# FOX CHASE

#### **TEMPLE HEALTH**

#### **Abstract:**

#### Introduction:

Cystic renal cell carcinomas (cRCC) are suggested to be clinically indolent. As such, a distinct pathologic staging category for these lesions was recently proposed. These recommendations fail to account for limitations in the ability of modern imaging to differentiate cRCC from the rare more biologically aggressive mimics. We evaluated the frequency of high-grade kidney cancer in the highly selected cohort of surgically resected renal masses having cystic appearance on pre-operative radiographic imaging.

#### Methods/Materials:

A prospectively maintained institutional database was queried for clinically cystic renal masses that underwent surgery from January 2000-June 2016 (*n*=2,729 kidney surgeries). Patient and tumor characteristics including age at surgery, smoking history, Charlson comorbidity index (CCI), gender, race, BMI, laterality, Bosniak classification, histology, grade, size, and nearness to the collecting system were recorded. Associations between tumor grade and patient/tumor characteristics were evaluated using generalized estimating equations.

#### Results:

Eighty-nine patients (n=102 cystic lesions) met strict inclusion criteria; the majority (77%) were older than 50 years of age with a median Charlson comorbidity index was 1.15 (SD1.48). Of the 102 clinically cystic renal masses, 26% were pathologically confirmed as high grade RCC, while 74% were low grade RCC (n=50) or benign (n=26). CCI was associated with high grade surgical pathology (OR 1.37, 95% CI 1.05-1.79, p = 0.02). There was no association between tumor grade and the remainder of the patient/tumor characteristics analyzed.

#### Conclusions:

Proposed changes to the kidney cancer staging system define a tumor's cystic nature based on pathologic examination, however the decision for surgical intervention is based on preoperative radiographic evaluation. Proceeding with surgery for a radiographically "cystic" renal mass was a rare event in our cohort; however, among those who were selected for surgery, about one fourth harbored high-grade pathology. Before making changes to the clinical RCC staging system, a better understanding of the limitations inherent to radiographic characterization of cystic renal masses is necessary.

#### **Background:**

#### **Materials and Methods:**

### **Results:**

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## Not All Resected Cystic Renal Masses Harbor Indolent Pathology

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• Cystic renal cell carcinoma (cRCC) is an uncommon subtype of RCC

Patients with cystic tumors have improved survival outcomes on active surveillance compared to those with solid masses

**Distinguishing pre-operatively between cRCC and biologically more** aggressive mimics on modern imaging remains a clinical challenge

• We show our experience with excised renal lesions pre-operatively classified as cystic to determine the incidence of high-grade final pathology

From January 2000 – June 2016, identified lesions identified as cystic on pre-operative imaging that underwent surgery at our institution

• Variables examined included age at surgery, sex, race, smoking history, Charlson comorbidity index (CCI), body mass index (BMI), Bosniak classification, tumor size, tumor laterality, tumor nearness to the collecting system, and tumor histology

• 74% were low grade RCC (n=50) or benign (n=26)

• 26% were pathologically confirmed as high grade RCC

• Increasing CCI alone was associated with high grade histology (OR 1.37; 95% CI 1.05-1.79, p = 0.02

Bosniak Score	Benign, n (%)	Low Grade RCC, n (%)	High Grade RCC, n (%)
= 0)	0	0	0
( <b>n</b> = 19)	8 (40)	8 (45)	3 (15)
( <b>n = 59</b> )	14 (23.7)	31 (52.5)	14 (23.7)
(n = 24)	3 (12.5)	12 (50)	9 (37.5)







Histology, n (%)				
Benign	21 (20.5)			
Clear cell renal cell carcinoma	57 (55.8)			
Papillary renal cell carcinoma	15 (14.7)			
Chromophobe renal cell carcinoma	1 (1)			
Other	8 (7)			
Grade, n (%)				
Benign	26 (25.4)			
Low	50 (49)			
High	26 (25.4)			

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- outcomes
- remains a clinical challenge

(%)				
	23 (22.5)			
	39 (38.2)			
	40 (39)			
(%)				
	49 (48)			
	53 (51.9))			
n (%)				
	82 (80.4)			
Thite	20 (19.6)			
ng History, n (%)				
	46 (45)			
	56 (55)			
on Comorbidity Score				
±SD)	1.15 (±1.48)			
k Class, n (%)				
	0			
	19 (18.6)			
	59 (57.8)			
	24 (23.5)			
al Size, Max tumor diameter (MTD, cm)				
±SD)	4.33 (± 2.36)			
ogic size (MTD, cm)				
±SD)	4.16 (± 2.95)			
laterality, n (%)				
	58 (57)			
	44 (43)			

Pathologically confirmed cRCC has low malignant potential and favorable long-term

Lesions preoperatively characterized as "cystic" may harbor heterogeneous biology

• Pre-operative distinction between cRCC and more biologically aggressive mimics