounts for <3% of all adult malignancies.[1] Metastasis occurs in about one-third of the cases, usually affecting the lung, liver, lymph nodes, and bone.[2] Metastasis to head and neck are relatively uncommon with calvarium being an unusual site of involvement. We report a case of calvarial metastasis from RCC treated 10 years back by nephrectomy that was initially diagnosed as a cavernous hemangioma. Cytological features can aid in the diagnosis of these lesions even at unusual site as in the present case.

CASE REPORT

A 55-year-old female presented with the complaint of gradually increasing painless soft tissue swelling on the forehead since 2 years. No significant history was given at this point. On examination, swelling measured 9 cm × 8 cm × 7 cm in size and was soft in consistency [Figure 1]. Clinically a soft tissue tumor was suspected. Computed tomography scan revealed a left frontal calvarial based well-defined mass lesion with homogenous enhancement. Lesion was causing lysis of the frontal bone with compression and mass effect on adjacent left frontal cortex. Two other lesions were seen in the parietal bone measuring 3 cm × 2 cm each and a diagnosis of multifocal calvarial cavernous hemangiomas was given [Figure 2].

Fine-needle aspiration cytology (FNAC) of the frontal mass was done using a 24 gauge needle, and grossly hemorrhagic material was aspirated. Smears were stained with hematoxylin and eosin, Papanicolaou and May–Grünwald–Giemsa (MGG) stains. Cytology smears revealed a cellular aspirate composed of many large single cells and loosely cohesive cells tending to form acini at places. Cells showed abundant pale cytoplasm with low nucleocytoplasmic ratio and indistinct cell margins. Vacuolated cells were also seen, which were better appreciated on MGG smears. Nuclei were moderately pleomorphic, some showing intranuclear cytoplasmic inclusions. A prominent vascular component was noticed in some clusters with presence of endothelial

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cells [Figure 2]. Based on the smears findings a diagnosis of metastatic tumor probably of renal origin was given. Initially, the patient had not given any significant history but on further probing she gave a history of right nephrectomy done 10 years back. Prior histopathology slides revealed a diagnosis of clear cell RCC arising from the lower pole of the right kidney [Figure 3]. Based on the FNAC, clinical and radiological findings a diagnosis of metastatic RCC was given. Patient was referred to a higher center, but refused any further treatment.

DISCUSSION

Renal cell carcinoma is the third most common infraclavicular tumor to metastasize to the head and neck region preceded only by breast and lung.[3] Metastasis solely to head and neck region occur in only 1% patients with primary RCC and usually affect thyroid, nose, paranasal sinuses and oral cavity.[3] Solitary calvarial metastasis after a long latency is a rare presentation of the disease. Calvarial metastasis have been reported as pulsatile masses in the frontal and occipital regions and presents as osteolytic vascular lesion as in the present case.[4,5] Some cases have presented as the first manifestation of the disease and some after a long latency. They mimic other lesions such as a cavernous hemangioma, multiple myeloma, lymphoma and other metastatic lesions both clinically and radiologically. These metastatic sites can become targets for FNAC for quick diagnosis. Cavernous hemangioma is seen in middle aged adults as osteolytic vascular lesion, commonly involving frontal and parietal bone and hence the present case was mistaken for this lesion.[6] Moreover, a case of cavernous hemangiomas in a known case of RCC has been reported.[6] Tabatabai and Staerkel have described the cytological features of RCC. The presence of heterogeneous cell population, cytoplasmic vacuoles, low nucleocytoplasmic ratio, hemosiderin deposits, smooth nuclear membrane and intranuclear inclusions are suggestive of RCC.[7] Hughes *et al*. Have described prominent vascularity to be an important feature of RCC to distinguish it from other clear cell tumors.[8] Fuhrman nuclear grade used in histology can be applied to cytology smears.[9] Cells of RCC contain intracytoplamic fat. Hence Oil O Red staining of air dried smears can be used to distinguish RCC from other clear cell tumors.[9] In the present case, all the features reported earlier were seen on cytology except the hemosiderin deposits. In prior reports, many cases of a solitary metastasis have been treated surgically with better survival.[10]

CONCLUSION

In the majority of cases, clinical information, cytological features and ancillary studies if needed can clinch the diagnosis of metastatic RCC even at unusual sites. The present case represents a rare metastatic site of RCC after a long latency, which was initially mistaken for cavernous hemangioma, and FNAC features were helpful in arriving at the correct diagnosis.

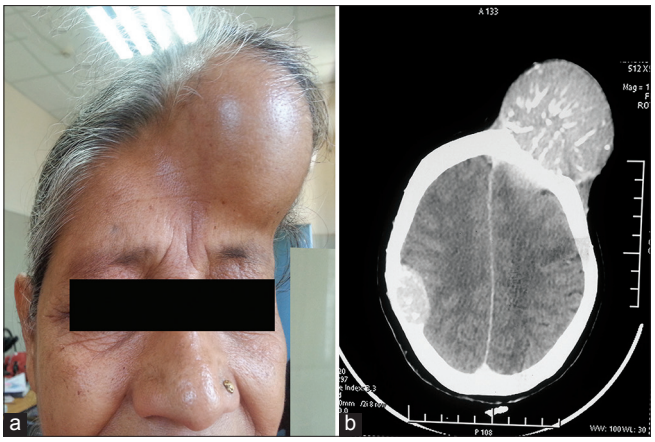

Figure 1: (a) Clinical picture of the patient with 2 years history of swelling in the left frontal region, (b) computed tomography scan showing left frontal calvarial based expansile lytic lesion with homogenous enhancement

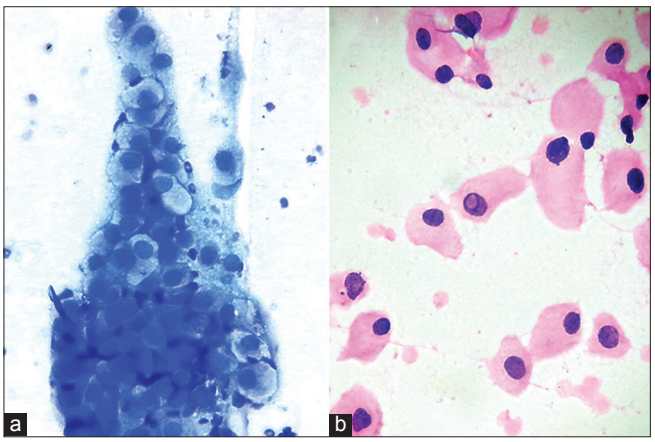

Figure 2: (a) May–Grünwald–Giemsa stained smears showing vacuolated cytoplasm with eccentric nucleus (Giemsa; ×40), (b) smears showing scattered cells with abundant pale cytoplasm with low nucleocytoplasmic ratio and intranuclear inclusion (Papanicolaou; ×40)

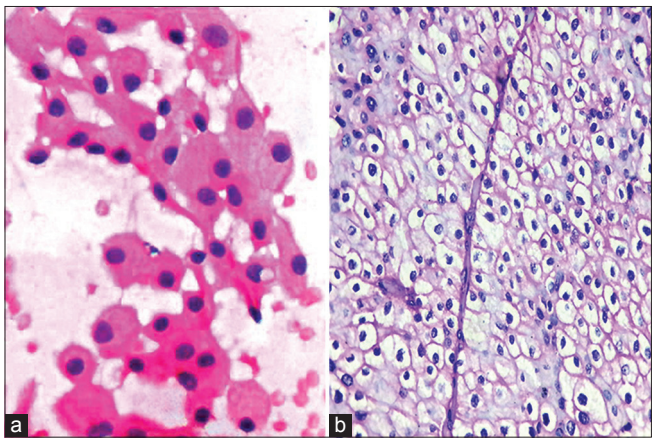

Figure 3: (a) H and E stained smears showing loose clusters of cells with prominent vascularity, (b) photomicrograph of right kidney tumor showing prominent delicate vasculature surrounding clusters of clear cells (H and E; ×40)

REFERENCES

1. Novick AC, Campbell SC. Renal tumors. In: Campbell MF, Walsh PC, Retik AB, Vaughan ED, Wein AJ, Kavoussi LR, editors. Campbell's Urology. 8th ed., Vol. 4. New York: WB Saunders Co. Ltd.; 2002. p. 2672-731.
2. Dhingra V, Misra V, Singh AP, Agarwal S. Cytodiagnosis of cutaneous metastasis from renal cell carcinoma: A case report with review of literature. J Cytol 2011;28:30-2.
3. Huang HC, Chang KP, Chen TM, Wu KF, Ueng SH. Renal cell carcinoma metastases in the head and neck. Chang Gung Med J 2006;29:59-65.
4. Rekhi B, Kumar R, Menon S, Medhi S, Desai SB. Calvarial metastasis of a renal cell carcinoma, mimicking a primary alveolar soft part sarcoma, in a young girl-a rare case report. Pathol Oncol Res 2009;15:137-41.
5. Wahner-Roedler DL, Sebo TJ. Renal cell carcinoma: Diagnosis based on metastatic manifestations. Mayo Clin Proc 1997;72:935-41.
6. Malde R, Moss T, Malcolm G, Whittlestone T, Bahl A. Multiple intraosseous calvarial hemangiomas mimicking metastasis from renal cell carcinoma. Adv Urol 2008;176392.
7. Tabatabai ZL, Staerkel GA. Distinguishing primary and metastatic conventional renal cell carcinoma from other malignant neoplasms in fine-needle aspiration biopsy specimens. Arch Pathol Lab Med 2005;129:1017-21.
8. Hughes JH, Jensen CS, Donnelly AD, Cohen MB, Silverman JF, Geisinger KR, *et al.* The role of fine-needle aspiration cytology in the evaluation of metastatic clear cell tumors. Cancer 1999;87:380-9.
9. Wan MW, Husain SN. Fine needle aspiration cytology of metastatic renal cell carcinoma - A case report. Med Health 2006;1:75-80.
10. Ljungberg B, Cowan NC, Hanbury DC, Hora M, Kuczyk MA, Merseburger AS, *et al.* EAU guidelines on renal cell carcinoma: The 2010 update. Eur Urol 2010;58:398-406.

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