Case Report

An Unusual Case of Frontoparietal Swelling in Elder Female: Diagnosed on Fine Needle Aspiration Cytology

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ABSTRACT

A solitary skull metastasis of renal cell carcinoma as an initial presentation is a very rare event. The most common sites for metastasis are lung, bone, liver and adrenal glands. Fine needle aspiration is a simple non-invasive diagnostic tool for diagnosing skull lesions. Here we are reporting a case of 64 years old female presenting with skull swelling. Fine needle aspiration was done from the lesion and reported as metastasis of renal cell carcinoma on cytology . In this case report we are highlighting the importance of cytology in diagnosing metastasis from unknown primary tumor.

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Introduction

Skull is an uncommon site for metastasis. Fine needle aspiration cytology is a simple diagnostic tool to diagnose skull lesions. A solitary skull metastasis from renal cell carcinoma as a first clinical symptom is a very rare event. Here we describe a case of skull swelling in which diagnosis of metastatic renal cell carcinoma was made on fine needle aspiration cytology prior to clinical and histological diagnosis. We will also discuss the diagnostic clues for reporting a case of metastasis with occult primary tumour.

Case Report

A 64 year old female presented with a rapidly increasing swelling over right fronto-parietal region for 6 weeks . There was no history of head trauma or any significant medical problems. There was no symptoms of raised intracranial tension and no neurologic deficit was present . Local examination revealed a Soft cystic swelling – 15x15 cms, non-tender, non pulsatile with prominent blood vessels (Figure 1). General examination and systemic examination was within normal limits. Skull x-ray showed a lytic lesion involving parietal and occipital bone (Figure 2). Fine needle aspiration was done from the swelling and smears were stained with giemsa and papanicolaou stain. Cytologic examination showed cellular smears with presence of malignant appearing epithelioid cells, arranged predominantly in sheets and in small clusters (Figure 3). On higher magnification , these cells had low nuclear to cytoplasmic ratio , nuclei showed marked pleomorphism, conspicuous nucleoli and vacuolated cytoplasm (Figure 4). So, diagnosis of metastatic lesion possibly from kidney, thyroid or salivary gland was given . Tissue biopsy from the lesion showed cells arranged in alveolar pattern and sheets separated by thin fibrovascular septae (Figure 5). These cells had round central nucleoli , conspicuous nuclei and clear cytoplasm. Immunohistochemical study showed tumor cells positive for cytokeratin, epithelia membrane antigen and vimentin. So diagnosis of metastasis from renal cell carcinoma was given. Meanwhile contrast enhanced computed tomography (CECT) of abdomen done which showed a right renal mass (Figure 6) which confirmed our diagnosis. The patient was referred to a higher center for further management.

Discussion

Renal cell carcinoma (RCC) comprises 2-3% of all adult malignancy. It usually presents with hematuria, flank pain and abdominal mass, however this classical triad of RCC occurs in only 9% of patients (1). RCC has a strong propensity to metastasize ; 25% of patients initially present with distant metastasis and another 50% develop metastasis during follow-up(2). The most frequent metastatic locations are lungs, bone, liver and adrenal glands. RCC is the third most frequent neoplasm to metastasize to the head and neck region, preceded only by breast and lung carcinomas (3). Kidney receives 25% of circulating blood volume, so RCC has a high spreading potential via the blood (4). Due to release of vascular endothelial growth factors and other angiogenic factors RCC is a hypervascular tumour with multiple shunts (3,4).

Renal cell carcinoma displays characteristic cellular features permitting correct cytologic diagnosis, but poses a diagnostic problem in metastatic cases with occult primary. Aspirates from RCC are usually cellular, but in some cases difficulty arises because of inadequate sampling, haemorrhage, and necrotic debris (5).

Tumor cells may be singly scattered or are arranged in flat sheets, clusters ,papillary fronds or an alveolar pattern tumor. Three types of cells are described –clear cells,

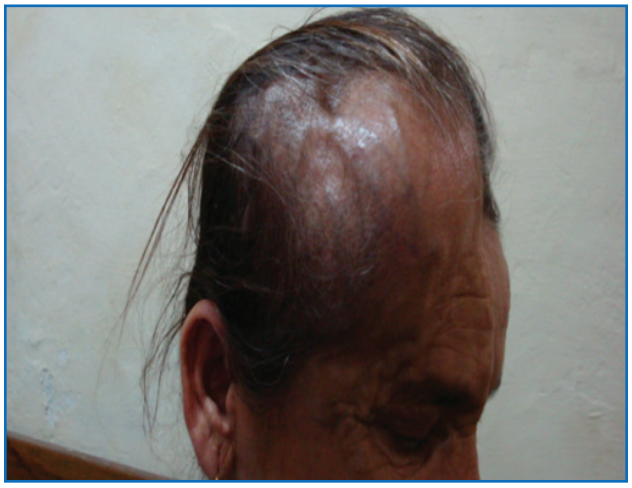

Fig. 1: A large Fronto-parietal swelling

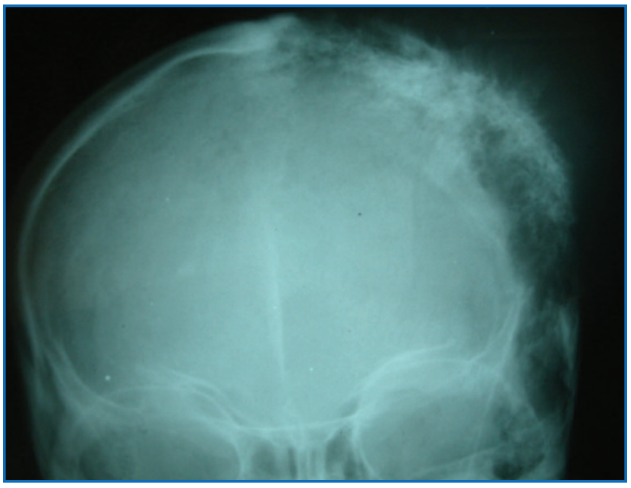

Fig. 2: PA view skull X-ray showing lytic lesion

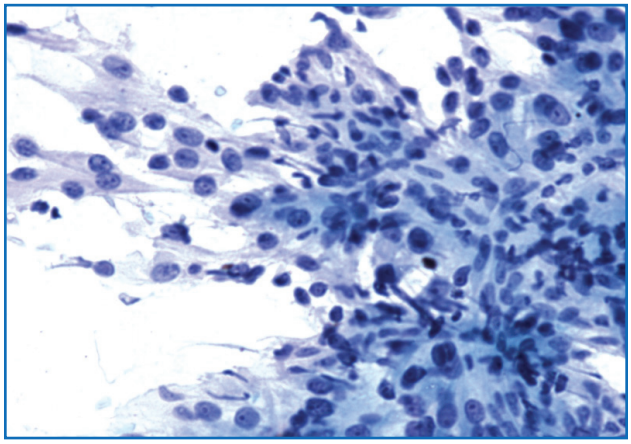

Fig. 3: Cytology smears showing cells in sheets with wispy cytoplasm (20X Papanicolaou)

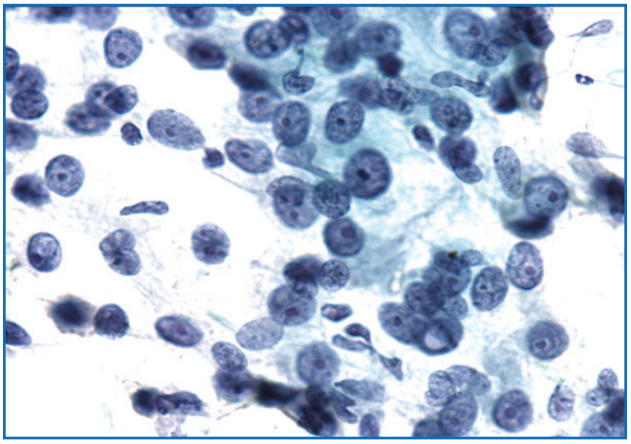

Fig. 4: Cytology smears showing cells with high nuclear cytoplasmic ratio, vacuolated cytoplasm, round nuclei and conspicuous nucleoli (40X Papanicolaou)

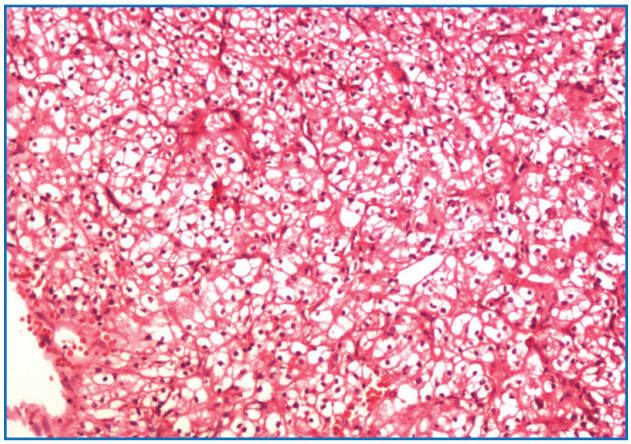

Fig. 5: Tissue biopsy showing cells arranged in alveolar pattern and sheets separated by thin fibrovascular septae (10X H&E)

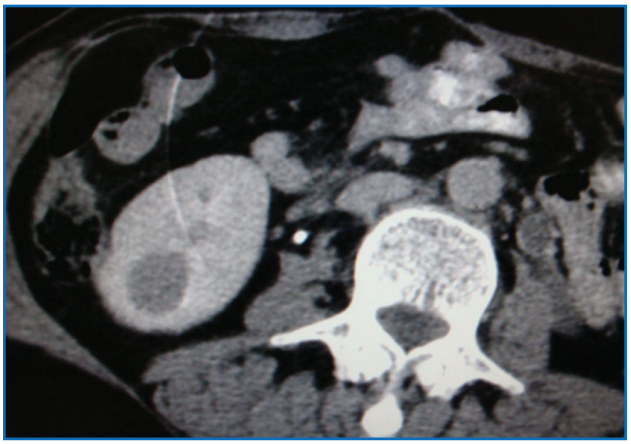

Fig. 6: CECT abdomen showing right renal mass

the granular cells and the oncocytic cells. The clear cells have abundant, fragile,and finely vacuolated. Cytoplasmic vacuoles are punched out, bubbly or lacy. The cell borders may be well defined but are usually indistinct (6). These cells have low nuclear to cytoplasmic ratio. Nuclei can be centrally or eccentrically placed and depending on the Fuhrman grading they vary in characteristics. Low grade tumors (Fuhrman grade 1-2) have smooth to slightly irregular nuclear contours and nuclei can be seen only at high-power magnification (>200X) while high grade tumors (Fuhrman grade 3-4) will have increasingly irregular nuclei, prominent nucleoli visualized at 100X. Granular cells have eosinophilic or cyanophilic cytoplasm. Oncocytic cells have very dense cytoplasm with well-defined cytoplasm (7,8).

The differential diagnosis of tumours with vacuolated (clear) cells includes acinic cell carcinoma and mucoepidermoid carcinoma of salivary gland , clear cell thyroid carcinoma, clear cell tumor of lung and mesonephric (clear-cell) carcinoma of ovary (6). In our case diagnoses was made on fine needle aspiration smears from scalp swelling which was supported by biopsy from the lesion. CECT abdomen showed a right renal mass that gave clue to the origin of tumor.

Conclusion

To conclude it is a very unusual presentation of renal cell carcinoma to metastasize to skull from an occult primary. It is important for cytopathologist to recognize the cytomorphologic features of RCC and must be keep in mind whenever an skull bone tumor is evaluated.

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Competing Interests
None

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