

# PathMD™: Board Review Letter

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Renal Tumors (Part 1) - ANSWERS

Vol. 1, No. 3

1. Which of the following is the best answer for the renal tumor depicted in Image 1 (website):
  - B. Conventional Renal Cell Carcinoma, Fuhrman Grade 1
2. The best diagnosis for the renal tumor depicted in Image 2 (website) is:
  - C. Metanephric Adenoma
3. The best diagnosis for the renal tumor depicted in Image 3 (website) is:
  - A. Oncocytoma
4. The best diagnosis for the renal tumor depicted in Image 4 (website) is:
  - B. Chromophobe Renal Cell Carcinoma
5. What is the best Fuhrman Grade for a conventional clear cell renal cell carcinoma with an area pictured in Image 5 (website):
  - D. Fuhrman Grade 4
6. Which of the following is the best diagnosis for the renal lesion pictured in Image 6 (website):
  - C. Cystic Renal Cell Carcinoma
7. Fuhrman grading is important for all of the following tumors EXCEPT:

Answer: D. Fuhrman grading was developed before the first main classification of renal tumors was developed, and this has led to some confusion as to when to use it. This will be discussed in the next question. Oncocytoma is a benign tumor and therefore grading carries no value. *Test taking strategy.* If one didn't know the answer, but recognized that an oncocytoma is a benign tumor and therefore would not likely have benefit of being graded. This answer would have a higher likelihood of being correct.

8. In which of the following, is Fuhrman grading the most prognostic:

Answer: A. As discussed in the previous question, Fuhrman grading was developed before malignant renal tumors were subclassified. Fuhrman grading in clear cell RCC has the most prognostic information with a large variation in outcomes between grade I and grade IV. *Test taking strategy.* Recognition that clear cell RCC is the "most" malignant or aggressive of these tumors would make it logical that it would also show wider variation in outcome with grading.

9. Papillary (Chromophil) Renal Cell Carcinoma is associated with all of the following chromosomal abnormalities EXCEPT:

Answer: C. Papillary RCC is most commonly associated with trisomy 7 (>80%), trisomy 17 (>80%), and loss of chromosome Y (~50%). *Test taking strategy.* Deletion of 3p should be recognized as the characteristic finding in clear cell RCC, and therefore will be the correct answer by elimination. (*Cancer Research* 63, 6200-6205, Oct. 1, 2003 & *Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004. p. 102-103)

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10. Electron microscopy of a mass from the kidney shows 150-300 nm clear vesicles, this tumor would most specifically stain for which of the following:

Answer: C. 150-750 nm clear vesicles in a renal mass is characteristic of the chromophobe type of RCC. Hale's colloidal iron is specific for chromophobe RCC among renal tumors. *Test taking strategy.* PAS in this series of answers is a diversion. Many tumors with clear cells often have characteristic staining patterns with PAS, but this is not helpful in renal tumors. Renal Cell Carcinoma marker stains clear cell type of RCC, which does not have 150-750 nm clear vesicles characteristically. (*Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004. p. 136)

11. All of the following markers are positive in renal cell carcinoma (clear cell type) EXCEPT:

Answer: B. This question arises from the dilemma in differentiating clear cell renal cell carcinoma from an adrenal tumor. In the past clear cell RCC has been characterized by dual staining with vimentin and cytokeratin. Many felt this was less than optimal because of the lack of specificity in each of the stains. This has been improved greatly with the recent addition of renal cell carcinoma marker, which is more specific. The staining can be patchy/focal and difficult to interpret. (personal observation) In the renal/adrenal differential, inhibin is very specific for adrenal lesion arising from the cortex. It is important to have good controls for these markers, as they may be difficult technically to perform. (*Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004. p. 119-120)

12. Differentiation of the eosinophilic variant of clear cell renal cell carcinoma from a chromophobe renal cell carcinoma can sometimes be very difficult. All of the following may be helpful tool in this differentiation EXCEPT:

Answer: E. Once again the PAS stain has been thrown in as an answer even though it has little benefit in differentiating renal tumors from each other. *Test taking strategy.* This question was written primarily for strategy. If you are one of the few who have recently reviewed the literature for this problem, then know CD117 (positive in 100% of chromophobe tumors and negative in 100% of clear cell RCC) and renal cell carcinoma marker (positive in 80% of granular clear cell RCC and negative in 100% of chromophobe RCC) are helpful in this differential. Please note that this was a small series. On a more basic knowledge level, cytogenetic abnormalities (3p deletion in clear cell RCC) and electron microscopy (150-750 nm vesicles in chromophobe RCC) have been well established in differentiating renal tumors. If one only knew this basic knowledge, then they would increase their chances to 1 in 3 of getting the question right. Knowledge that RCC marker is primarily positive in clear cell RCC would further increase the odds to 1 in 2. Remember, many of the questions on the board exam will have bogus answers from which you will ask yourself, "is there a paper I didn't read." In these circumstances, the best we can do is narrow the list and make the most logical "guess." (*Am J Surg Path.* 2005 May;29(5):640-6)

13. All of the following are helpful in differentiating an oncocytoma from a chromophobe RCC EXCET:

Answer: A. Oncocytomas and chromophobe RCC have been noted to share similar abnormal cytogenetic profiles. Many few these lesions are two ends of a spectrum. (*Cancer Genet Cytogenet.* 2005 Dec;163(2):160-3)