

CONTENIDO	COMUNICACIONES
▶ Abstract	<p style="text-align: center;"><b>BRAZILIAN PRIMARY RENAL TUMORS: CLINICAL AND PATHOLOGICAL REVIEW OF 137 CASES WITH EMPHASIS ON RENAL CORTICAL EPITHELIAL NEOPLASMS.</b></p> <p style="text-align: center;"><i>Sueli Suzigan<sup>*</sup>, Marcio El Ammar Müller<sup>**</sup>, Wilson de Souza Lima<sup>*</sup>, Carlos Benedito Menezes Verona<sup>**</sup>, Miguel Zerati Filho<sup>**</sup>.</i></p> <p style="text-align: center;"><i>Larpac Laboratory<sup>*</sup> and Institute of Urology and Nephrology (IUN)<sup>**</sup>, São José do Rio Preto, SP, Brazil.</i></p> <p style="text-align: center;">IV-CVHAP 2001 COMUNICACIÓN-E - 002</p> <p style="text-align: right;">Fecha recepción: 4/09/2000 Fecha evaluación: 19/09/2000 Fecha publicación: 12/11/2000</p>
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**SUMMARY**

In Brazilian papers related to primary renal tumors and specially those using the "1997 Rochester/Minnesota Renal Cell Carcinoma Classification", documentation about renal cortical epithelial neoplasms (RCEN) is scarce. This paper is meant to correlate clinical and pathological data on this classification. Between January 1978 and March 2000 Larpac Laboratory received 137 primary renal neoplasms for analysis and they were reviewed retrospectively. From these, 122 cases were followed up by IUN. The following primary renal neoplasms were diagnosed: Collecting Duct Carcinoma (CDC) (0.74%), Leiomyosarcoma (1.46%), Cystic Nephroma (1.46%), Sarcoma.46%), Oncocytoma (2.19%), Angiomyolipoma (6.57%), Wilms' Tumor (8.03%), Transitional Cell Carcinoma (15.33%) and Renal Cell Carcinoma (RCC) (61.31%). In relation to non-RCEN tumors: Leiomyosarcoma was seen in the sixth and seventh decades of life, only in females and in left kidneys. Cystic Nephroma as well as Sarcoma were found only in right kidneys, but the first was seen in the first and fourth decades of life and in males and the last only in the seventh decade of life and in females. Angiomyolipoma occurred from the fourth to the seventh decades of life, in a higher incidence in females (77.78%) and in right kidneys (66.67%). Wilms' Tumor was found in the first and second decades of life, with a frequency of 63.64% for both females and for right kidneys. Transitional Cell Carcinoma occurred from the fifth to the ninth decades of life, with no differences between the sexes, but with a slight prevalence (52.38%) in right kidneys. In relation to RCEN tumors: CDC occurred in the third decade of life, in a male and in the left kidney. Unclassified Carcinoma was seen in the sixth and eighth decades of life and only in males. Oncocytoma was found from the sixth to the eighth decades of life, with an occurrence rate of 66.67% both for females and in left kidneys. RCC was detected from the second to the ninth decades of life, with a slight prevalence in males and in left kidneys. The subtypes of RCC were: Chromophobe RCC (17.86%), Papillary RCC (21.43%) and Conventional RCC (60.71%). There were 12 patients with RCC who died of the disease: zero of Chromophobe type, one of Papillary type and 11 Conventional type. The two first types of RCC gave a better prognosis than the last one.

**Keywords:** renal cortical epithelial neoplasms | kidney | tumors | pathology |  
**Palabras clave:** neoplasias del epitelio cortical renal | riñón | tumores | patología |



Fig. 1. 1

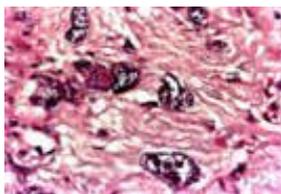


Fig. 3. 3



Fig. 7. 1

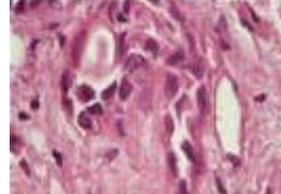


Fig. 9. 2



Fig. 12. 1



Fig. 1. 2

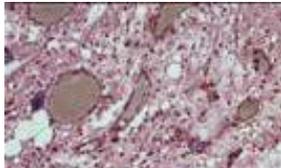


Fig. 4

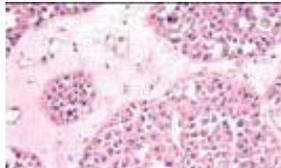


Fig. 7. 2



Fig. 10. 1

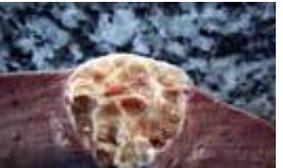


Fig. 12. 2



Fig. 2. 1



Fig. 5. 1



Fig. 8. 1

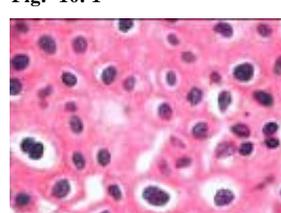


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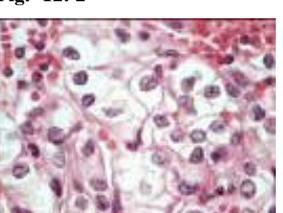


Fig. 12. 3

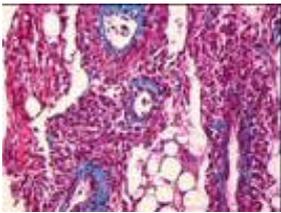


Fig. 2. 2

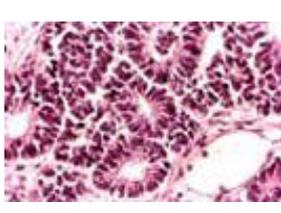


Fig. 5. 2

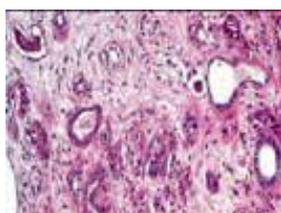


Fig. 8. 2



Fig. 10. 3

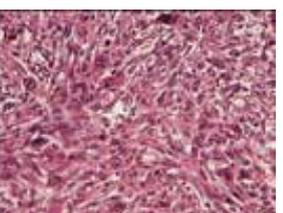


Fig. 12. 4



Fig. 3. 1



Fig. 6. 1

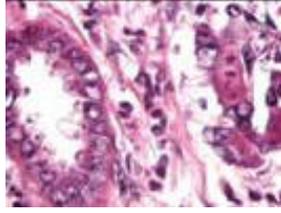


Fig. 8. 3



Fig. 11. 1

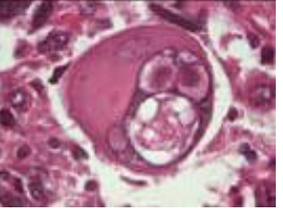


Fig. 12. 5

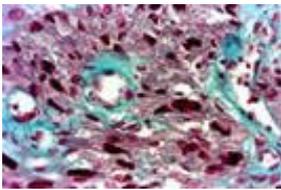


Fig. 3. 2



Fig. 6. 2



Fig. 9. 1

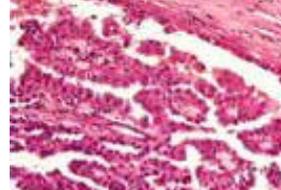


Fig. 11. 2

Gráficas

## INTRODUCTION

An international consensus conference reviewed the current state of histologic classification of renal cell carcinoma, the grading, TNM staging, current and future prognostic factors, and clinical research priorities. This conference held at Rochester, Minnesota, USA, on March 21-22, 1997 was called "The First International Workshop on Renal Cell Carcinoma" and was coordinated by the World Health Organization in collaboration with the Union International Contre le Cancer (UICC), American Joint Committee on Cancer (AJCC), Mayo Clinic and Mayo Foundation, the Pacific Northwest Cancer Foundation (1-9) .

International agreement was reached on the histologic classification of **Renal Cortical Epithelial Neoplasms (RCEN)** as following:

- ≠ **Benign Neoplasms:**
  - ≠ Papillary adenoma
  - ≠ Renal oncocytoma
  - ≠ Metanephric adenoma and adenofibroma
- ≠ **Malignant Neoplasms:**
  - ≠ Renal cell carcinoma (RCC)
    - Conventional (clear cell) RCC
    - Papillary (chromophil) RCC
      - Eosinophilic type
      - Basophilic type
    - Chromophobe RCC
      - Typical type
      - Eosinophilic
  - ≠ Collecting duct carcinoma (CDC)
    - Medullary carcinoma
  - ≠ Unclassified carcinoma

## MATERIAL Y METHODS

**Larpac Laboratory** received 48,874 surgical specimens between January 1978 and March 2000, and from these, all the renal tumors were analyzed retrospectively. A total of 137 cases (0.28%) of primary kidney neoplasms were diagnosed. Ninety of which were renal cortical epithelial neoplasms (**RCEN**). The "1997 Rochester/Minnesota Renal Cell Carcinoma Classification" on RCEN, TNM staging and Fuhrman's grading system were used in this review of slides using HE staining and Hale's colloidal iron staining.

A retrospective clinical correlation of 122 primary kidney neoplasms was performed by the **Institute of Urology and Nephrology (IUN)**.

The study of these tumors was separated in Non-RCEN and RCEN, as well in Benign and Malignant Neoplasms, as following:

### **1 - Non-Renal Cortical Epithelial Neoplasms (Non-RCEN): Benign Neoplasms**

- 1.1 - Cystic Nephroma
- 1.2 - Angiomyolipoma

### **2 -Non-Renal Cortical Epithelial Neoplasms (Non-RCEN): Malignant Neoplasms**

- 2.1 - Leiomyosarcoma
- 2.2 - Sarcoma
- 2.3 - Wilms' Tumor
- 2.4 - Transitional Cell Carcinoma

### **3 - Renal Cortical Epithelial Neoplasms (RCEN): Benign Neoplasm**

- 3.1 - Oncocytoma

### **4 - Renal Cortical Epithelial Neoplasms (RCEN): Malignant Neoplasms**

- 4.1 - Collecting Duct Carcinoma (CDC)

- 4.2 - Unclassified Carcinoma
- 4.3 - Renal Cell Carcinoma (RCC)

## RESULTS

The following primary renal neoplasms were diagnosed: Collecting Duct Carcinoma (CDC) one case (0.74%), Leiomyosarcoma two cases (1.46%), Cystic Nephroma two cases (1.46%), Sarcoma two cases (1.46%), Unclassified Carcinoma two cases (1.46%), Oncocytoma three cases (2.19%), Angiomyolipoma nine case (6.57%), Wilms' Tumor eleven cases (8.03%), Transitional Cell Carcinoma 21 cases (15.33%) and Renal Cell Carcinoma (RCC) 84 cases (61.31%) (Graphic 1).

Using the "1997 Rochester/Minnesota Renal Cell Carcinoma Classification", 90 RCEN cases were reviewed and the following data was found: one Collecting Duct Carcinoma, two Unclassified Carcinoma, three Oncocytoma and 84 Renal Cell Carcinoma (Graphic 11).

The association between clinical information and histopathological report showed:

### 1 - Non-Renal Cortical Epithelial Neoplasms (Non-RCEN): Benign Neoplasms

**1.1 - Cystic Nephroma:** Cystic Nephroma was found in the first and the fourth decades of life, only in males and in right kidneys (Graphic 2). The gross pathology demonstrated an average tumor size of 5.25 cm, with multiple non-communicating locules (Figure 1.1). The microscopic pathology revealed multiple cysts separated by fibrous septa (Figure 1.2) and a hobnail epithelium.

**1.2 - Angiomyolipoma:** Angiomyolipoma occurred from the fourth to the seventh decades of life, in higher incidence in females (77.78%) and in right kidneys (66.67%) (Graphic 3). The gross pathology showed an average tumor size of 6.53 cm, with a yellow color and one case with rupture and hemorrhage (Figure 2.1). The microscopic pathology demonstrated thick-walled blood vessels, smooth muscle and fat (Figure 2.2).

### 2 - Non-Renal Cortical Epithelial Neoplasms (Non-RCEN): Malignant Neoplasms

**2.1 - Leiomyosarcoma:** Leiomyosarcoma was seen in the sixth and the seventh decades of life, only in females and in left kidneys (Graphic 4). The gross pathology showed an average tumor size of 12.6 cm, with a firm, solid, white mass (Figure 3.1). The microscopic pathology revealed fascicles of smooth muscle (Figure 3.2), with nuclear pleomorphism (Figure 3.3). One patient evolved to death 2 years after the surgery.

**2.2 - Sarcoma** was found in the seventh decade of life, in females and in right kidneys (Graphic 5). The gross pathology demonstrated an average tumor size of 8.45 cm, with a myxoid appearance. The microscopic pathology revealed strap cells in a myxoid stroma (Figure 4).

**2.3 - Wilms' Tumor** was found in the first and the second decades of life, with a greater frequency of 63.64% in both females and right kidneys (Graphic 6). The gross pathology showed an average tumor size of 9.96 cm, in a gray or pink color, with hemorrhage, necrosis and cysts (Figure 5.1). Microscopic pathology demonstrated a variable mixture of blastema, epithelium (Figure 5.2) and stroma. Stage I and stage II (NWTS classification) were observed in 63.64% of the cases. One patient with stage III died of the disease.

**2.4 - Transitional Cell Carcinoma (Urothelial Carcinoma).** Transitional Cell Carcinoma (Urothelial Carcinoma) occurred from the fifth to the ninth decades of life, with no

differences between the sexes, and with a slight prevalence (52.38%) in right kidneys (Graphic 7). The gross pathology demonstrated multiple papillary neoplasms, with an average tumor size of 4.26 cm, associated with hydronephrosis (Figure 6.1). The microscopic pathology revealed papillary low-grade cancer (WHO classification) (Figure 6.2) in 61.9% and stage pTa+pT1 (TNM classification) in 76% of the cases. One patient with high-grade cancer and stage pT2 evolved to death.

### 3 - Renal Cortical Epithelial Neoplasms (RCEN): Benign Neoplasms

**3.1 - Oncocytoma** Oncocytoma was 3.33% of RCEN cases (Graphic 11). It was found from the sixth to the eighth decades of life. The oldest patient was 72 years old. The female to male ratio was 2:1 and left kidney was involved in 66.67% (Graphic 8). The gross pathology demonstrated an average tumor size of 5.46 cm, in a mahogany-brown color (Figure 7.1) and the central stellate scar was observed in only one case. The microscopic pathology revealed tumor cells arranged in islands or solid sheets of cells with eosinophilic and finely granular cytoplasm, in a loose edematous connective tissue (Figure 7.2). No clinical symptoms were seen.

### 4 - Renal Cortical Epithelial Neoplasms (RCEN): Malignant Neoplasms

**4.1 - Collecting Duct Carcinoma (CDC):** This rare high-grade renal cell carcinoma was found in 1.11% of the RCEN cases (Graphic 11). It occurred in the third decade of life, in a male and in the left kidney (Graphic 9). The gross pathology showed a tumor size of 6.0 cm, with a white-yellowish color, including the cortex and the medulla of the kidney (Figure 8.1). The microscopic pathology demonstrated an abundant, loose, slightly basophilic stroma (Figure 8.2) and irregular channels lined by highly atypical epithelium with a hobnail cell appearance (Figure 8.3). It was diagnosed as Medullary Carcinoma type.

**4.2 - Unclassified Carcinoma** Unclassified carcinoma was 2.22% of the RCEN cases (Graphic 11). It was seen in the sixth and eighth decades of life, and only in males (Graphic 10). The gross pathology revealed an average tumor size of 4.65 cm, with a white mass in the cortex and medulla of the kidney. The microscopic pathology revealed areas like urothelial carcinoma (Figure 9.1) and areas like CDC (Figure 9.2).

**4.3 - Renal Cell Carcinoma (RCC):** RCC was 93.34% of the RCEN cases (Graphic 11). It was detected from the second to the ninth decades of life, with a slight prevalence in males and in left kidneys (Graphic 13). The median tumor diameter was 5.5 cm in females and 7.75 cm in males ( $V_p=0.036$ ). Clinical information was found in 94.12% of the cases from the Institute of Urology and Nephrology (IUN). Clinical symptoms such as haematuria, abdominal pain, abdominal mass and metastasis were seen in 75.43% of the cases. The subtypes of RCC were: Chromophobe RCC (16.67%), Papillary RCC (22.62%) and Conventional RCC (60.71%) (Graphic 12).

**4.3.1 - Chromophobe RCC Type:** Chromophobe tumors were 16.67% of the RCC cases (Graphic 12). They were found from the third to the eighth decades of life, with a higher incidence in females (64.29%) (Graphic 14). The gross pathology demonstrated an average tumor size of 6.16 cm, in a brown color (Figure 10.1). The microscopic pathology revealed solid or tubular structures, lined by large cells, with haloes around the nuclei (Figure 10.2) or with abundant pale reticular cytoplasm seen using H.E. staining or with a blue color using Hale's colloidal iron staining (Figure 10.3). The great majority of these cases (92.85%) corresponded to Fuhrman's grades 3-4. The patients had no symptoms in 64.28% of cases. In the cases which presented clinical symptoms, haematuria (37.5%), abdominal pain (25%), and abdominal mass (12.5%) were seen. None of the 14 cases of chromophobe RCC evolved to

death (Graphic 10).

**4.3.2 - Papillary (Chromophil) RCC Type:** Papillary tumors made up 22.62% of the RCC cases (Graphic 12). They were found from the second to the eighth decades of life, with a slight prevalence in females and in the right kidney (Graphic 15). The gross pathology showed an average tumor size of 6.28 cm, in a brown-yellowish color (Figure 11.1). The microscopic pathology demonstrated papillary architecture, with low cytoplasmatic volume and high nuclear/cytoplasmatic ratio, and an eosinophilic cytoplasm (Figure 11.2). They fitted Fuhrman's grades 2-3 in 73.68% of cases. The patients showed no symptoms in 63.16% of cases but when clinical signs were described haematuria (40%), abdominal pain (30%) and metastasis (10%) were reported. One of the 19 patients died of the disease (Graphic 17).

**4.3.3 - Conventional (Clear Cell) RCC Type:** Conventional RCC was 60.71% of these malignant RCEN cases (Graphic 12). It was found from the fourth to the ninth decades of life, with a slight prevalence in males (Graphic 16). The gross pathology demonstrated an average tumor size of 7.86 cm, in a yellow color or with hemorrhage and necrosis (Figure 12.1) and two cases were multilocular cystic RCC subtypes (Figure 12.2). The microscopic pathology revealed the typical mixture of cells with clear (Figure 12.3) or eosinophilic cytoplasm. It was found in seven of the cases a sarcomatoid component (Figure 12.4) and in four of the cases with anaplastic areas (Figure 12.5). Fuhrman's grades 3-4 were observed in 84.31% of cases. The patients showed no symptoms in 54.9%, however of the clinical signs which were documented haematuria (65.21%), metastasis (56.52%) and abdominal pain (39.13%) were found. Conventional RCC showed 11 cases that evolved to death (Graphic 17). The great majority of the RCC cases that died of the disease showed Fuhrman's grades 3-4 (90.9%).

## CONCLUSION

Brazilian papers in relation to primary renal tumors as well as to the "1997 Rochester/Minnesota Renal Cell Carcinoma Classification" on renal cortical epithelial neoplasms (RCEN), are scarce. This paper is a contribution to the Brazilian clinical and pathological data on this issue. Some disagreements between this regional Brazilian study and others were observed. It is probably due to the heterogeneous mixture of races that exists in Brazil. There were some differences in the evolution of the renal cell carcinoma subtypes: 0% of the chromophobe type, 5.26% of the papillary type and 21.57% of the conventional type evolved to death. The two first types of RCC showed a better prognosis than the last one. Therefore, this report may substantiate the concept that the subtypes of renal cell carcinoma are probably distinct biological entities.

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