Low-grade Oncocytic Tumour in a Seventy Years Old Male- A Newly Emerging Entity of Oncocytic Renal Neoplasm

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ABSTRACT

Low-grade oncocytic tumor (LOT) is an emerging entity, described in other oncocytic tumours of the kidney showing overlapping features be.tween oncocytoma and chromophobe renal cell carcinoma. The tumour shows indolent clinical behavior commonly occurring in older patients. It is associated with somatic mutations in the mTOR pathway genes. Herein, we present a case of LOT in a 70 years male with exploration of clinical, histomorphological and immunohistochemical features.

INTRODUCTION

Renal neoplasms with oncocytic/eosinophilic morphology are a growing list of entities and their diagnosis is sometimes challenging. Low-grade oncocytic tumor of kidney is an emerging entity included in the WHO classification of urinary & male genital tumours, 2022. It is characterized by distinct morphological, histological, immunophenotypic, karyotypic, ultrastructural profile and biological behaviour.[1]

CASE PRESENTATION

A 70-year male presented with lower urinary tract symptoms along with anaemia and edema without any abdominal pain or haematuria. A left renal mass was revealed upon imaging. Patient party could not submit the imaging documents. Left radical nephrectomy was performed.

Gross findings revealed a well-circumscribed tumor measuring 4.7 cm in the greatest dimension (pT1b). The tumor was solid, tan gray & focally tan brown, at midpole, predominantly cortical based, with medullary involvement (Figure 1). The pelvicalyceal system, renal sinus, perinephric fat and all cut margins (renal vessels and ureter) were free.

On microscopy, the tumor was sharply demarcated with the adjacent renal parenchyma and lack of definitive capsule. It showed predominantly solid and nested growth pattern (Fig-2A).

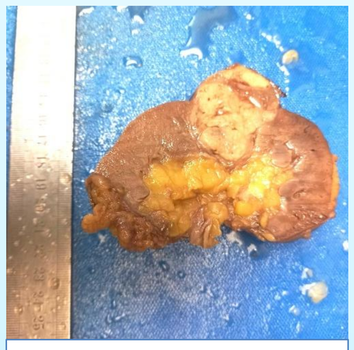

Figure 1A: Cut surface of the specimen

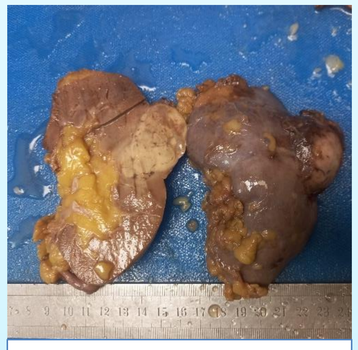

Figure 1B: Posterior view of the kidney

The tumor cells had abundant fine eosinophilic cytoplasm with distinct cell membrane. The cells had low-grade nuclei (equivalent to WHO/ISUP grade 1) with occasional perinuclear clearing (Fig-2D).

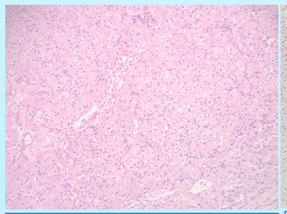

Figure 2A:Solid pattern of growth (H&E; 100x)

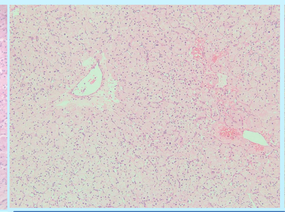

Figure 2B:Perivascular growth with focal hemorrhage (H&E;100x)

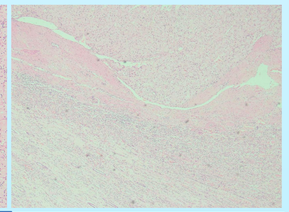

Figure 2C:Irregular interface with the renal medulla (H&E;40x)

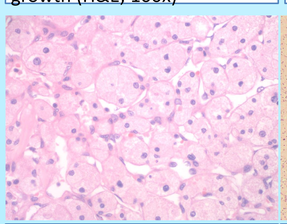

Figure 2D:ISUP grade-1 nuclei with occasional perinuclear halos (H&E; 400x)

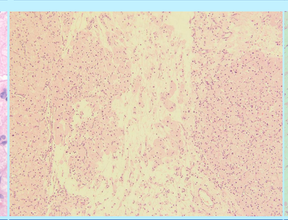

Figure 2E:Transition to cord like arrangement in edematous stroma (H&E;100x)

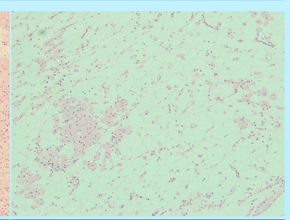

Figure 2F:Boats in a bay pattern of scattered cells (H&E;100x)

There were no nuclear membrane irregularities or raisinoid nuclei. The growth had edematous stromal area with characteristic 'boats in a bay' arrangement of the tumour cells (Fig-2E,F). There was no mitotic activity, coagulative tumor necrosis or lymphovascular invasion. The case was reported as histomorphologically suggestive of Low-grade oncocytic tumor. Immunohistochemistry was recommended, which report is still awaiting a final decision.

DISCUSSION

LOT is better designated under the category of "oncocytic renal neoplasms of low malignant potential (ORNLP)"due to having intermediate features among the possible differentials of chromophobe RCC (eosinophilic variant), oncocytoma, clear cell RCC (eosinophilic variant), papillary RCC (oncocytic variant), epithelioid angiomyolipoma, SDH-deficient RCC and eosinophilic, solid, and cystic RCC.[2]Accurate differential diagnosis of eosinophilic renal tumors remains challenging due to substantial overlap in morphology and immunophenotype (Fig-3). The diagnosis of LOT can be suspected on morphological grounds but

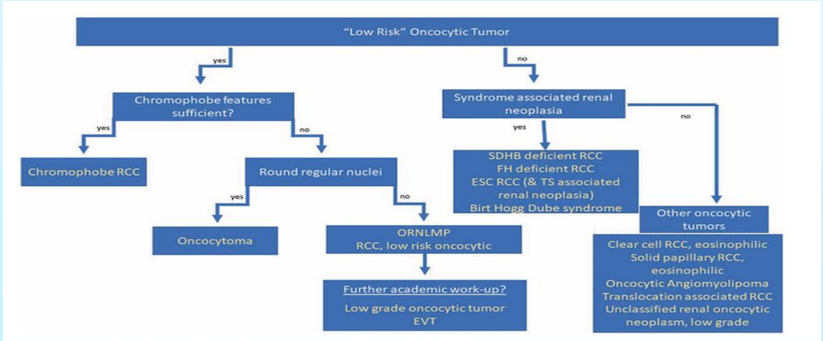

Figure3: Systematic approach to low grade renal oncocytic neoplasms of the kidney

Should be confirmed by IHC. these tumours are typically indolent, so it is important to distinguish such low- grade tumours from the high-grade unclassified RCCs that typically behave aggressively. LOT is rarely associated with tuberous sclerosis and shows diffuse strong CK7 labelling, and negative CD117 labelling. The L1CAM is being recognized as a potential diagnostic marker for LOT.[3] Further work is needed to fully characterize these entities. To date, there is no reported case of recurrence or metastasis.[4]

CONCLUSION

Documentation of LOT involves a histologic approach to eosinophilic renal tumours by evaluating tumour cell features, growth pattern, stromal characteristics, and employing IHC, or accurate ancillary investigation. Therefore, more such cases in literature will help in expanding the knowledge about prognosis of this relatively rare renal tumor from larger sample size with longer follow-up.

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