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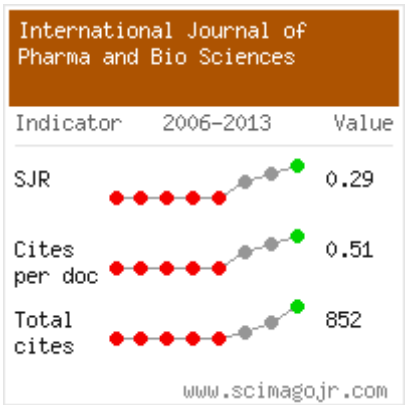

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Case Report **Pathology**

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CHROMOPHOBE VARIANT OF RENAL CELL CARCINOMA MASQUARDING AS RENAL ONCOCYTOMA ON CYTOLOGY.

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ABSTRACT

Chromophobe renal cell carcinoma (ChRCC) is a unique variant of renal cell carcinoma (RCC). Thoenes et al in 1985 described it for the first time and it constitutes about 2-5% of RCCs. It is composed of an admixture of two types of tumor cells.One type of cell is large having pale cytoplasm and other is smaller having granular eosinophilic cytoplasm. It is frequently unrecognized tumor and may be misdiagnosed as renal oncocytoma on cytology.It is important to distinguish these two entities for the suitable surgical management. We report a case of ChRCC diagnosed on imprint cytology in a 78 year old male patient who has undergone right nephrectomy.

KEYWORDS:Chromophobe RCC, Imprint cytology, oncocytoma.

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INTRODUCTION

Chromophobe renal cell carcinoma (ChRCC) is a unique entity of renal cell carcinoma (RCC).[1] It is described recently and frequently remains aunrecognized tumor. Thoenes et al in 1985 described it for the first time and it constitutes about 2-5% of RCCs. It is composed of an admixture of two types of tumor cells.One type of cells are large having pale cytoplasm and others are smaller having granular eosinophilic cytoplasm.[1,2] Sometimes ChRCCs are difficult to distinguish from renal oncocytomas and other RCCs with granular cells. Oncocytomas are indistinguishable from RCC on imaging studies and they develop from type B intercalated cells of the cortical collecting duct .[3] It is interesting to note that oncocytomas and ChRCCs share similar ontogenic , histologic features and imaging findings .[1] We present a case of ChRCC masquarding as renal oncocytoma on cytology and diagnosis was confirmed on histopathology.

CASE REPORT

A 78 year old male patient presented with a history of haematuria and abdominal discomfort since two months. Ultrasonography of the abdomen and pelvis revealed a right renal mass for which right nephrectomy was done. Gross examination-recieved nephrectomy specimen with peri nephric fat measuring 16x10x9 cm and Right kidney was measuring 12x8x9cm .On cut section- well circumscribed gray white to gray brown mass was noted in lower pole of the kidney extending to midportion of the kidney, beyond renal Capsule and involving perinephric fat. Medially tubular structures were noted.Renal pelvis was not clearly made out.(Fig-1)

Imprint cytology

Imprint cytological smears from the mass were taken .Smears were stained with H & E and pap stains. On microscopic examination,smears showed high cellularity composed of tumor cells arranged in monolayered sheets and scattered singly. Cells were large,polygonal having abundant granular eosinophilic cytoplasm, well-defined cell membrane and accentuated cell borders (Fig-2).Cytoplasm showed variable granularity with vague perinuclear vacuolization (Fig-3). Distinct perinuclear halos were noted in few cells. Typical clear cells were not observed . Nuclei of the cells were eccentric and showed mild to moderate pleomorphism with a regular nuclear border.In some cells mild irregularity in nuclear border was noted.Also noted many binucleated cells .Few cells also showed small to large nucleoli. Mitotic figures were rarely present. There was no necrosis or inflammation in the background. Based on these findings ,on imprint smear differential diagnosis of ChRCC and renal oncocytoma was given.

Histologically

Tumor cells were arranged in sheets, clusters , tubules and papillary pattern. Individual tumor cells were large , polygonal having hyperchromatic nuclei, prominent nucleoli and abundant pink cytoplasm(Fig-4,5). Areas of haemorrhage and necrosis were seen. Tumor tissue was infiltrating into adjacent structures , extending beyond renal capsule, involving perinephric fat and renal vein. On histopathology, diagnosis was given as ChRCC with invasion into perinephric fat and renal vein.

Figure 1
Macrophotograph showing well-circumscribed, brown,solid renal mass

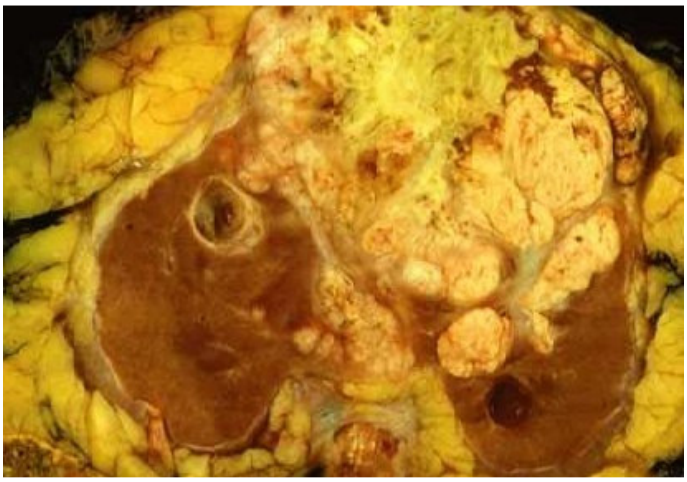


Figure2
Microphotograph of imprint smear showing high cellularity.MGG.x200

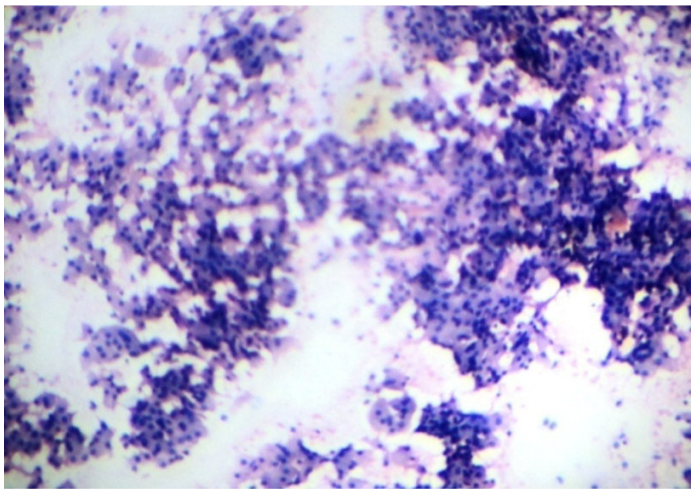


Figure3
Microphotograph of imprint smear showing polygonal cells with granular, eosinophilic cytoplasm.H & E x400

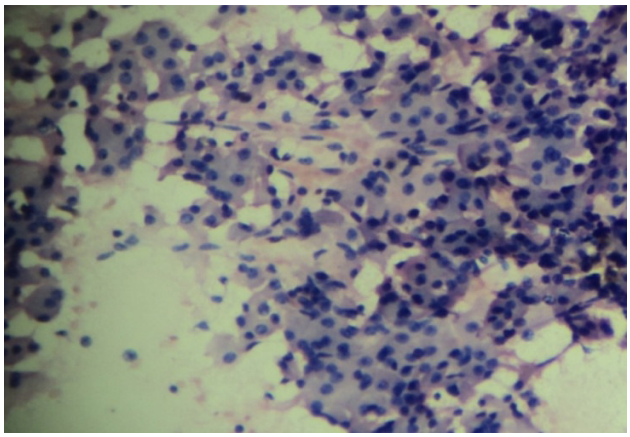


Figure4
Histopath microphotograph showing tumor cells. H&E x100

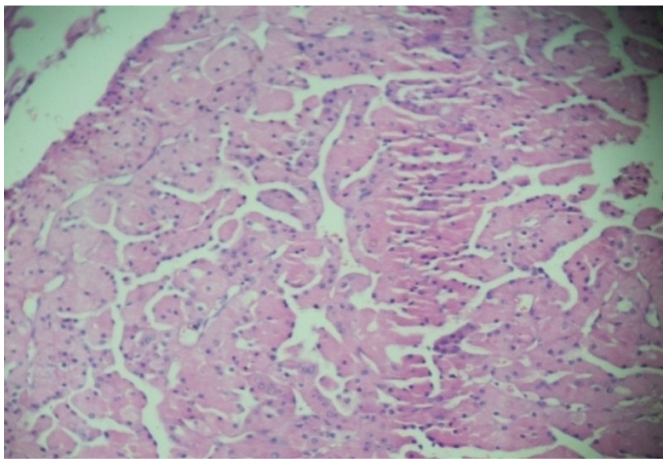
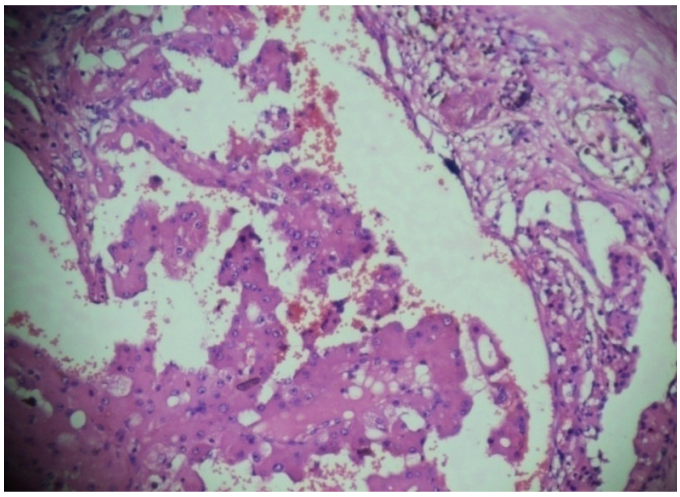


Figure5
Histopath photomicrograph showing tumor tissue invading capsule. H&E x400



DISCUSSION

Chromophobe RCC is the third most common histologic subtype, accounting for less than 5% of RCCs .[1] Chromophobe RCC is postulated to differentiate toward type B intercalated cells of the cortical collecting duct . It shows a mean age of incidence in the 6th decade. Men and women are equally affected. ChRCC has unique morphological, cytogenetic, histochemical and ultrastructural characteristics.[1] On cytology, morphology of ChRCCs show polymorphous voluminous cells having distinct cell borders , pale finely reticular and transparent or granular eosinophilic cytoplasm. Distinct perinuclear halos and wrinkled nuclei are important clues for the diagnosis.[1] The main differential diagnosis of the ChRCC on cytology is renal oncocytoma and clear cell RCC with granular cells. It is most important and challenging to distinguish ChRCC from oncocytoma. However, renal oncocytoma has a monotonous population of cells having uniform nuclei and homogeneous granular cytoplasm without reticulated clearing or vacuolization. Binucleation and an accentuated cell border are not prominent in renal oncocytoma as in ChRCC.[1,4] Hale's colloidal iron stain helps to distinguish these two entities. It is negative in oncocytoma and strongly positive in ChRCC. Ultrastructurally, ChRCC contains numerous

microvesicles, which account for the diffuse and strong reaction with Hal's colloidal iron stain.[1,2] Immunohistochemistry helps to distinguish ChRCC and oncocytoma. Oncocytoma are positive for cytokeratin and negative for vimentin where as ChRCC cells are positive for both vimentin and cytokertain.Thus ChRCC and renal oncocytoma can be distinguished with vimentin.[5,6] ChRCCs are difficult to distinguish from clear cell RCC having predominantly granular cells. In clear cell RCC,cells have indistinct cell borders, friable cytoplasm and the background is dirty, bubbly with many foamy histiocytes, in contrast to the clean background of ChRCC.[5] In our case imprint smears were highly cellular composed of polygonal tumor cells with abundant granular eosiophilic cytoplasm,eccentric nuclei with vague perinuclear halos. Background was clean without any inflammation and necrosis. These findings were similar to the findings of study done by Lee W.[1]Based on these findings and previous case reports, tumor was diagnosed as ChRCC which was confirmed on histopathology**.** Tumor infiltration into blood vessel and the capsule was noted along with classical features of ChRCC on histopathology.

CONCLUSION

Renal oncocytoma is a benign tumor where as ChRCC is a tumor with low malignant potential . The prognosis of ChRCC is intermediate between renal oncocytoma and clear cell RCC and usually simple nephrectomy or partial nephrectomy is the the treatment of choice for ChRCC Hence it is important to distinguish ChRCC from renal oncocytoma on the pre-operative cytologic smear.

CONFLICT OF INTEREST

Declared none.

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