

# A small renal mass in radiologic & pathologic context

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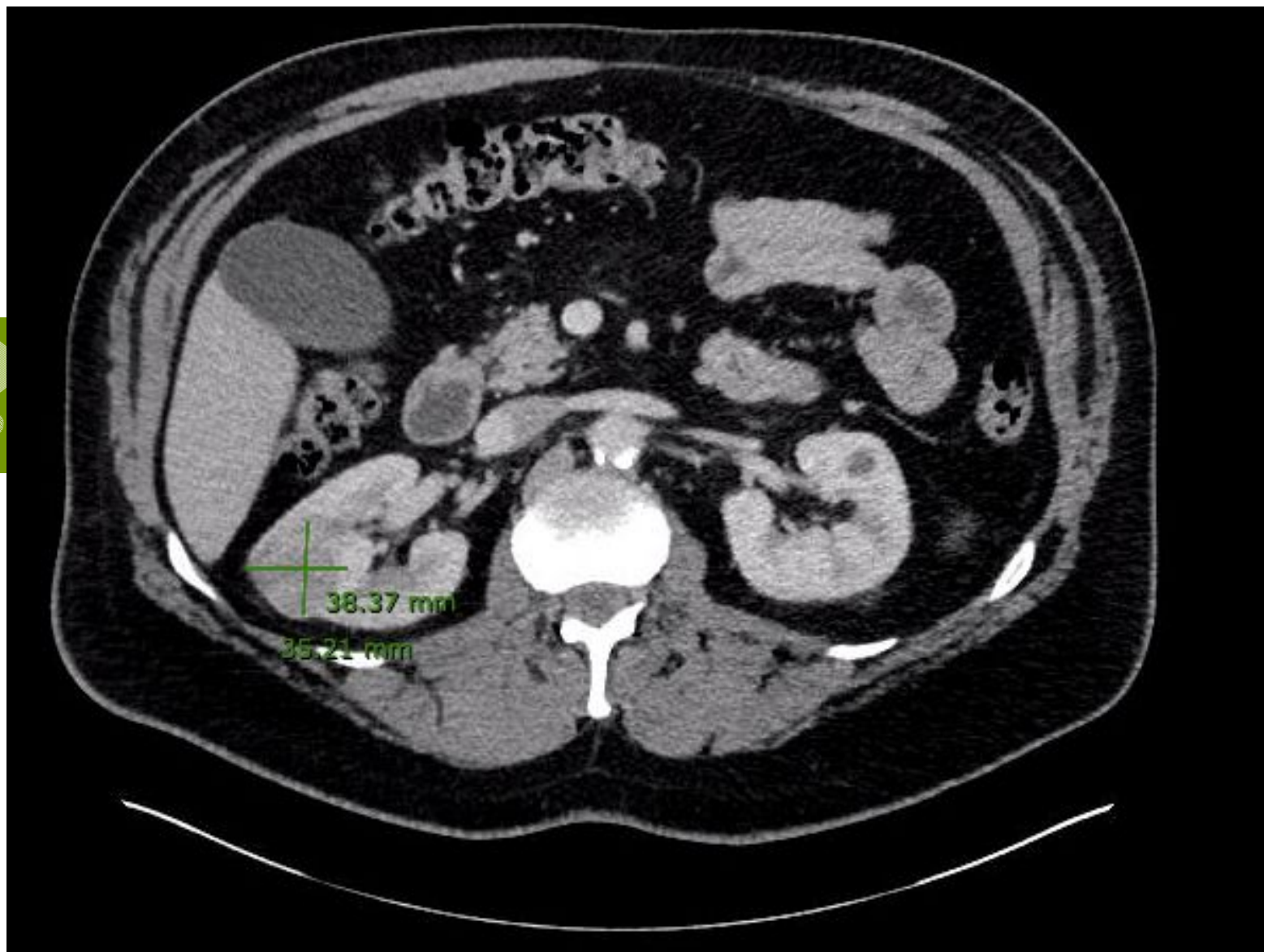
## Patient JD



- PMH notable for vasculopathy with history of MI, HTN, PAD, DM
- Incidental renal mass Fall 2016 found on Lumbar MRI for back pain and left leg numbness
- Initial surveillance:
  - Renal protocol CT Scan a few weeks later
  - Renal US a month later
  - Second renal protocol CT scan in Spring 2017
- Summer 2017 → options for treatment or biopsy for further risk assessment presented

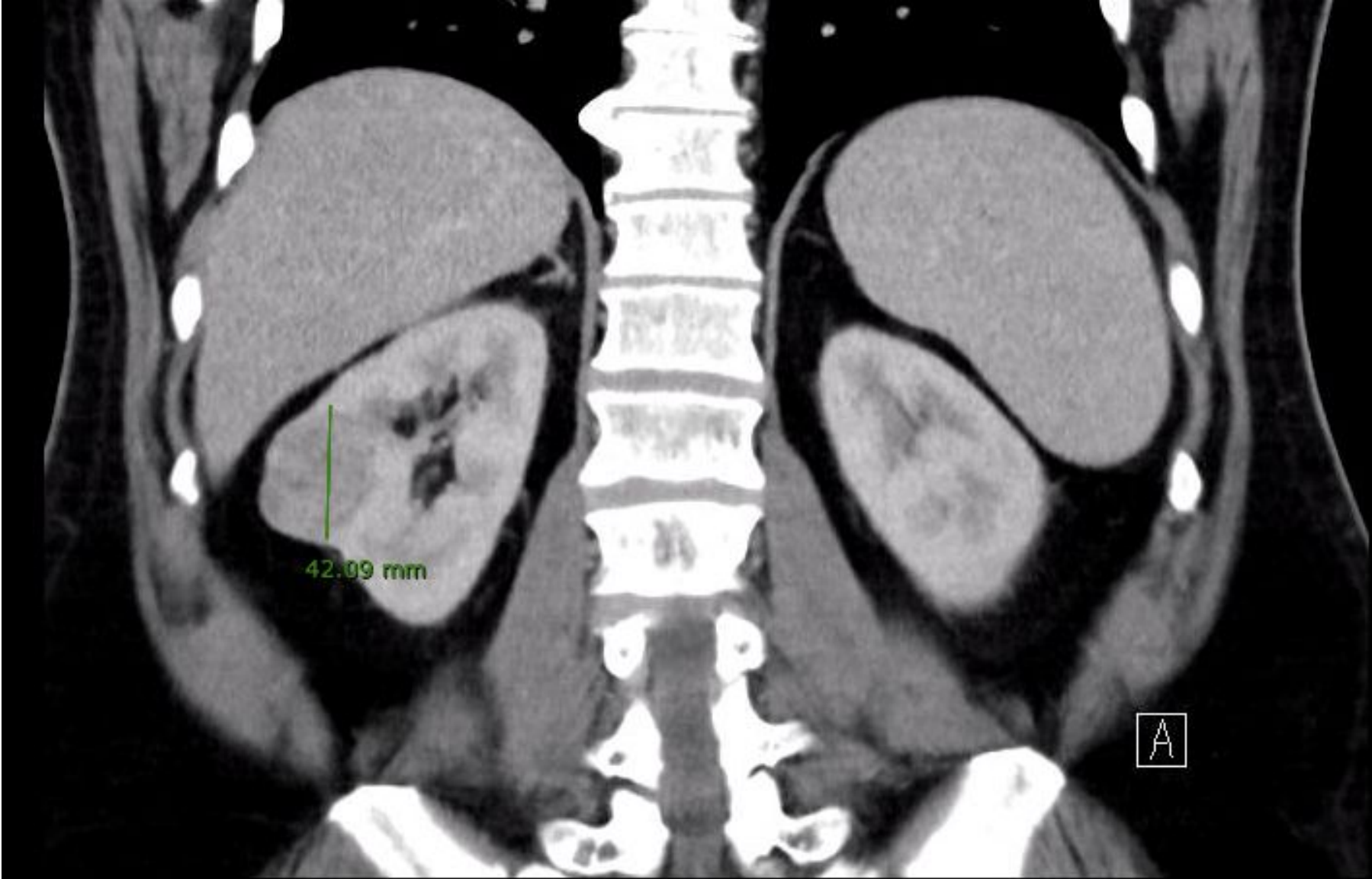
CT – 9/16/16

3.8 x 3.5 x 4.2



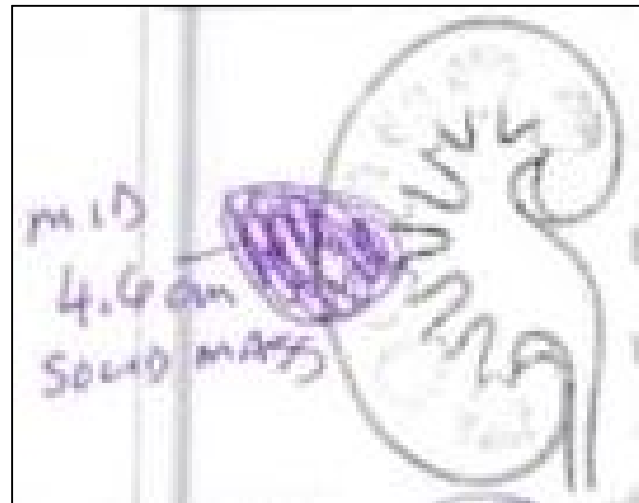
3.8 x 3.5 x 4.2

CT – 9/16/16



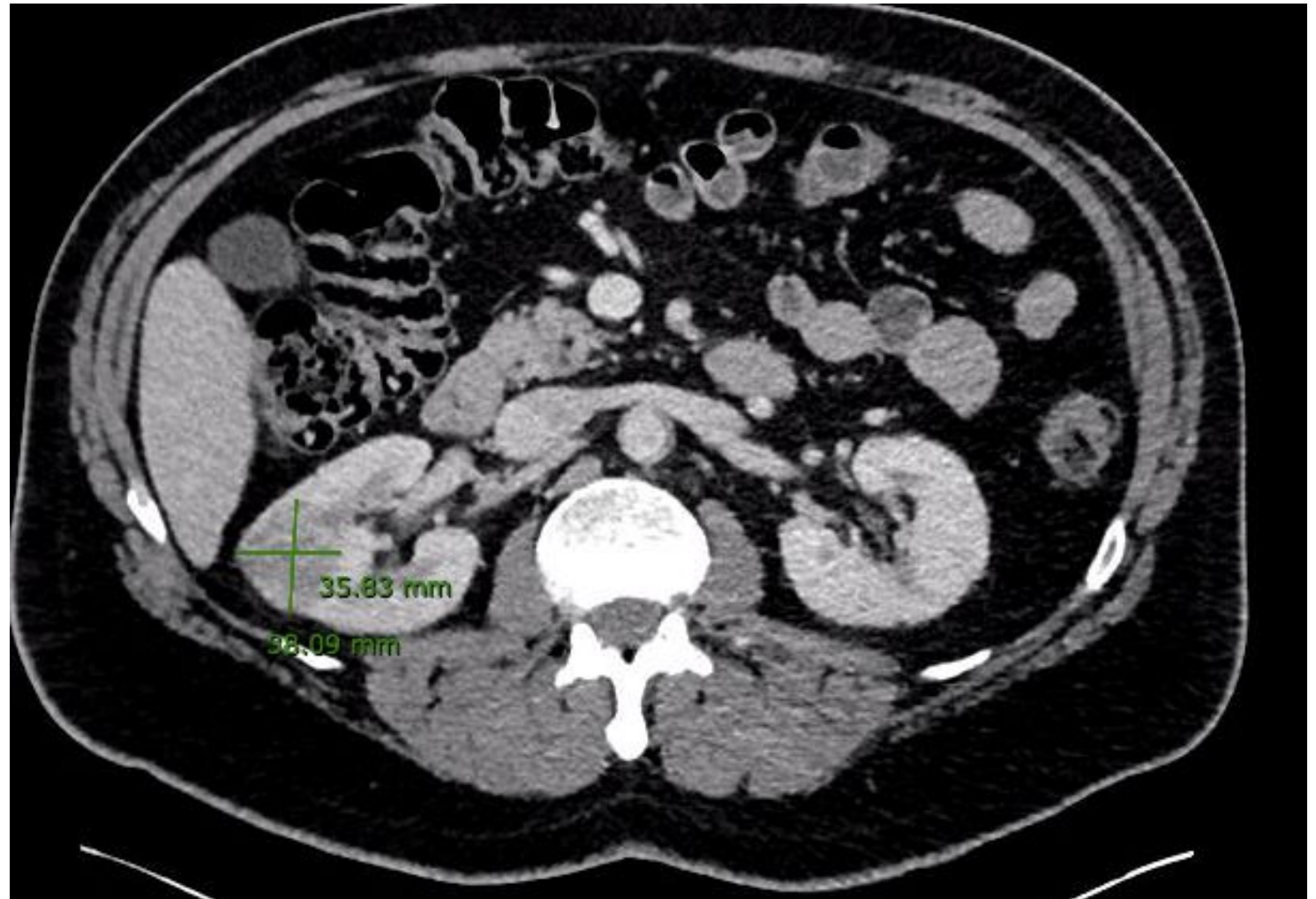
- 4.6-cm in largest dimension
- An artist's rendition

US – 10/13/16



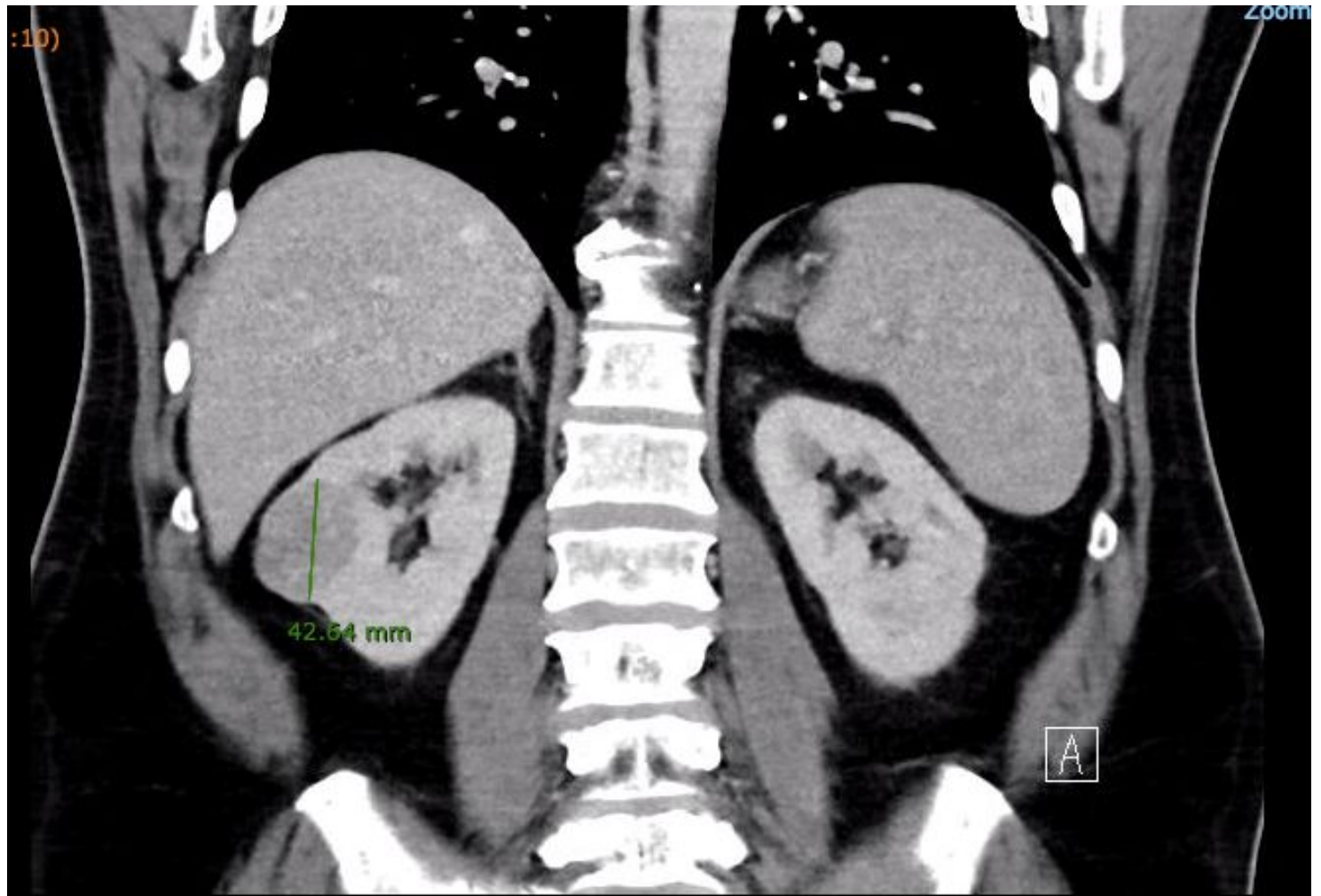
3.6 x 3.8 x 4.3

CT – 4/24/17



3.6 x 3.8 x 4.3

CT – 4/24/17



## June 2017

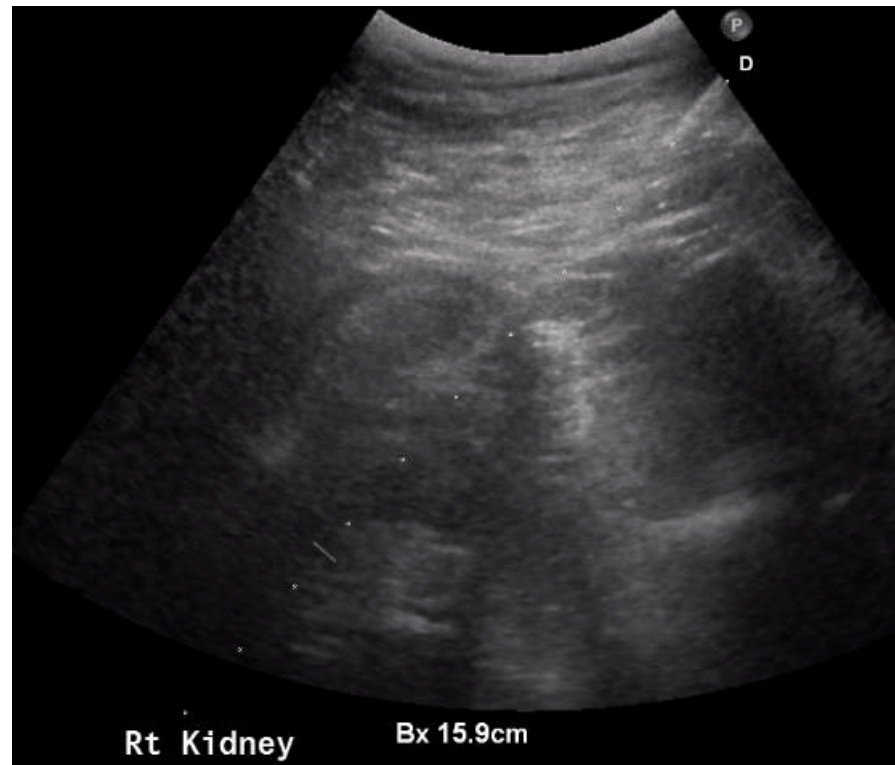


- Met with Dr. Lippert again and decided to proceed with image-guided biopsy



8/2/17

- Underwent US-guided right renal biopsy of exophytic mass



Took the sample to pathology

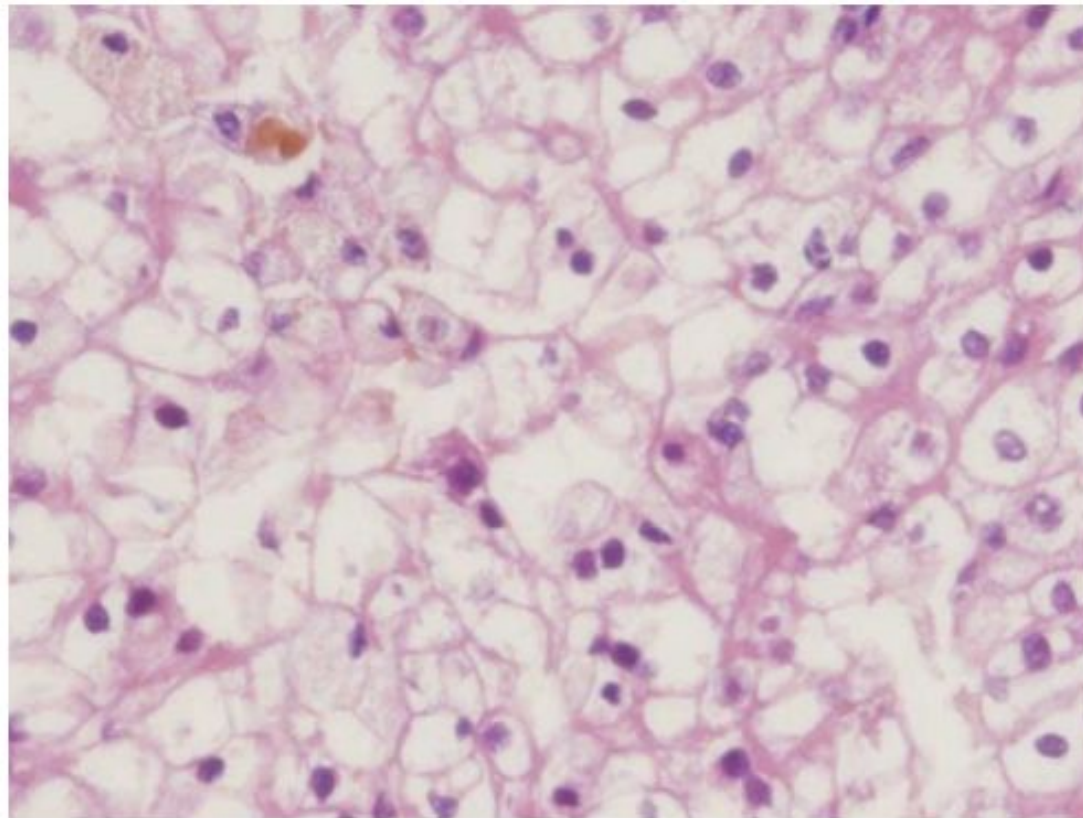


# Pathology Review – 8/3/17



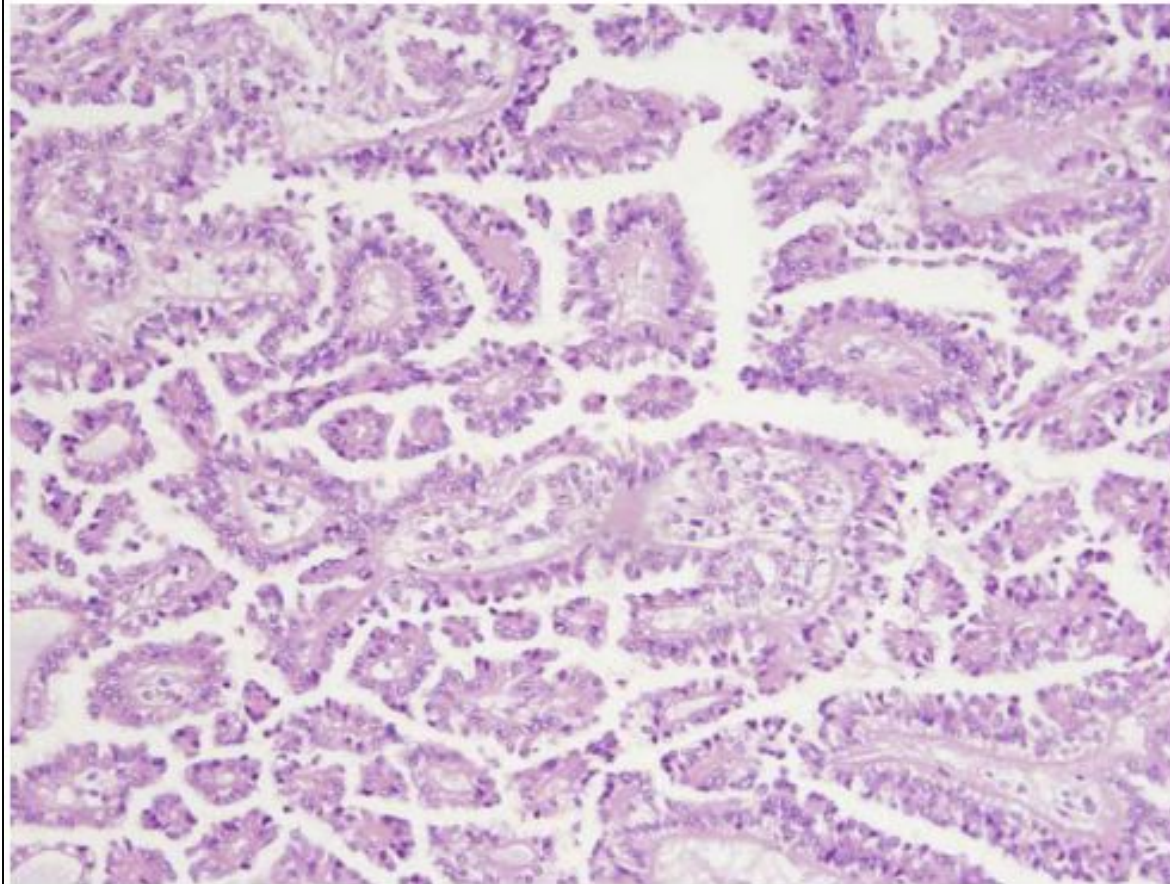
- Dr. Cathro showed us the sample and explained some of the findings
- Cells consistent with renal cell carcinoma (RCC)
- Papillary fronds consistent with *papillary-type* RCC
- BUT also some clear-cytoplasm-containing cells consistent with *clear cell* RCC
- **Mixed RCC?** – a rare, recently-described histologic pattern

## Example of Clear Cell RCC<sup>1</sup>



H and E, high power of a clear cell renal cell carcinoma. The tumor cells have abundant pale "clear" cytoplasm.

## Example of Papillary Type RCC<sup>1</sup>



H and E, low power of a papillary renal cell carcinoma. There are "finger-like" projections of fibrovascular stroma lined by malignant tumor cells that lack the abundant clear cytoplasm seen in a clear cell carcinoma.

## Pathology Review – 8/3/17



- Dr. Cathro advised us that some special stains would clarify the situation.
  
- Recent paper provided background – pathologic sub-types can be distinguished using immunohistochemical markers.<sup>2</sup>
  - CK7
  - Carbonic anhydrase IX (CA-IX)
  - Alpha-methylacyl-CoA-racemase (AMARC)
  - TFE3.<sup>2</sup>

**Table 4** Immunohistochemical profile of the studied cases

Studied marker	CRCC N=28	PRCC N=15	CPRCC N=8	Xp11 translocation N=9	
CK7	Negative	26	0	0	8
	+	2	0	0	1
	++	0	0	0	0
	+++	0	15	8	0
AMACR	Negative	23	0	8	0
	+	5	0	0	0
	++	0	0	0	3
	+++	0	15	0	6
CA IX	Negative	0	13	0	7
	+	0	2	0	2
	++	10	0	2	0
	+++	18	0	6	0
TFE3	Negative	28	15	8	9
	+	0	0	0	0
	++	0	0	0	0
	+++	0	0	0	0

## Staining Profiles.<sup>2</sup>

### ■ CRCC & CPRCC

- CK7 **negative**
- AMACR **negative**
- CA IX **positive**
- TFE3 **negative**

### ■ Papillary RCC

- CK7 **POSITIVE**
- AMACR **POSITIVE**
- CA IX **NEGATIVE**
- TFE3 **NEGATIVE**

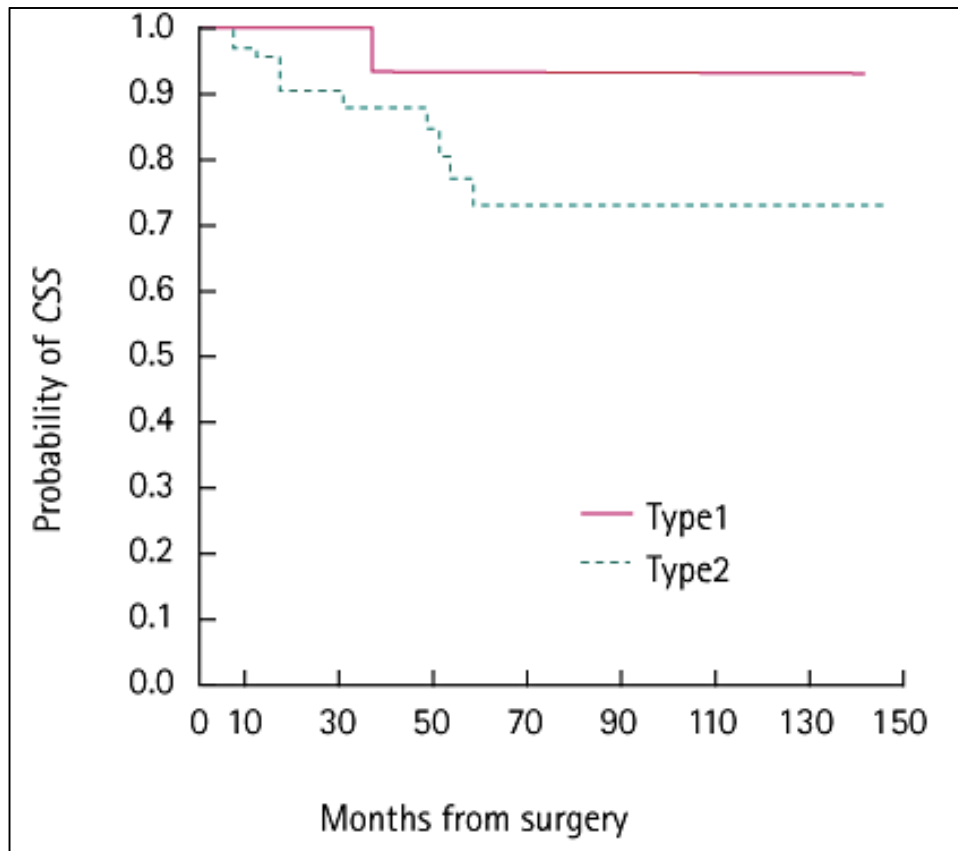
# Pathology Report – 8/7/17



- Final Diagnosis: **Mixed Clear Cell Papillary RCC**
- H&E: papillae lined by some cells with eosinophilic cytoplasm others with isometric vacuolization.
  - Some nuclei oriented towards lumen.
- Staining:
  - CK 7 **negative**
  - P504S (aka, AMARC) **positive \*\*\***
  - CA IX **positive**



## Does it matter?



- YES!
- 5-year cancer-specific survival for patients without metastases at diagnosis<sup>3</sup> ...
  - Between papillary and clear cell – not statistically significant:
    - Papillary RCC ~ 90%
    - Clear Cell RCC ~ 84%
  - But between subtypes of papillary, it matters! ( $p = 0.027$ )
    - Type 1 Papillary RCC ~ 74%
    - Type 2 Papillary RCC ~ 94%

# References



1. Sachdeva K, Jana BRP, and Curti B. “Renal Cell Carcinoma.” Ed. Abel EJ. MedScape. 3 April 2017. <http://emedicine.medscape.com/article/281340-overview#a3>
2. Alshenawy, HAS. “Immunohistochemical Panel for Differentiating Renal Cell Carcinoma with Clear and Papillary Features.” *Pathol Oncol Res.* (2015) 21: 893-899.
3. Waldert M, Haitel A, Marberg M, Katzenbeisser D, Ozsoy M, Stadler E, Remzi M. “Comparison of type I and II papillary renal cell carcinoma (RCC) and clear cell RCC.” *Brit J Urol International.* (2008) Vol. 102, Iss 10, Pg. 1381-4.

