

Case Report

Cytodiagnosis of Clear Cell Papillary Renal Cell Carcinoma: A Case Report

Dr SP Khanna¹, Dr Prem Singh², Dr Sneha Singh³, Dr Ridhima Auplish³,
Dr Aditi Gupta⁴

¹Associate Professor, ²Professor, ³Assistant Professor, ⁴Resident,
Department of Pathology, MMIMSR, MMDU, Mullana (Ambala), Haryana

Corresponding Author: Dr Prem Singh

ABSTRACT

Image guided fine needle aspiration cytology (FNAC) for the diagnosis of renal cell carcinoma (RCC) is well established diagnostic tool and is being increasingly utilised for early diagnosis and grading of renal tumors. It also helps in determining the operability of renal tumors. The exact diagnosis is possible on account of characteristic cellular features of RCC and its variants. Since the emergence of new RCC entities, their cytological features also need to be defined. Cytological features of newer subtypes of renal cell carcinoma (RCC) have added to a trend of increasing diagnostic accuracy, thus emphasizing the role of cytological sampling in management and personalisation of therapy. We hereby present a case of 68 years old patient in whom a renal mass was discovered incidentally and subsequently a USG guided FNAC was performed which revealed classical cytological features of clear cell papillary renal cell carcinoma (CCPRCC).

Key words: Clear cell Papillary Carcinoma, Macrophages, Fine needle aspiration cytology

INTRODUCTION

USG guided FNAC plays an important role in diagnosis and subsequent management of renal cell carcinoma. Cytological evaluation of renal tumors is imperative in settings of indeterminate imaging studies or when radical surgery is contraindicated as in high grade tumors with extensive metastasis. Kristensen et al had first reported USG guided percutaneous Fine needle aspiration cytology (FNAC) of renal masses. [1] Also guided FNAC is very helpful for diagnosis, grading and pre-operative planning of renal tumors. Diagnostic aspirates from renal cell carcinoma, whether from primary or metastatic lesions provide characteristic cellular details, thus permitting a correct cytological diagnosis. [2] FNAC has exhibited increasing diagnostic utility for

classification of most common types of RCC [3] and cytological diagnosis are highly accurate compared to histopathological diagnosis. [4] Many a time discrepancies are attributed to small size of the sample, tumor heterogeneity and certain diagnostic categories, particularly in oncocytic tumors. [5] The new subtypes of RCC encompasses the tumors of differing prognosis, varying from indolent to the most aggressive renal neoplasms with corresponding diagnostic implications. [6]

CASE REPORT

A 68 years old male patient reported to our hospital with history of fever, diarrhoea, vomiting and pain abdomen of 20 days duration. No mass was palpable per-abdomen. The patient was a known case of diabetic nephropathy. USG abdomen

revealed solid renal space occupying lesion in the inferior pole of left kidney with moderate ascites.

Blood parameters revealed Hb 9.2gm/dl, TLC 20000/cmm with 85% neutrophils, blood urea 162 mg%, creatinine 7.30 mg/dl. Contrast Enhanced Computed Tomography (CECT) of abdomen revealed large hypo and isodense mass lesion seen at inferior pole of left kidney bulging exophytically with evidence of hyper dense content within it likely haemorrhagic, measuring approx 4.2x3.2cm (Figure 1). Multiple tiny calculi were seen in both kidneys but no hydronephrosis was noted. A diagnosis of malignant renal mass - likely

RCC in inferior pole of left kidney with moderate ascites was rendered.

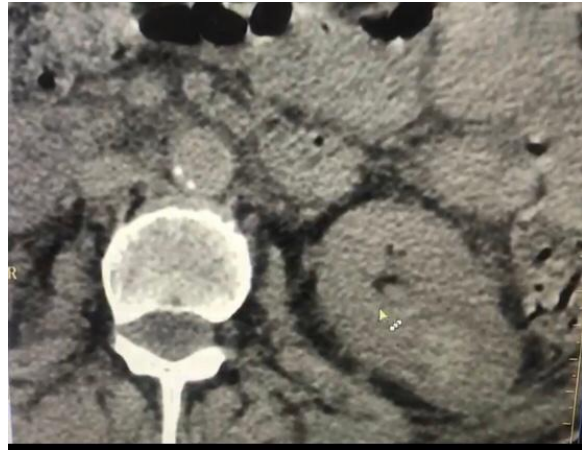


Figure 1: CECT abdomen showing hypo and isodense mass lesion at inferior pole of left kidney

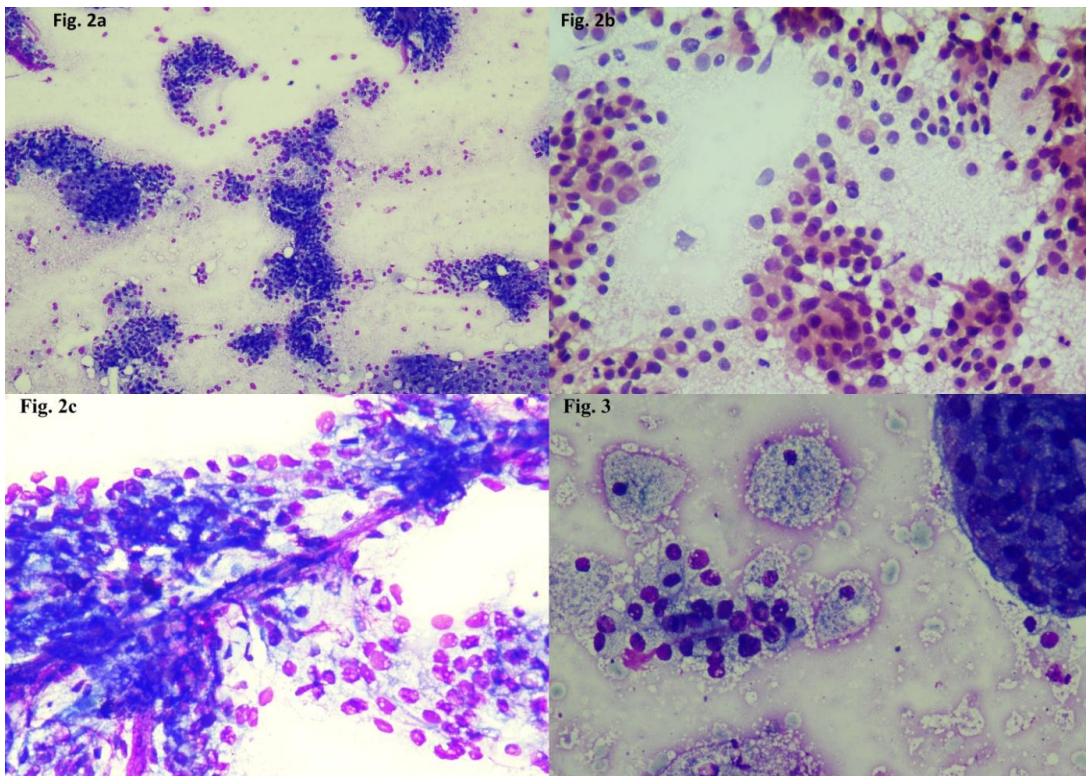


Figure 2a – FNAC smear showing papillary structures lined by tumor cells showing vacuolations and eccentric nuclei with an inconspicuous nucleoli. Interspersed in-between are seen small clusters and isolated cells (Leishman-Giemsa, X100).

Figure 2b – Papanicolou stain showing similar features as in 2a (PAP, X400)

Figure 2c – Smear showing well formed papillary structures lined by the tumor cells (Leishman-Giemsa, X400)

Figure 3 – Smear showing tumor cells forming clusters and papillary structures with macrophages in background (Leishman-Giemsa, X400)

A USG guided FNAC was advised. The renal mass was localized and area was cleaned with antiseptic solution. A fine needle was inserted under guidance and multiple passes were given. Smears made from the aspirate were air dried and fixed

before submitting for cyto-pathological examination. Cytological examination revealed tumor cells arranged in loosely cohesive sheets, clusters, papillary and focal acinar structures. The tumor cells were uniform round to polygonal with ill -defined

cell borders and moderate amount of clear cytoplasm having small vacuoles. The nuclei were small, round having finely granular chromatin and inconspicuous nucleoli and were eccentrically as well as centrally placed. Background revealed macrophages, some of them are pigment laden. Small fragments of myxomatous and hyalinised stroma were also seen (Figure – 2a, 2b, 2c, 3). Based upon above cytological features a diagnosis of CCP RCC was made.

DISCUSSION

Image guided FNAC has revolutionized the cytopathological diagnosis especially in the intra- abdominal masses and deep seated retro-peritoneal lesions which cannot be visualised or palpated. Approach to these lesions under dynamic USG is quick and usually precise by fine needle in any desired plane. [7] USG has added advantage of being inexpensive and can be easily repeated without any hazards of radiation exposure. Studies have proven the usefulness of this method and have reported a success rate of 87-100% (mean of 93.5%) for renal tumors. [8,9] Renal cell carcinoma is a rare neoplasm with newer entities having distinct pathological and genetic signatures which have been recently adopted in tenth edition of World Health Organisation (WHO) classification. [6] Subsequently cytological features of these new subtypes have been discussed. On account of increasing utility of image guidance, several cytological features have been described adding new subtypes of renal cell carcinoma. Out of these clear cell papillary renal cell carcinoma, a distinct subtype of RCC, has been acknowledged by International Society of Urological Pathology (ISUP). [10] It occurs in adults of age group of 55-60years, [11,12] and in our case the age was 68years. Usual presentations are hematuria (59%), flank pain (41%) and abdominal mass (45%). However, 25% of RCC are asymptomatic where it is discovered incidentally on imaging studies. [13] Cytological evaluation sometimes is limited by massive

haemorrhage or necrosis. This feature is particularly true of papillary variant of RCC [6] and in our case too necrosis with degenerative changes were clearly evident. Cytology of clear cell Papillary renal cell carcinoma reveals variable or moderate cellularity, sheets and papillary structures along with occasional tubular or acinar pattern. Cells are monomorphic medium sized with ill-defined borders and central to eccentric nucleus, fine chromatin and inconspicuous nucleoli. Cytoplasm may be clear or show small vacuolations. Background shows macrophages - some containing pigment in them. [14] Our case revealed similar findings with no oncocytic cells as is usually seen in RCC. CCPRCC is a distinct low grade indolent variant of RCC [15] that reveals low pathological staging at presentation and is the fourth most common tumor. [16]

CONCLUSION

Image guided FNAC of renal tumors is first line diagnostic approach. Diagnosis of CCPRCC is more reliable by FNAC as compared to other renal tumors. The combined radiological & cytological approach leads to proper diagnosis and early management of such low grade tumors, thus obviating the need of surgical intervention.

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