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RESEARCH ARTICLE

INCIDENTAL RCC IN AN END-STAGE RENAL DISEASE : A RARE CASE REPORT

Dr. Swati Setia, Dr. Charu Tripathi and Dr. Naresh N. Rai

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End-Stage Renal Disease(ESRD), Renal Cell Carcinoma(RCC), Clear-Cell Papillary Renal Cell Carcinoma

Abstract

The incidence of end-stage renal disease has increased owing to the greater prevalence of patients with chronic kidney disease and diabetes mellitus .Acquired renal cystic disease (ARCD), renal adenoma (AD), and renal cell carcinoma (RCC) are more common in patients with end-stage renal disease (ESRD).Clear cell papillary carcinoma is the most common variant of RCC in ESRD patients. In our case,a 52 yr old male presented to the surgery department withcomplains of left renal colic.CECT scan was suggestive of left renal obstructive calculi and the possibility of left pyeloureteritis. The clinical diagnosis of left poorly functioning kidney was made. On the basis of clinical and histopathological findings , the diagnosis of End stage renal disease with renal cell carcinoma was made . IHC was advised. On IHC, PAX8, vimentin and CK7 were positive .On the basis of IHC, the diagnosis of Clear cell papillary carcinoma was made.

Introduction:-

The incidence of end-stage renal disease has increased owing to the greater prevalence of patients with chronic kidney disease and diabetes mellitus [1].Acquired renal cystic disease (ARCD), renal adenoma (AD), and renal cell carcinoma (RCC) are more common in patients with end-stage renal disease (ESRD).[2,4] Shrewsbury et al. estimated that around 2–7% of patients with ESRD develop RCC.[4, 5] Clear cell papillary renal cell carcinoma also has an indolent course (no cases involving metastasis have been reported to date), and its features resemble those of both clear cell renal cell carcinoma and papillary renal cell. [1] Other types of RCC also occur in ESRD, albeit with different frequencies from the non-ESRD general population. The histological features of RCC do not vary in the setting of ESRD vs. non-ESRD, yet other findings, such as multifocality and multiple tumor types, are more frequent in ESRD.[6]

Case report:

The 52 yr old male presented to the surgery department with the complains left renal colic. CECT scan was suggestive of left renal obstructive calculi and the possibility of left pyeloureteritis. The clinical diagnosis of left poorly functioning kidney was made.

Left nephrectomy was done and the specimen was sent for histopathological examination. On gross examination , left nephrectomy specimen measured 9x6.5x4.5cm and ureter measured 4 cm in length. On cutting ,corticomedullary junction demarcation was lost and multiple grey brown fibrotic areas and necrotic areas were present. On microscopic examination, sections from kidney showed the fibrotic cortex with sclerotic glomeruli. Tubules were dilated and filled with pink cast (thyroidization of tubules).There were scattered chronic inflammatory cells with hyalinization and thickening of arteries. Areas of necrosis were also present. Sections from the upper pole

Corresponding Author:- Dr. Swati Setia

showed a focal area showing the presence of sheets of tumor cells amidst inflammatory infiltrate. Cells have round to oval nuclei , increased N:C ratio, vesicular chromatin and prominent nucleoli. On the basis of clinical and histopathological findings , diagnosis of End stage renal disease with renal cell carcinoma was made . IHC was advised. On IHC, PAX8, vimentin and CK7 were positive .On the basis of IHC, the diagnosis of Clear cell papillary carcinoma was made.

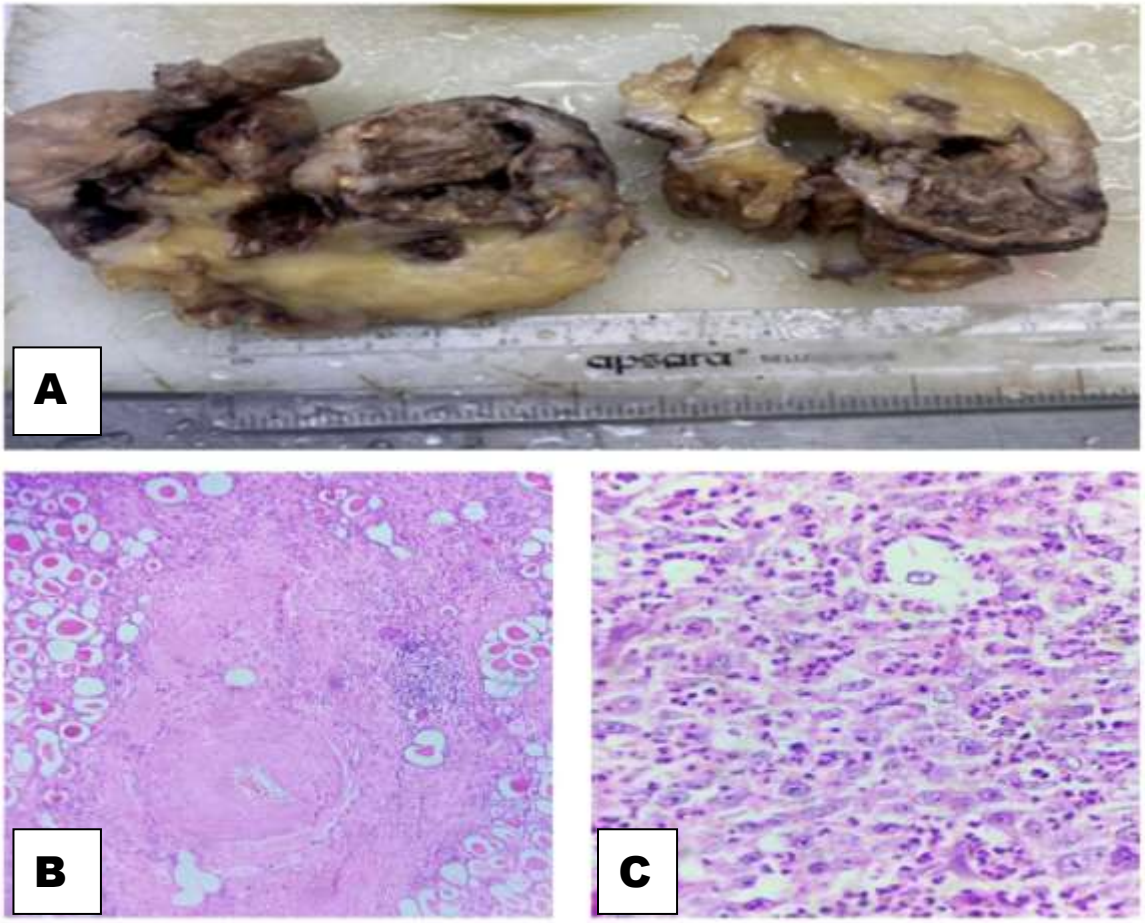

Figure1:- A, Nephrectomy specimen measuring 9x6.5x4.5cm and ureter measuring 4 cm in length. Grossly, no tumour tissue identified. B,Microscopy showing changes of chronic pyelonephritis- thyroidisation of renal tubules ,presence of chronic inflammatory infiltrate in the interstitium and interstitial fibrosis. C, Presence of tumour cells amidst the inflammatory cells.

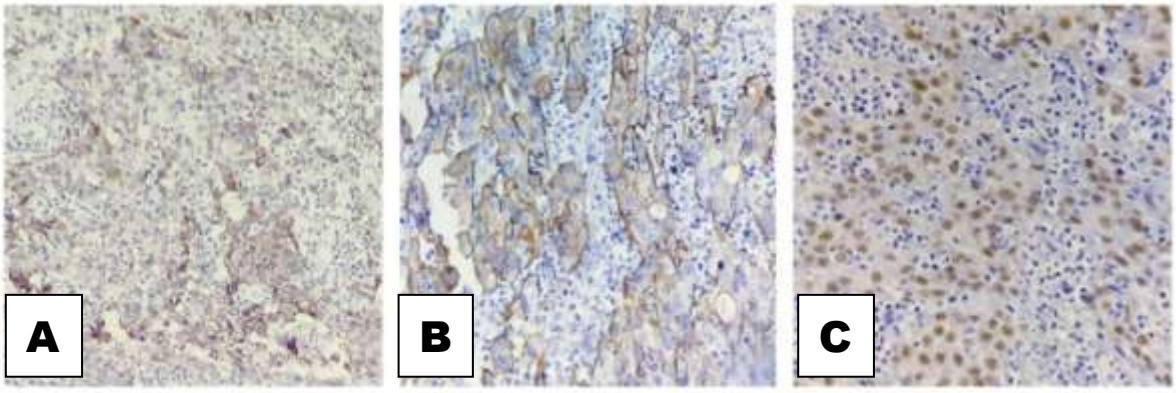

Figure 2:-A,IHC showing A ,CK7 positivity(membranous),B, Vimentin positivity(memberanous) C,PAX8 positivity(nuclear).

Discussion:-

It is estimated that as many as 9.7 million people suffer from end-stage kidney disease (ESKD) worldwide[3]. The incidence of RCC is 3–24-fold higher in ESRD patients and kidney transplant recipients, especially those with ACKD, than in the general population, including transplant recipients with a native kidney [1].Patients with ESRD are diagnosed with RCC at younger ages than those without ESRD and the male-to-female ratio for RCC is higher in patients with ESRD or kidney transplants than those without ESRD. [1] It has long been suggested that RCC in an ESKD patient may behave as a distinct biological entity compared to RCC in a non-ESKD patient.[3] The median time from the onset of ESRD to the date of RCC was 8.5 years.[4] Patients with ESRD and subsequent RCC had significantly smaller tumors with a lower stage at the time of detection compared with RCC-only patients, one reason might be that ESRD patients undergo more medical investigations,including CT/ultrasound-screening than the general population and therefore these tumors are identified earlier and are smaller at detection.[1,4] In the group of patients with ESRD-RCC we found significantly more papillary and chromophobe RCCs.[1,4,6] The majority of RCCs occurring in ESRD and / ACKD represent ACKD-RCC in addition to another unique RCC entity, clear-cell papillary renal cell carcinoma (ccpRCC) . [6] Hypertension is a risk factorfor both ESRD and RCC and is common in ESRD-patients. Overall survival in ESRD-RCC patients is significantly lower compared to RCC patients with-out ESRD, probably due to the detrimental effect of theESRD.[4]Oxidative stress is thought to promote carcinogenesis in various organs, including the kidneys.[2] It has been shown to cause mitochondrial DNA mutations and DNA hypermethylation in RCCs in ESRD patients.[1]Immunohistochemically, the epithelial cells are positive for epithelial membrane antigen, cytokeratin 7, AE1/AE3, CAM5.[2] vimentin and CA IX, but not AMACR, RCC marker or TFE3; some cases show CD10 positivity.[1] ESRD-RCC patients with RCC-only, the median age at diagnosis was 65 vs 68 years, median tumordiameter was smaller (4.5 vs 6.0 cm). Tumor morphology revealed 53% vs 78% clear cell RCC, 30% vs 11% papillary RCC and 8% vs 5% chromophobe RCC in ESRD-RCC.[4] ACKD-RCC and ccpRCC may be clinically detected incidentally on imaging or after nephrectomy of an end-stage kidney for non-tumor-related indications. The definitive diagnosis of both tumors requires pathological examination of tissue .[6] Smoking is an established risk factor for RCC with a described dose-response relationship.[7] In our case patient is 52 years male and diagnosed incidentally on histological examination. No lesion was detected on CT and MRI may be due to necrosis and vascular insufficiency and the smaller size of the tumor.

Conclusion:-

The incidence of RCC is more common in end stage renal disease.Papillary Clear Renal cell carcinoma is the most common variant found in end stage renal disease. Clinical, Radiological and Histopathological examination is the key for diagnosis of RCC in ESRD.IHC is required for the further categorisation of RCC.

Conflicts of Interest:-

There is no conflict of interest.

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