



EXPRESSION OF AMACR AND CA-IX IN CYSTIC NEOPLASMS OF KIDNEY

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ABSTRACT Diagnosis of cystic neoplasms of the kidney is challenging, both clinically and radiologically. Histopathology is crucial in establishing the diagnosis. This case series includes 3 cystic neoplasms of kidney. The aim of this study was to investigate AMACR and CAIX immunoreactivity within the spectrum of cystic renal cell neoplasms. Multilocular cystic renal neoplasm of low malignant potential (MCRNLMP): This type of cystic renal neoplasm is characterized by a low-grade, multiloculated, cystic appearance. It is often AMACR negative. Tubulocystic carcinoma (TCC): This type of renal cell carcinoma is characterized by a tubulocystic pattern and is often AMACR positive. Clear cell renal cell carcinoma (CCRCC), either solid or cystic, is the most frequent type of renal cancer. While pseudocysts are found in high-grade aggressive CCRCC, cystic growth is associated with low-grade indolent cases. But diagnosis requires careful morphological and immunohistochemical analysis. We sought to determine if CAIX could be used as an immunohistochemical marker to reliably distinguish amongst different tumor types and if its expression correlated to RCC grade.

KEYWORDS : AMACR, MCRNLMP, CCRCC**DISCUSSION**

A-Methylacyl coenzyme A racemase (AMACR) is traditionally considered to be a marker of papillary renal cell carcinoma. However, AMACR expression can be seen in other renal tumors. Carbonic anhydrase-IX, a hypoxia-induced protein, is expressed in some renal cell carcinomas. The aim of this study is to investigate AMACR and CAIX immunoreactivity within the spectrum of cystic renal neoplasms.

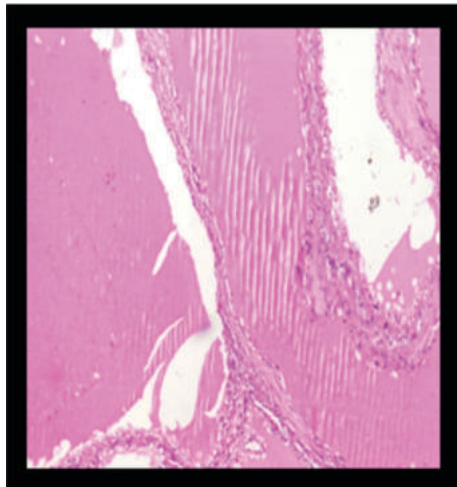
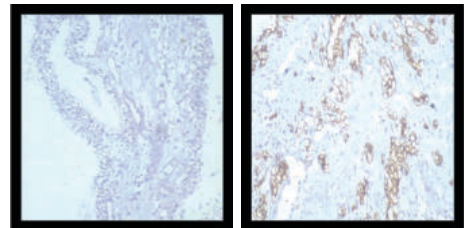
Multilocular cystic renal neoplasm of low malignant potential (MCRNLMP) is a rare subtype of renal cell carcinoma (RCC) with favorable outcome. This entity was previously known as multilocular cystic RCC or multicystic clear cell carcinoma. The 2012 International Society of Urological Pathology (ISUP) consensus conference on renal neoplasia adopted the new terminology of MCRNLMP owing to its similar pathological features to renal clear cell carcinoma, but different natural history (2).

Case 1

We report here a case of a 76 year old male patient who presented with left renal mass.

MORPHOLOGY

Macroscopically, the tumor is characterized by having a variegated multilocular cystic appearance. Microscopically, the tumor is composed of multiple cysts separated by fibrous septae lined by tumor cells with clear cytoplasm that have low nuclear grade (ISUP/WHO grade 1 or 2). There are small aggregates of tumor cells but no formation of expansile nodules seen. There is no necrosis, vascular invasion or sarcomatous differentiation.

Microscopy**Immunohistochemistry**

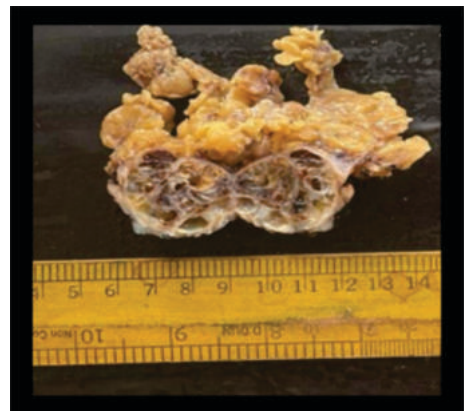
AMACR

CAIX

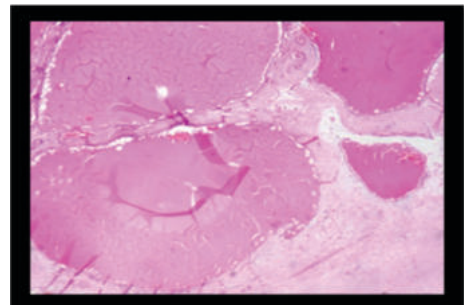
Immunohistochemistry showed positive membranous CAIX staining and negative AMACR

Case 2

69 year old male presented with small mass left kidney for which he underwent partial nephrectomy

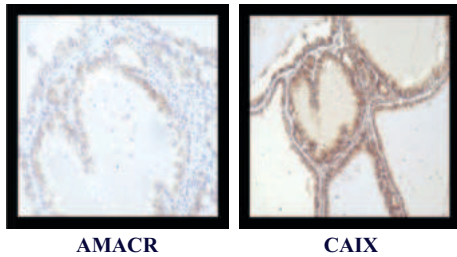
Macroscopy

Renal Tumor Showing Multiple Cystic Spaces



Microscopy showed predominantly a cystic neoplasm .Individual cells are polygonal with abundant clear cytoplasm,nucleus showing prominent eosinophilic nucleoli.(ISUP grade 2)

Immunohistochemistry



Immunohistochemistry showed positive membranous CAIX and granular cytoplasmic AMACR positivity.

Case 3

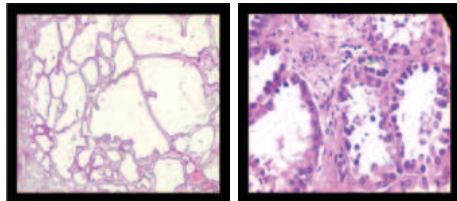
76 year old male patient with right renal mass

Macroscopic Findings

4x3 cm friable tumor upper pole of right kidney

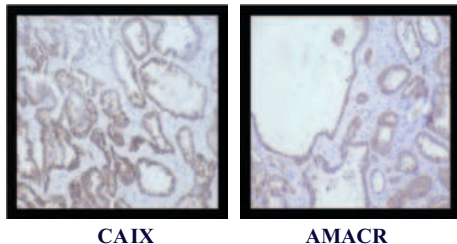


Microscopy



Mixture of closely packed tubules and variably sized cysts with overall low grade morphology. Tubules and cysts are lined by a single layer of flattened, cuboidal or columnar cells, hobnailing present with modest to abundant amounts of eosinophilic cytoplasm.. uniform round nuclei with eosinophilic nucleoli (ISUP grade 3)

Immunohistochemistry



Positive for membranous CAIX positivity focally and positive granular AMACR staining.

Extremely rare case with <100 cases reported so far

Mean age -54 years with male propensity.Tubulocystic renal cell carcinoma was first described in the 2016 WHO classification. Initially called the Bellinian epithelioma by Masson-thought to be a subtype of

collecting duct carcinoma, but due to the relatively less aggressive nature it was later disproved. Yang et al- studies revealed tubulocystic renal cell carcinoma to be closely associated with papillary renal cell carcinoma-gain of chromosome 7 and 17 and loss of Y chromosome (3)

RESULTS

On evaluation of the three cystic renal tumors AMACR was found to be negative in MCRNLMP and was found to be positive in Cystic renal cell carcinoma and tubulocystic renal cell carcinoma.

Correlating with the grade of tumor AMACR was found to be positive in high grade tumors.

CAIX was found to be positive in all the three cystic renal neoplasms(MCRNLMP,cystic renal cell carcinoma).CAIX correlated with the aggressive nature of renal tumors.CAIX is found to be positive in the tubulocystic renal cell carcinoma correlating with its aggressive nature.

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