Rad Path Conference 10/15/12

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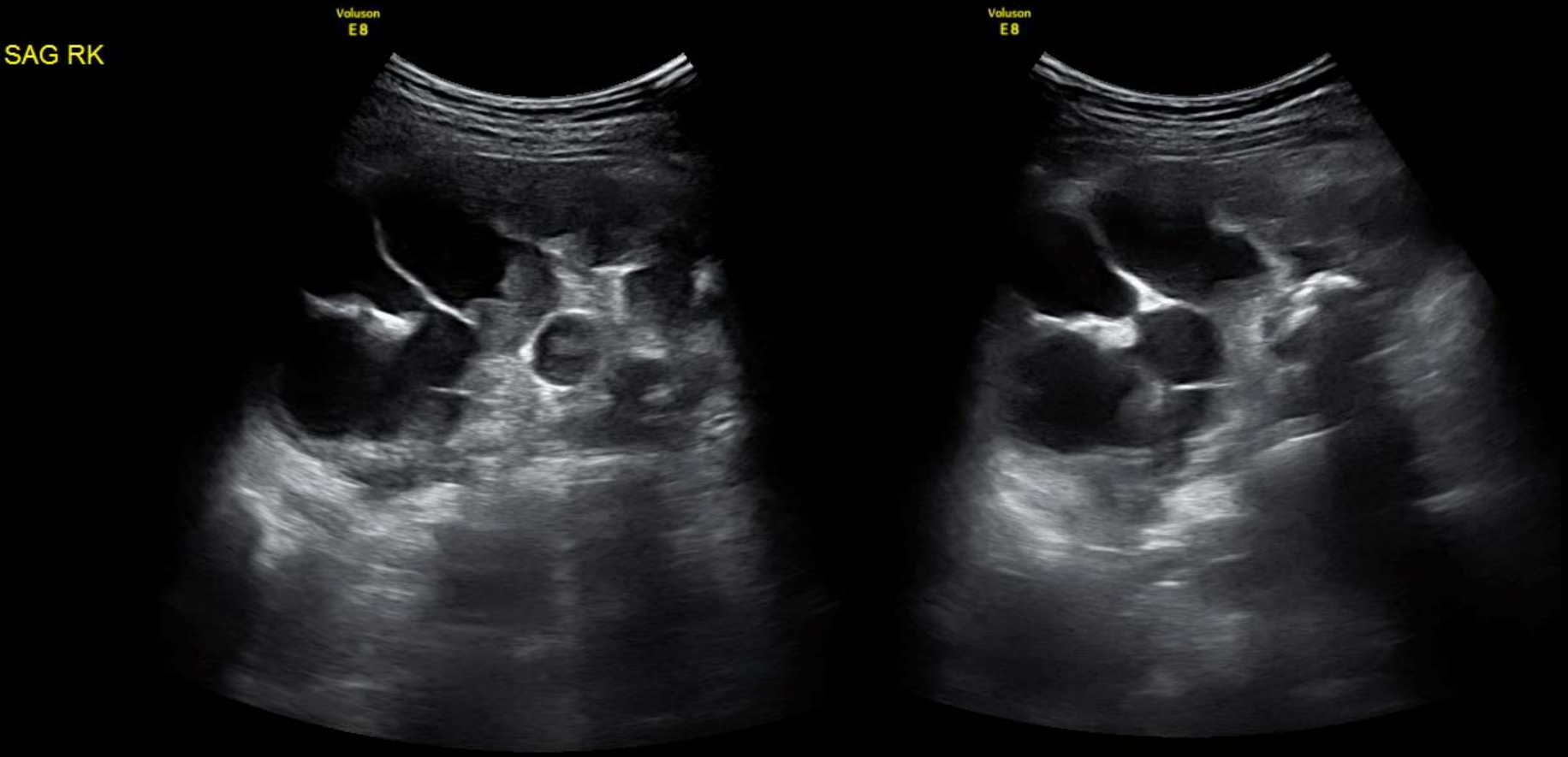
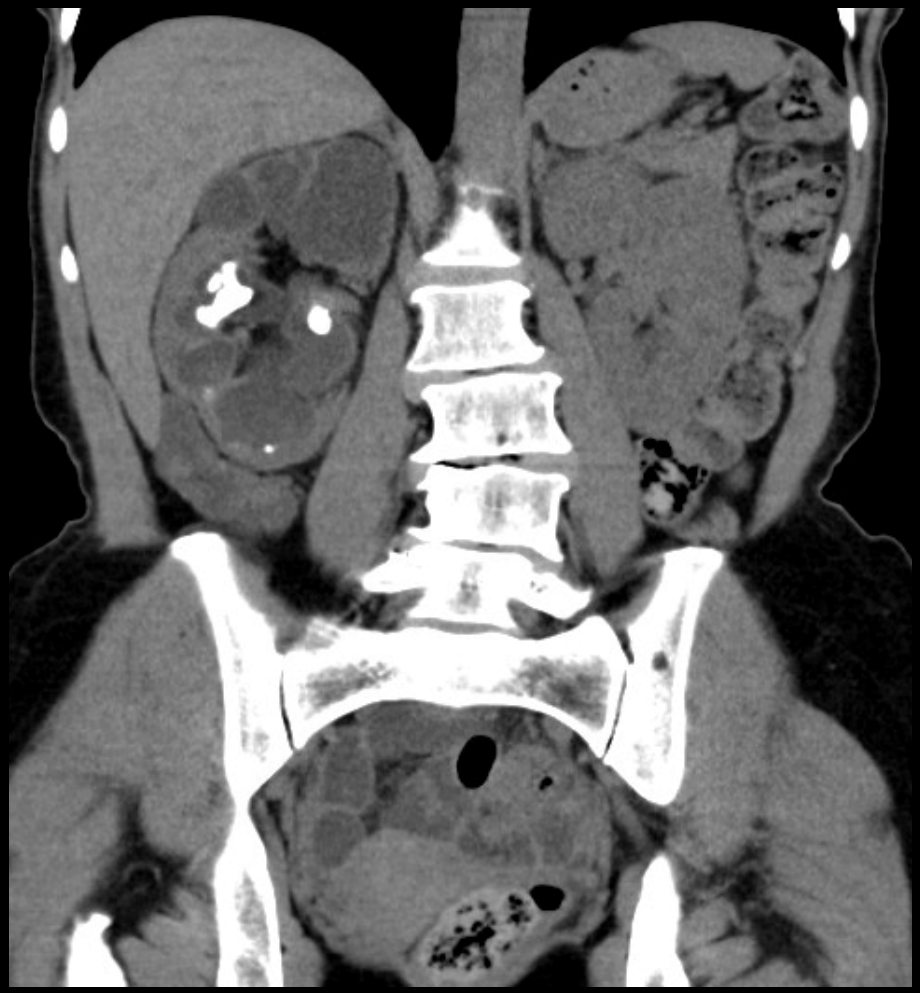
Case #1

- 56 year-old woman with hematuria, proteinuria, and pyuria on UA. Is otherwise asymptomatic.

Renal US (2/1/12):



CT (2/12/12):



Summary of Findings

- Marked dilatation of the collecting system of the right kidney
- Hypoechoic debris in dilated calyces
- Enlarged right kidney
- Two staghorn renal calculi within renal pelvis

Differential Diagnosis

- Xanthogranulomatous Pyelonephritis
- Hydronephrosis
- Pyonephrosis
- Solid tumor within dilated collecting system
- Complex renal cysts
- Papillary Necrosis
- Abscesses
- Lymphoma
- Urinary tract TB

ACR Appropriateness Criteria

Hematuria due to generalized renal parenchymal disease.

Radiologic Procedure	Rating	Comments	RRL*
US kidneys and bladder retroperitoneal	8		O
X-ray retrograde pyelography	2		☢ ☢ ☢
CT abdomen and pelvis without and with contrast	2		☢ ☢ ☢ ☢
MRI abdomen and pelvis without and with contrast	2		O
CT abdomen and pelvis without and with contrast (CT urography)	2		☢ ☢ ☢ ☢
Arteriography kidney	1		☢ ☢ ☢
MRI abdomen and pelvis without and with contrast (MR urography)	1		O
X-ray abdomen and pelvis (KUB)	1		☢ ☢
X-ray intravenous urography	1		☢ ☢ ☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

ACR Appropriateness Criteria

Hematuria: except those with generalized renal parenchymal disease or young females with hemorrhagic cystitis.

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen and pelvis without and with contrast (CT urography)	9	Must include high-resolution imaging during excretory phase.	☢☢☢☢
X-ray intravenous urography	6	If CT urography unavailable.	☢☢☢
X-ray retrograde pyelography	6	For patient with contraindication to iodinated contrast or strong suspicion of urothelial lesion, to clarify abnormality suspected on CT or IVU.	☢☢☢
US kidneys and bladder retroperitoneal	5		O
MRI abdomen and pelvis without and with contrast (MR urography)	5	For patients with contraindication to iodinated contrast. See statement regarding contrast in text under "Anticipated Exceptions."	O
CT abdomen and pelvis without and with contrast	5		☢☢☢☢
MRI abdomen and pelvis without and with contrast	3		O
Arteriography kidney	2		☢☢☢
X-ray abdomen and pelvis (KUB)	2		☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level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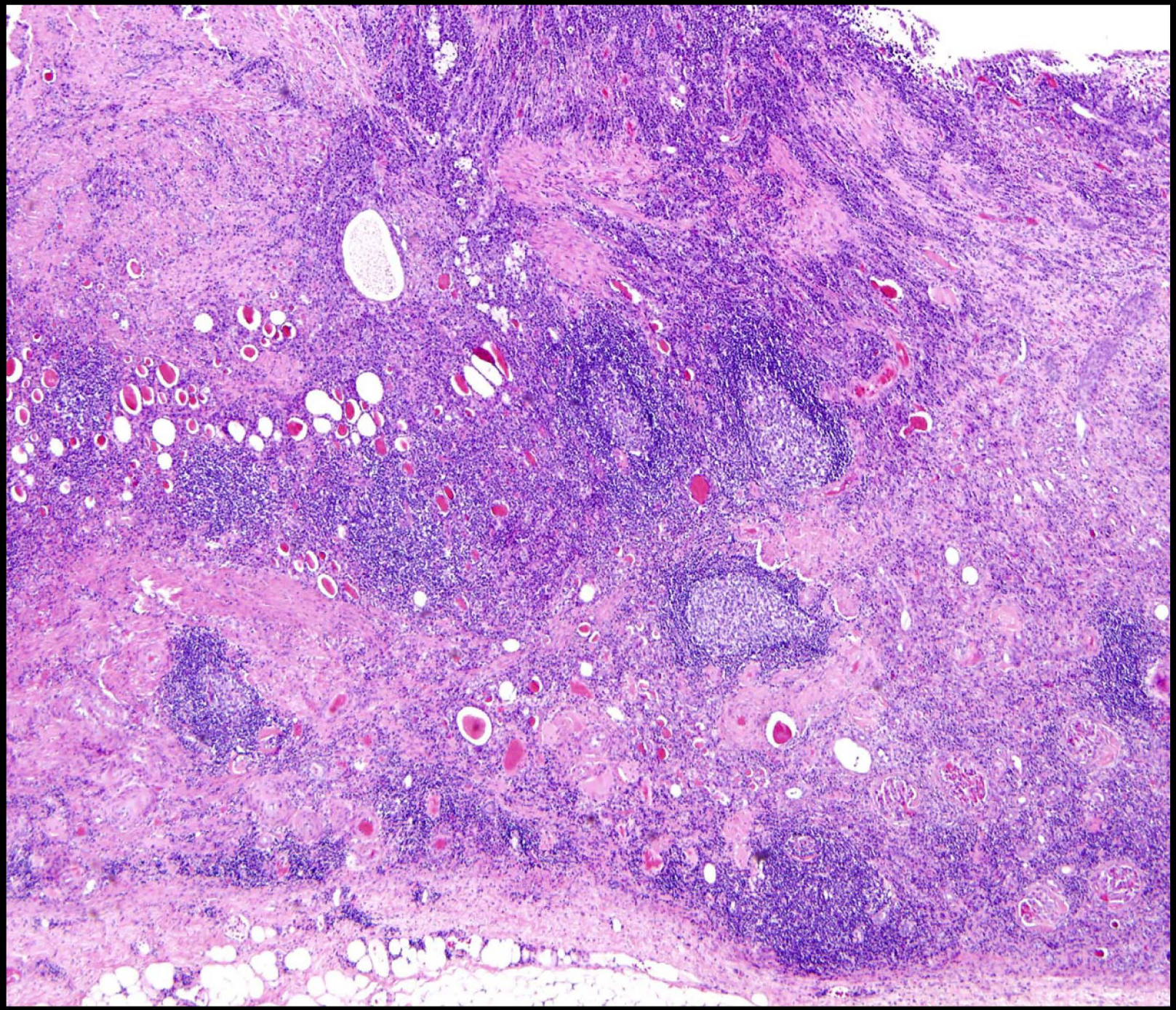
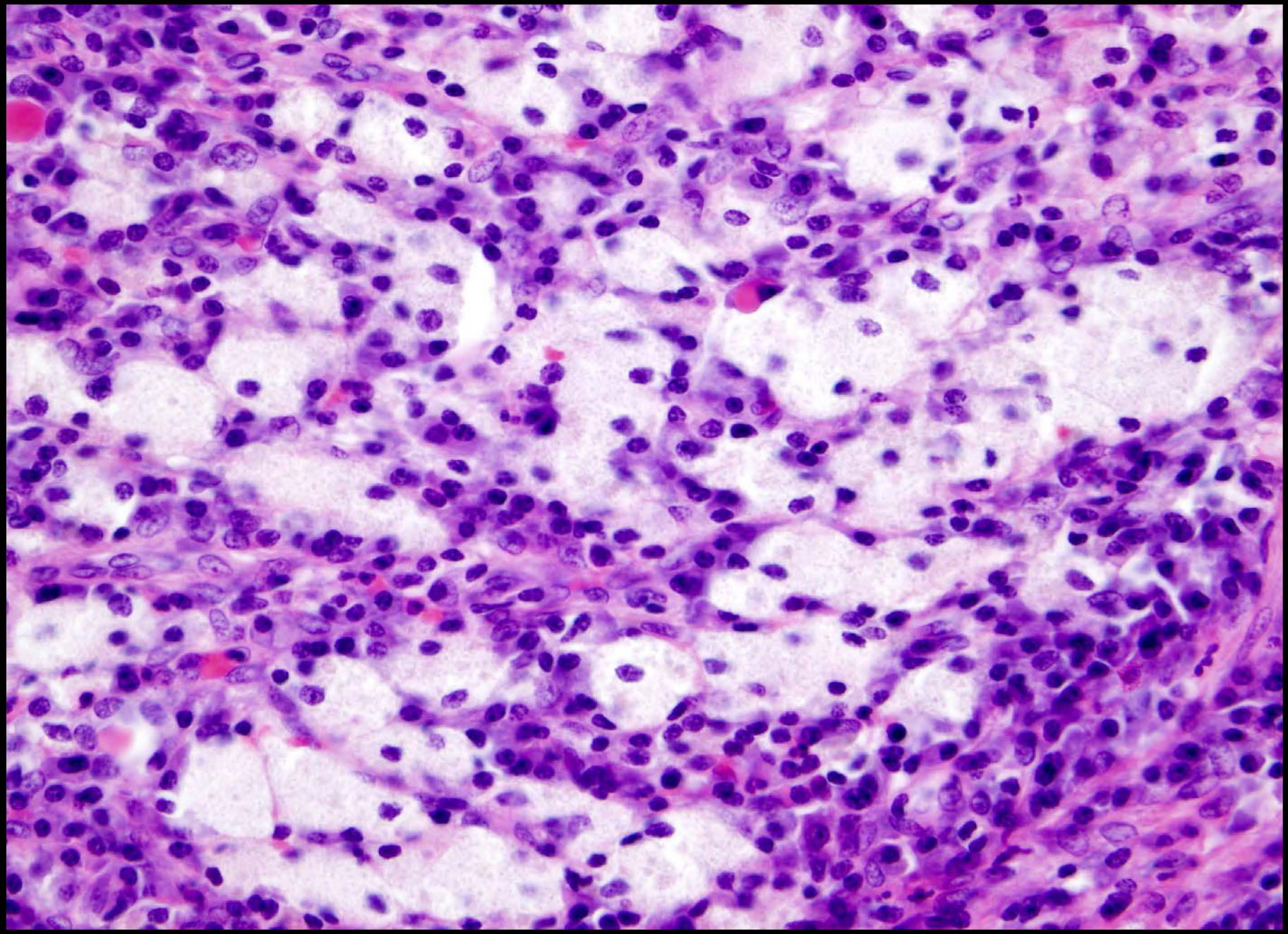
BWH Pathology

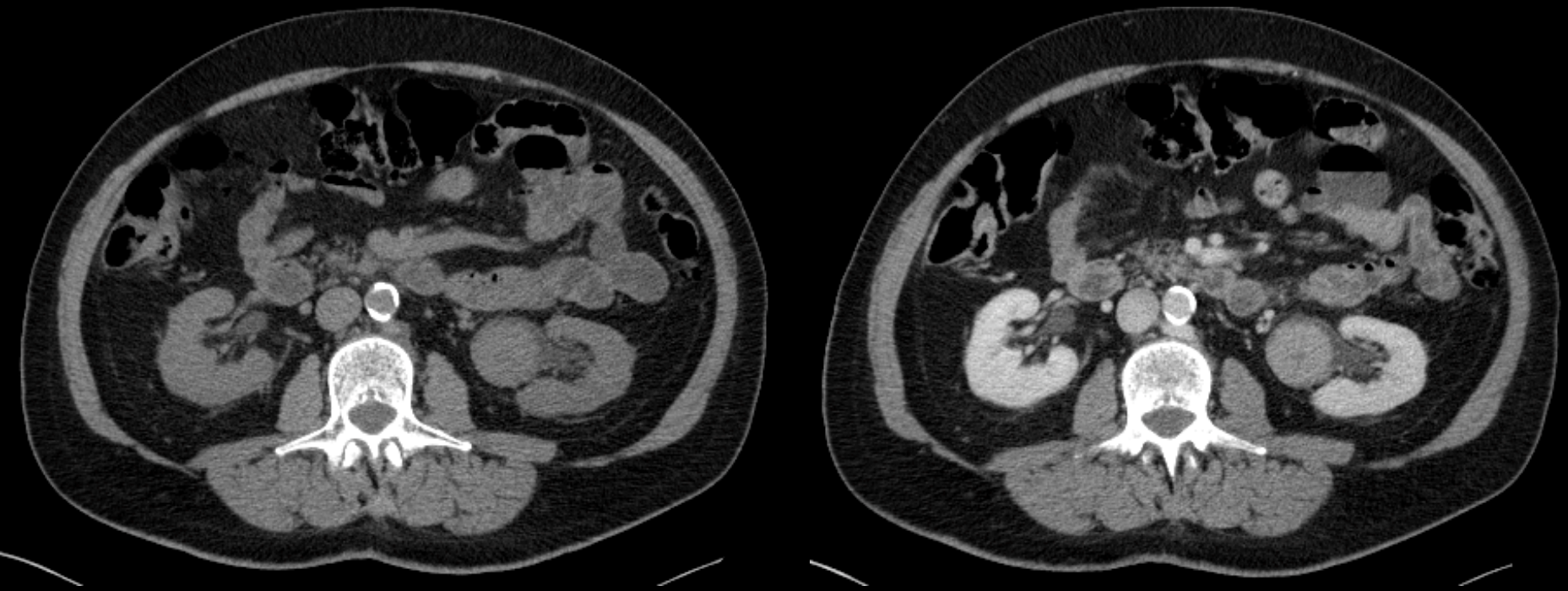




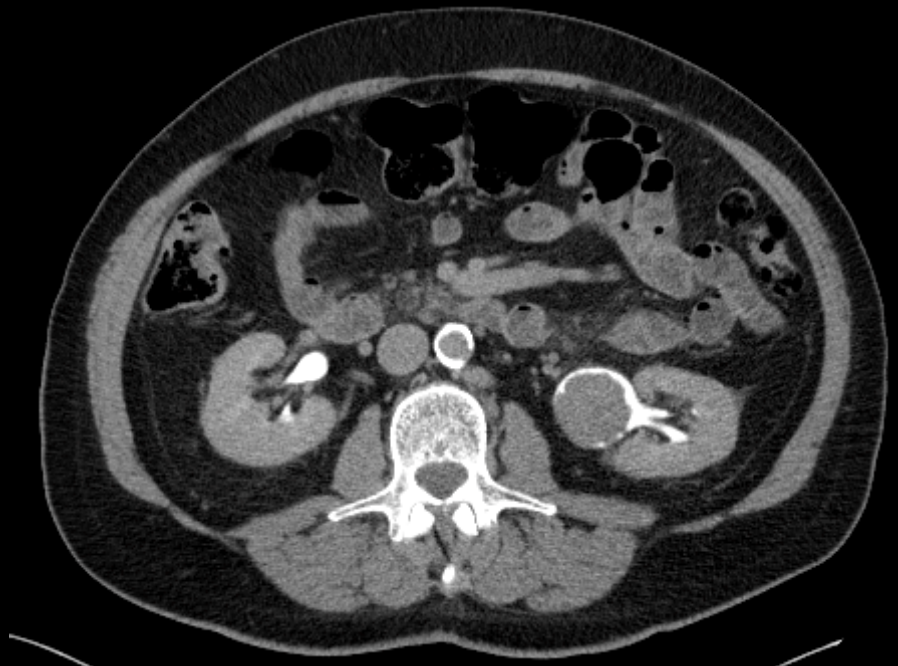
Case #2

- 78 year-old male with intense left upper quadrant abdominal and flank pain. No fevers, chills, hematuria, or history of kidney stones.

CT urogram (5/30/12)



CT urogram (5/30/12)



Summary of Findings

- Round, enhancing mass within left renal pelvis
- On NECT, isodense to kidney
- No calyectasis to suggest proximal obstruction
- Periureteric extension
- Papillary projections
- Mass seen as filling defect on nephrogenic phase
- Normal renal shape

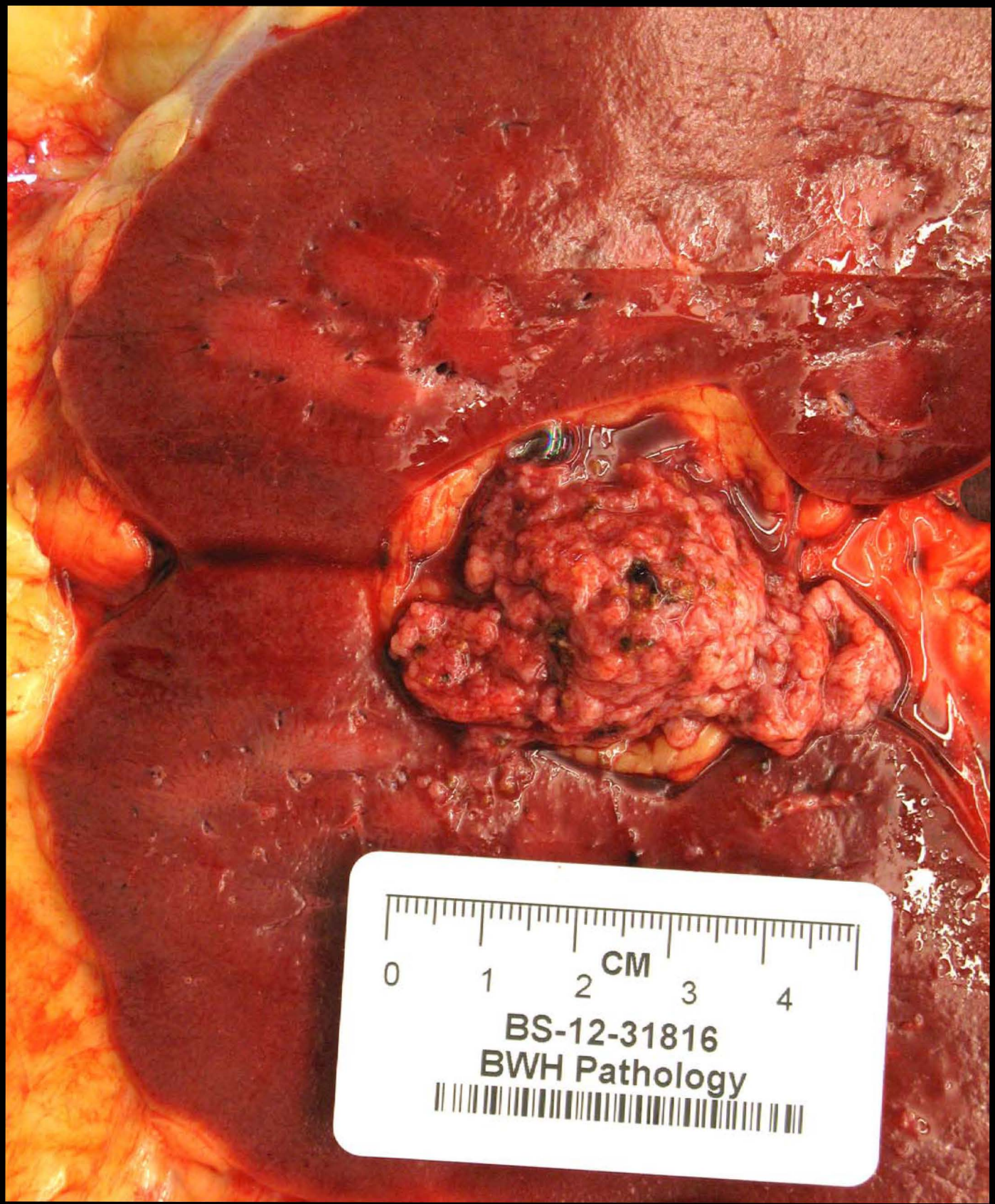
Differential Diagnosis

- Transitional Cell Carcinoma
- Urolithiasis
- Blood clot
- Papillary necrosis
- RCC
- Papilloma

ACR Appropriateness Criteria

Acute Onset Flank Pain — Suspicion of Stone Disease

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen and pelvis without contrast	8	Reduced-dose techniques preferred.	☢☢☢☢
CT abdomen and pelvis without and with contrast	6	If CT without contrast does not explain pain or if without has abnormality that should be further assessed with contrast (ex. stone versus phleboliths).	☢☢☢☢
US kidneys and bladder retroperitoneal with Doppler and KUB	6	Preferred examination in pregnancy, in patients who are allergic to iodinated contrast, and if NCCT is not available.	☢☢
X-ray intravenous urography	4		☢☢☢
MRI abdomen and pelvis without contrast (MR urography)	4		O
MRI abdomen and pelvis without and with contrast (MR urography)	4	See statement regarding contrast in text under "Anticipated Exceptions."	O
CT abdomen and pelvis with contrast	2		☢☢☢☢
X-ray abdomen and pelvis (KUB)	1	Most useful in patients with known stone disease.	☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level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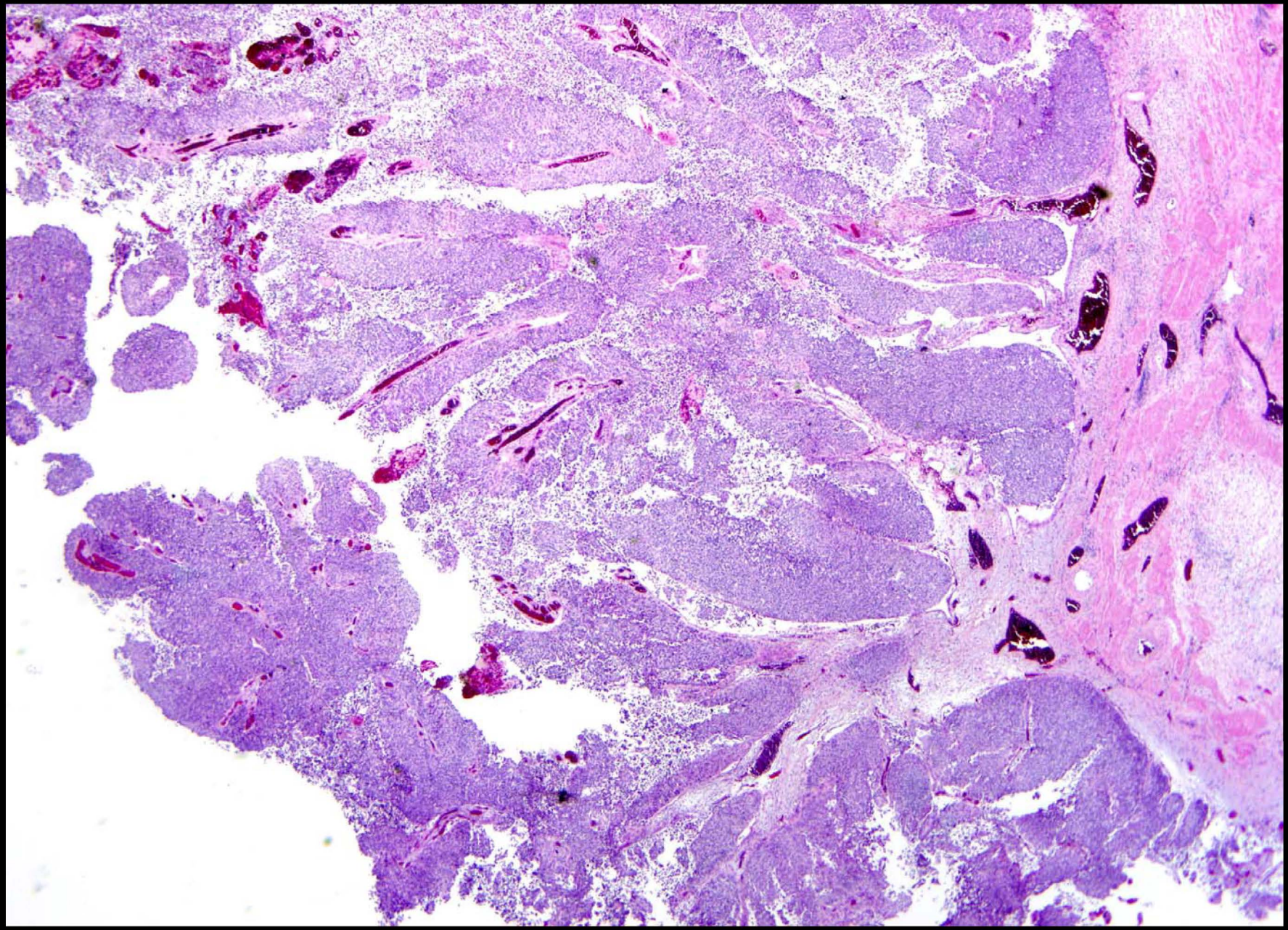
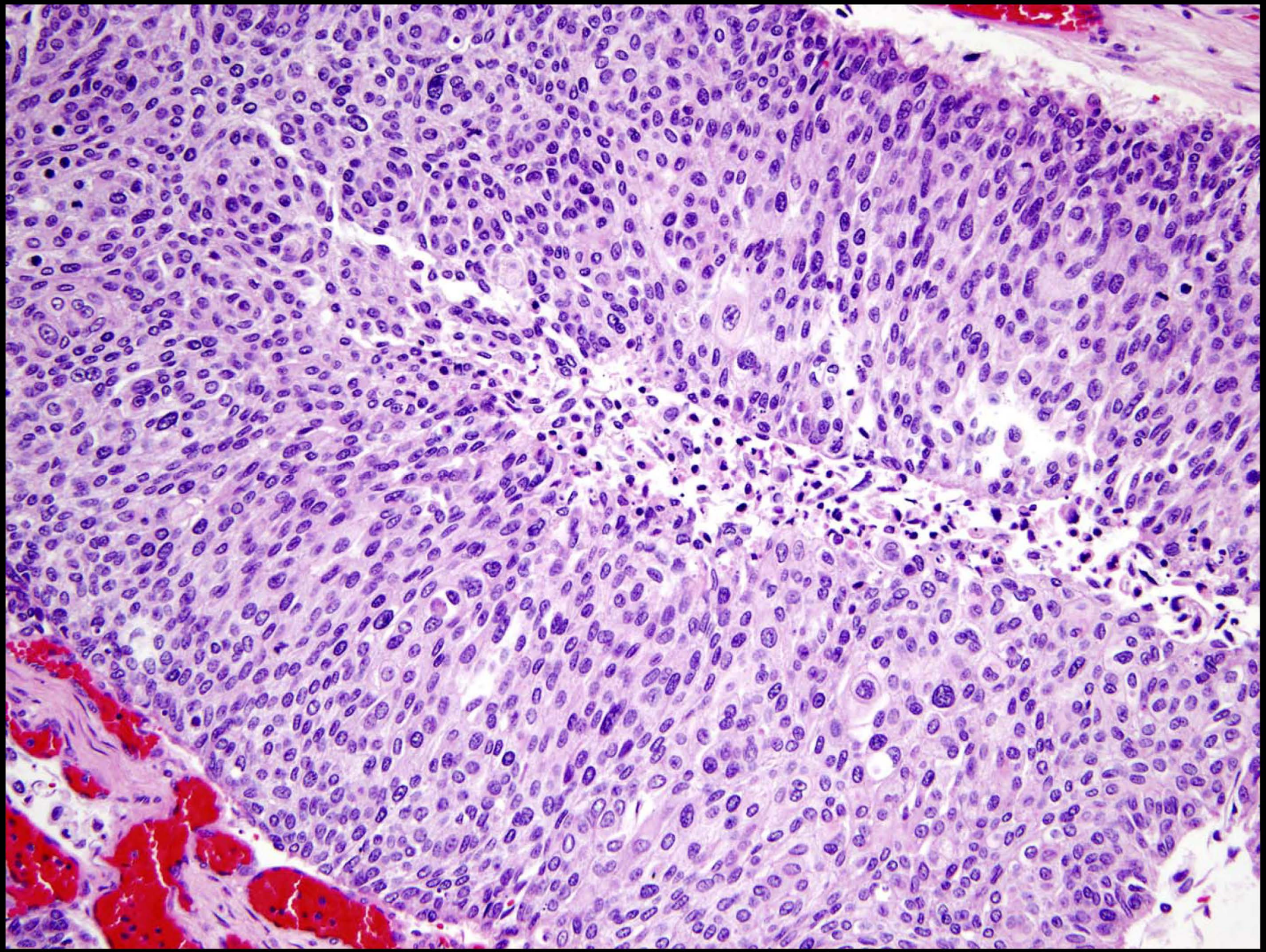
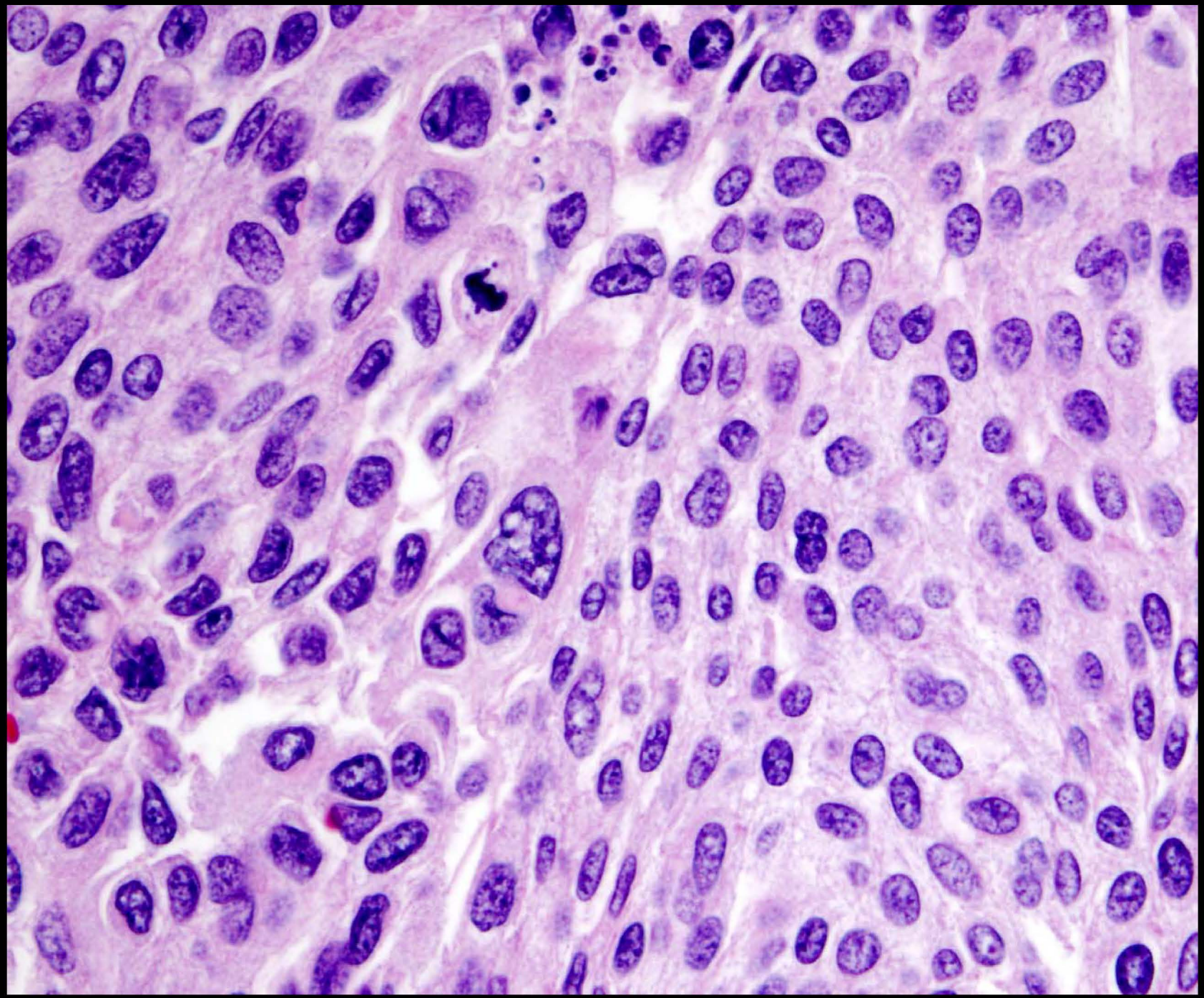
BWH Pathology



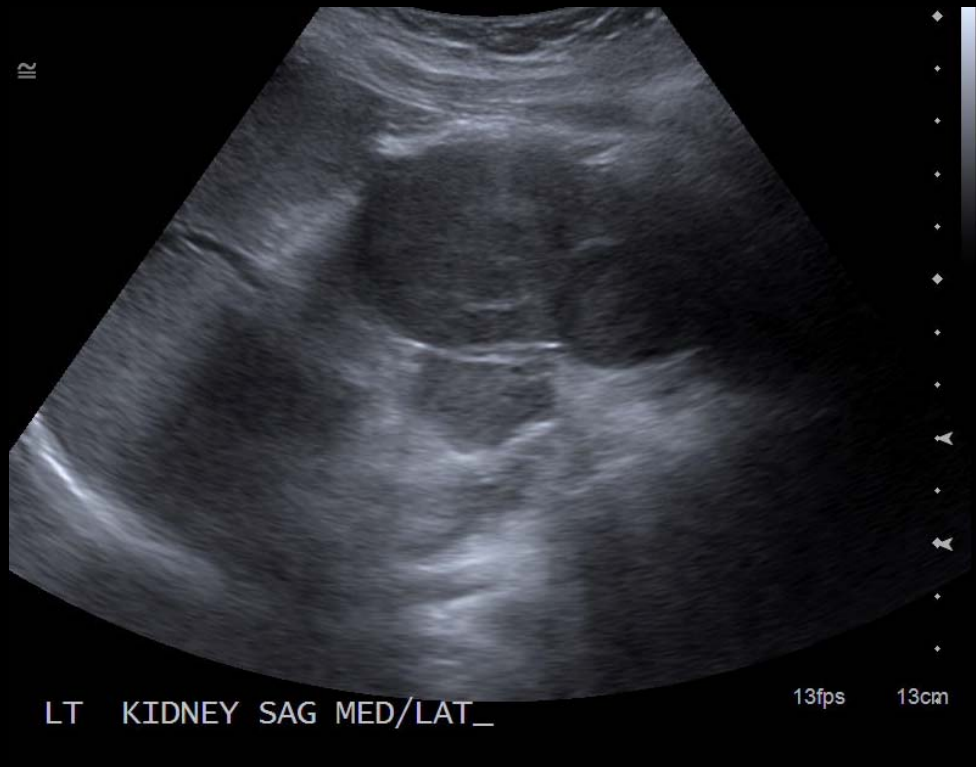




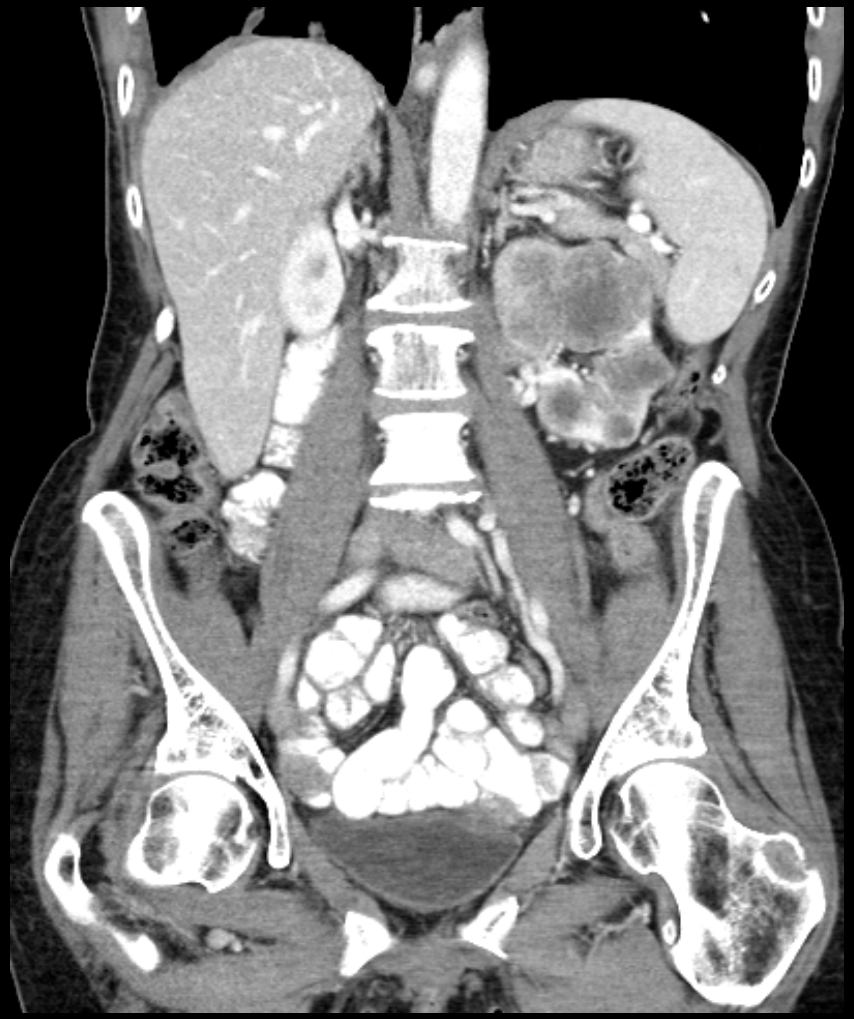
Case #3

- 69 year-old female with left flank pain. Other history withheld.

Abd US (12/20/2011)



Abd CT 3/14/12



Summary of Findings

- Multiple round, solid masses in the left kidney
- Hypoechoic on US
- Poor enhancement on CT
- Near replacement of underlying renal parenchyma without capsular disruption
- Vascular invasion
- No hydronephrosis

Differential Diagnosis

- Metastatic disease to the kidney
- RCC
- Renal Cysts
- Lymphoma
- Abscesses
- TCC

ACR Appropriateness Criteria

Indeterminate Renal Mass

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen without and with contrast	9	Either CT or MRI is appropriate. Thin-section CT.	☢☢☢☢
MRI abdomen without and with contrast	8	Either CT or MRI is appropriate. See statement regarding contrast in text under "Anticipated Exceptions."	O
US kidney retroperitoneal with Doppler	8	To clarify mass that is probably a hyperdense or simple cyst.	O
Biopsy and aspiration kidney	5	Depends on clinical scenario. The appearance and size of mass. US, CT, or MRI may be used for image guidance.	Varies
MRI abdomen without contrast	3	Can be useful to characterize simple cysts.	O
Tc-99m DMSA scan kidney	1	May be useful to rule out pseudomass of functioning renal tissue.	☢☢☢
Arteriography kidney	1	To rule out arteriovenous malformation, arteriovenous fistula, or renal artery aneurysm.	☢☢☢
X-ray intravenous urography	1	May be helpful to differentiate parenchymal masses from collecting system masses.	☢☢☢
CT abdomen with contrast	1		☢☢☢
CT abdomen without contrast	1		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**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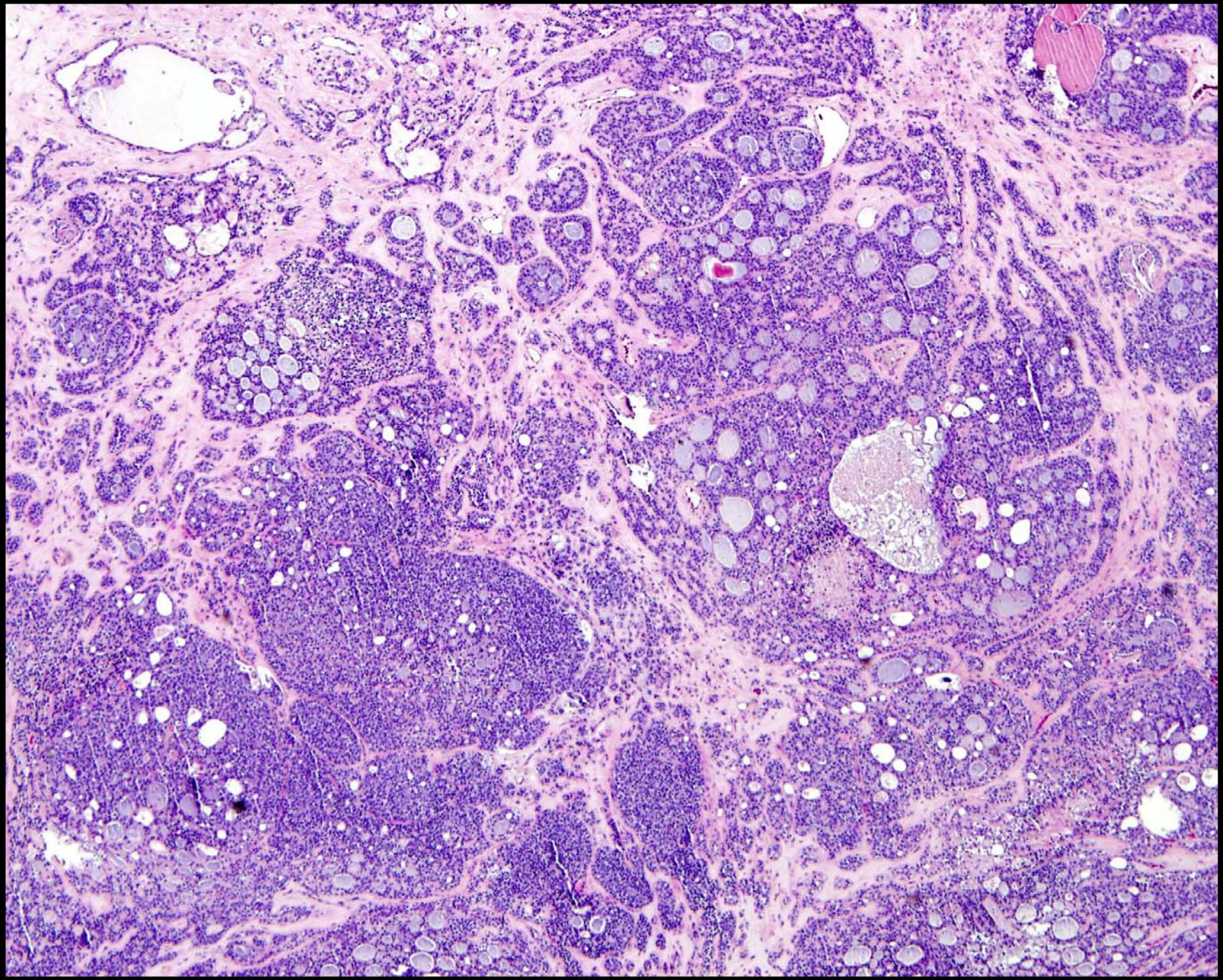
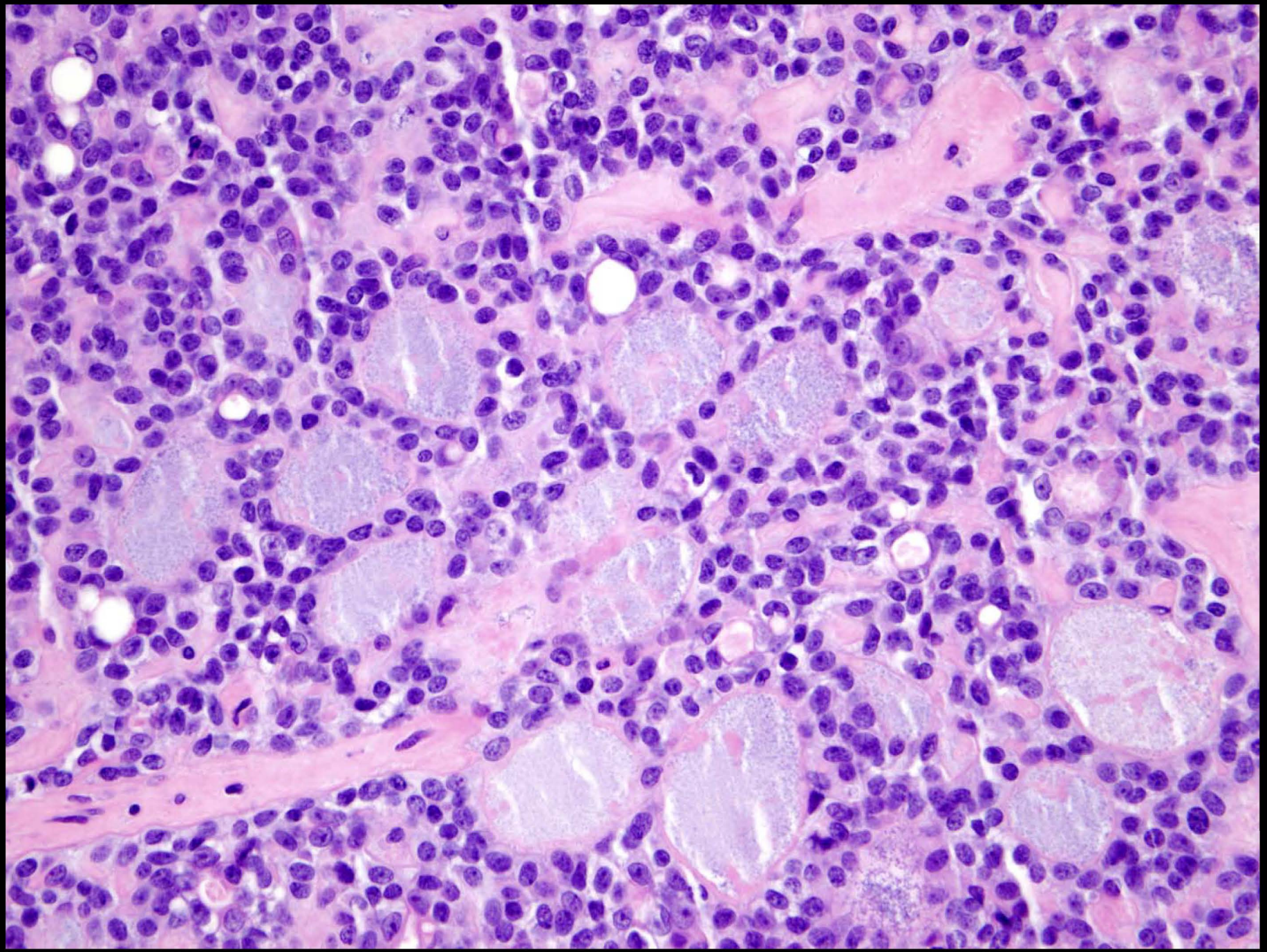
BWH Pathology

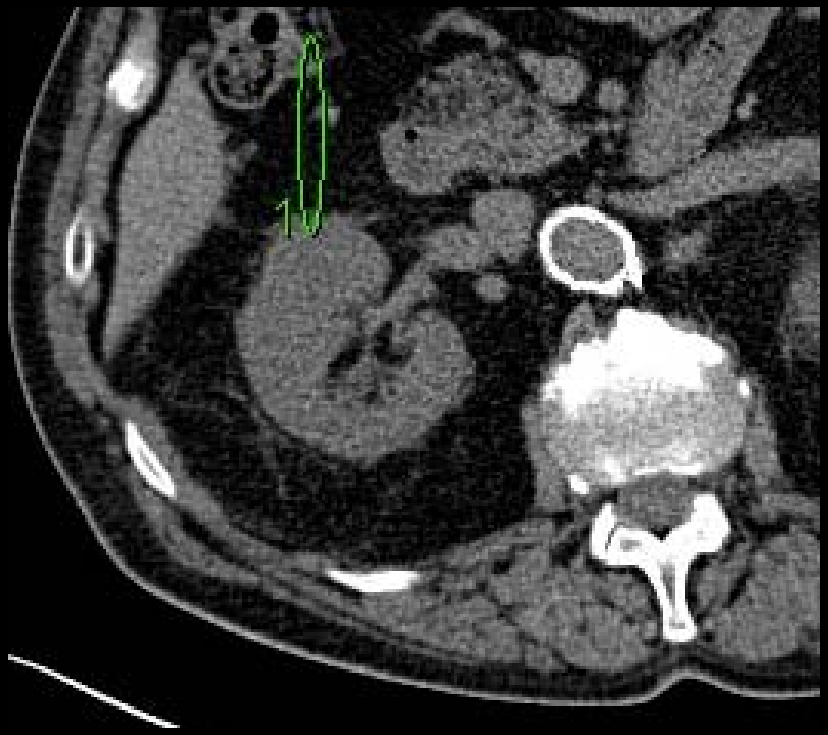




Case #4

- 82 year-old male with history of left renal cell carcinoma s/p left radical nephrectomy.

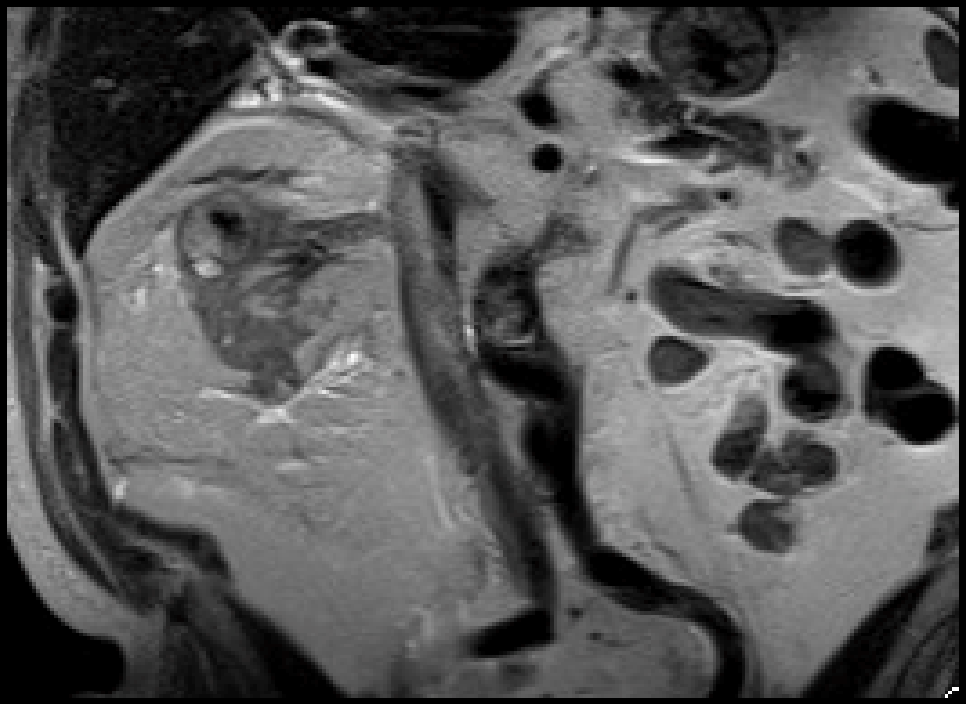
CT (3/28/07)

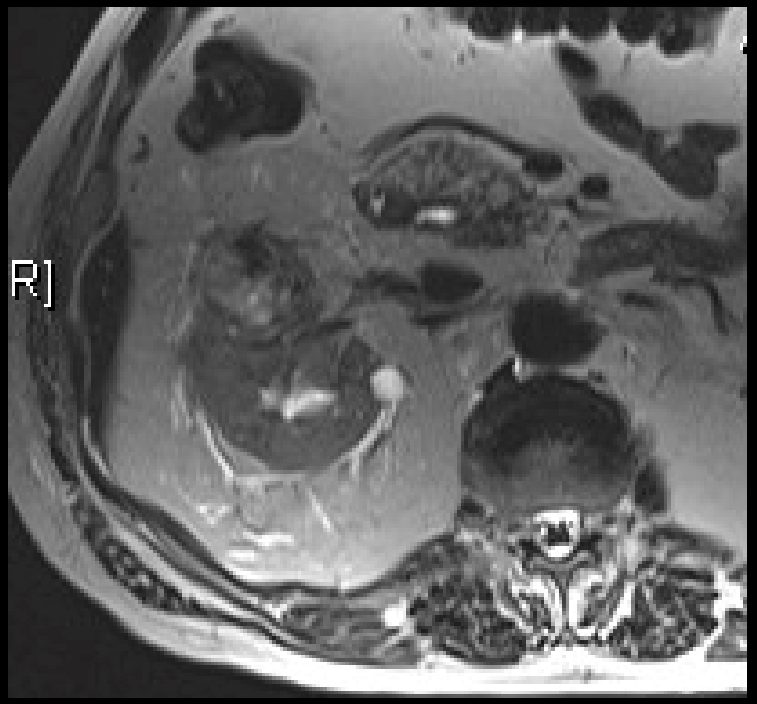


HU: 18

HU: 53

MRI (4/16/12)





Summary of Findings

CT:

- Solid, well-defined, slightly enhancing mass in the interpolar region of right kidney
- Isodense to kideny on NECT
- No invasion of perinephric fat or vessels

MRI:

- Solid cortical mass with central stellate scar
- Well-marginated with pseudocapsule
- Slightly hyperintense relative to renal cortex on T2

Differential Diagnosis

- Oncocytoma
- Renal Cell Carcinoma
- Angiomyolipoma
- Metastases
- Lymphoma

ACR Appropriateness Criteria

Follow-up of Renal Cell Carcinoma. Asymptomatic.

Radiologic Procedure	Rating	Comments	RRL*
X-ray chest	8	Not necessary if CT chest performed.	☢
CT abdomen and pelvis with contrast	8	Particularly if primary was high stage and/or high grade.	☢ ☢ ☢ ☢
MRI abdomen and pelvis without and with contrast	6	See statement regarding contrast in text under "Anticipated Exceptions."	O
CT chest with or without contrast	6		☢ ☢ ☢
FDG-PET/CT whole body	4	May have a role when CT and/or bone scan findings are equivocal.	☢ ☢ ☢ ☢
US kidney retroperitoneal	3		O
X-ray intravenous urography	2		☢ ☢ ☢
Tc-99m bone scan whole body	2		☢ ☢ ☢
MRI head without and with contrast	1		O
X-ray abdomen	1		☢ ☢
CT head without and with contrast	1		☢ ☢ ☢
X-ray radiographic survey whole body	1		☢ ☢ ☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

ACR Appropriateness Criteria

Indeterminate Renal Mass

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen without and with contrast	9	Either CT or MRI is appropriate. Thin-section CT.	☢☢☢☢
MRI abdomen without and with contrast	8	Either CT or MRI is appropriate. See statement regarding contrast in text under "Anticipated Exceptions."	O
US kidney retroperitoneal with Doppler	8	To clarify mass that is probably a hyperdense or simple cyst.	O
Biopsy and aspiration kidney	5	Depends on clinical scenario. The appearance and size of mass. US, CT, or MRI may be used for image guidance.	Varies
MRI abdomen without contrast	3	Can be useful to characterize simple cysts.	O
Tc-99m DMSA scan kidney	1	May be useful to rule out pseudomass of functioning renal tissue.	☢☢☢
Arteriography kidney	1	To rule out arteriovenous malformation, arteriovenous fistula, or renal artery aneurysm.	☢☢☢
X-ray intravenous urography	1	May be helpful to differentiate parenchymal masses from collecting system masses.	☢☢☢
CT abdomen with contrast	1		☢☢☢
CT abdomen without contrast	1		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**