General history

- Name:陳逢春
- Sex:女
- Birth date:30/02/24
- Date of admission:93/07/05

Chief complaint

- Left flank soreness and left renal tumor for one year

Present illness

- 63 years old female
- Left flank soreness since last year
- Left renal stone s/p ESWL for 3-4 times
- 忠孝 sonography, CT -left renal cyst

Family history

- DM(-)
- HTN(-)
- CVA(-)
- Personal history
- Smoking+, one package a day
- Alcohol-
- Drug allergy: penicillin,pyrine

Past history

- Left renal stone s/p ESWL
- Atopic pregnancy s/p OP
- Right lower leg trauma s/p OP

Physical examination

- BP146/90 mmHg, TPR36°C/86 /20
- General appearance: fair
- Cons : clear
- HEENT: normal
- Lung :symmetric expansion, clear BS
- Abdomen:soft
- Extremities: freely movable

Lab data

- Glucose(血液)173
- Lipemia
- Urea N(血液) 21.5
- Creatinine(血液)　1.0

Image-KUB

- Spinal curve toward left side
- Degenerative lumbar spondylosis
- Wedge shape deformity of vertebra

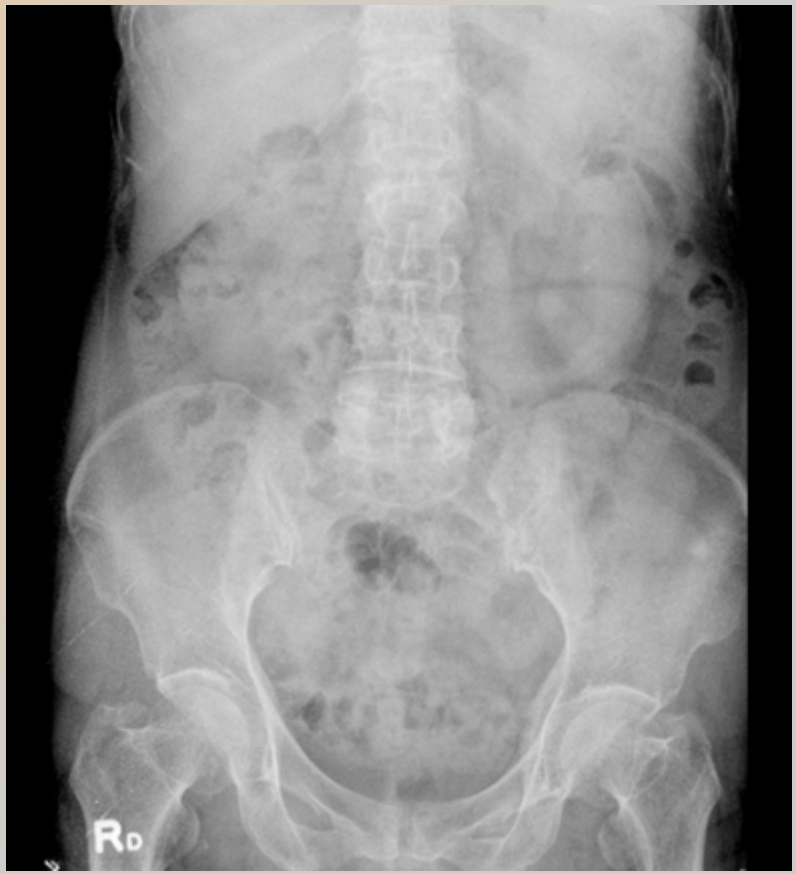


Image-IVP

- No evidence of obstructive uropath
- Normal shadow of psoas muscle
- Renal pelvis, urete

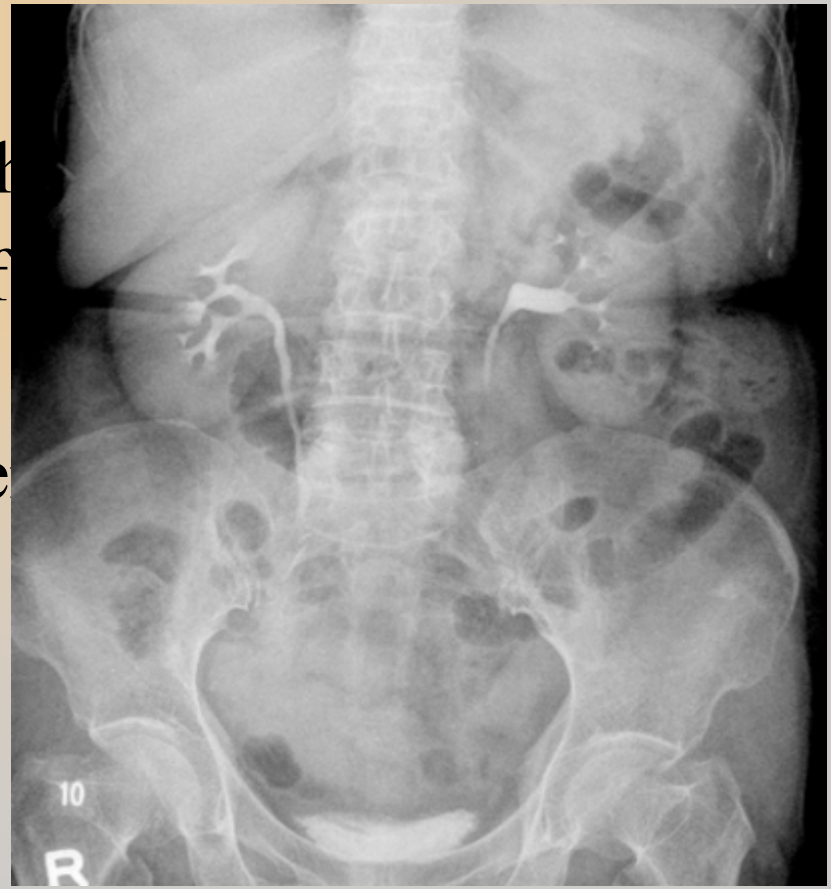


Image -CT

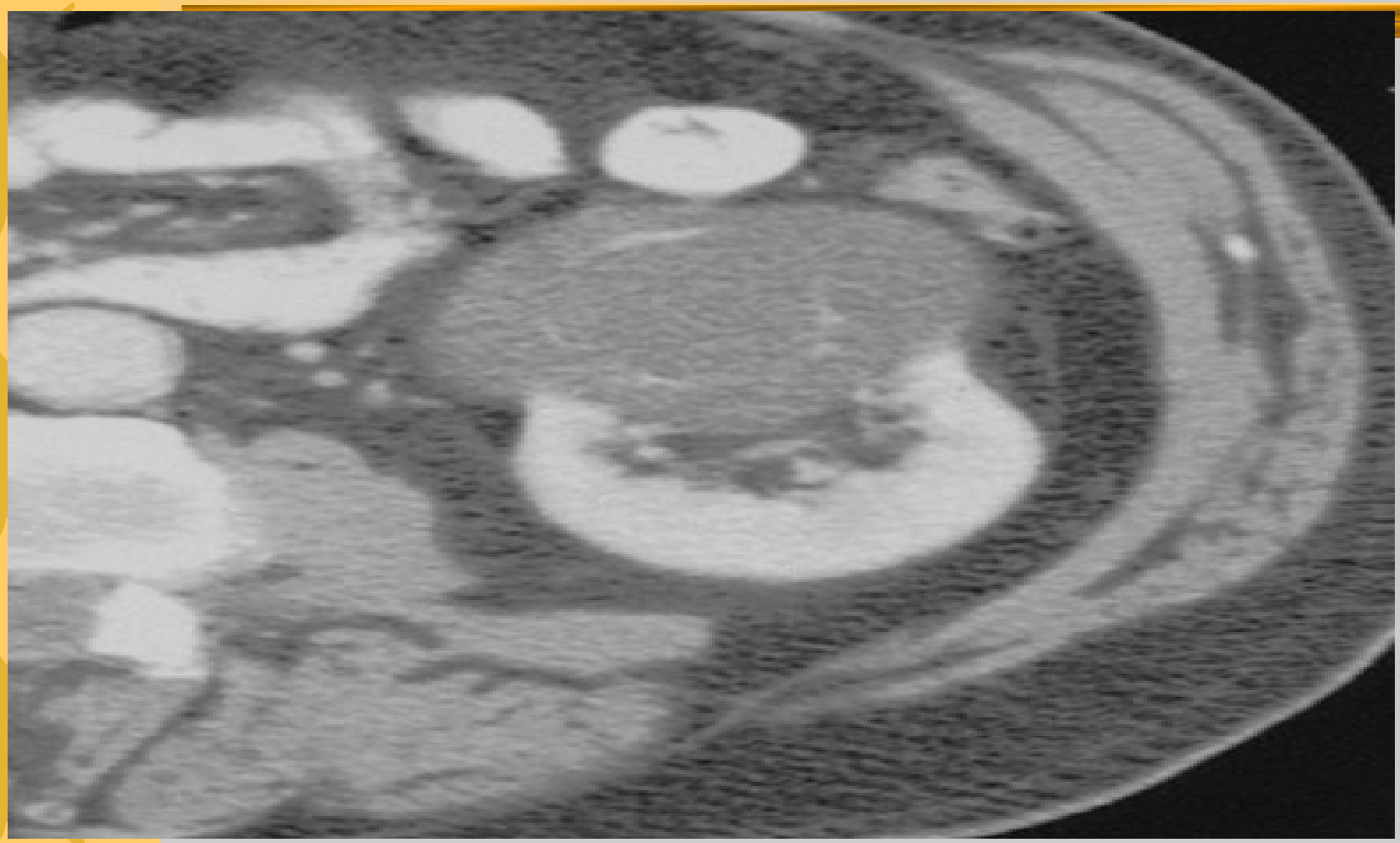


Image-CT

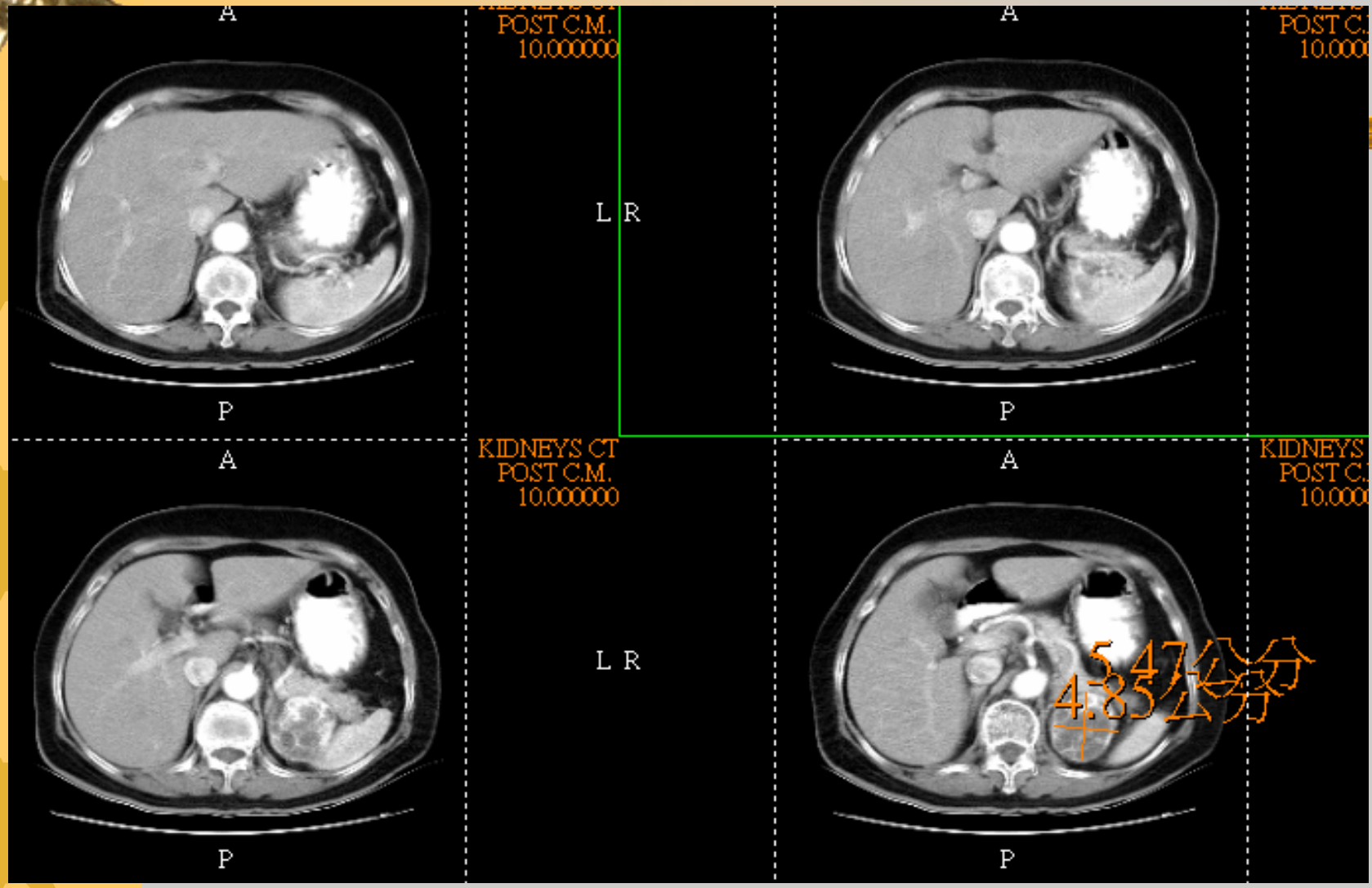
1.Well-defined, oval mass 4.5*5.5 cm

2. heterogeneous enhancement at cortical phase and medullary phase , involving perinephric fat

3.left renal vein and IVC

4. pancreatic tail, splenic hilum and the left renal mass are partially blurred.

5.A 1.2-cm left para-aortic lymph node at L2 level


A
POST C.M.
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4.85公分

Image-CT

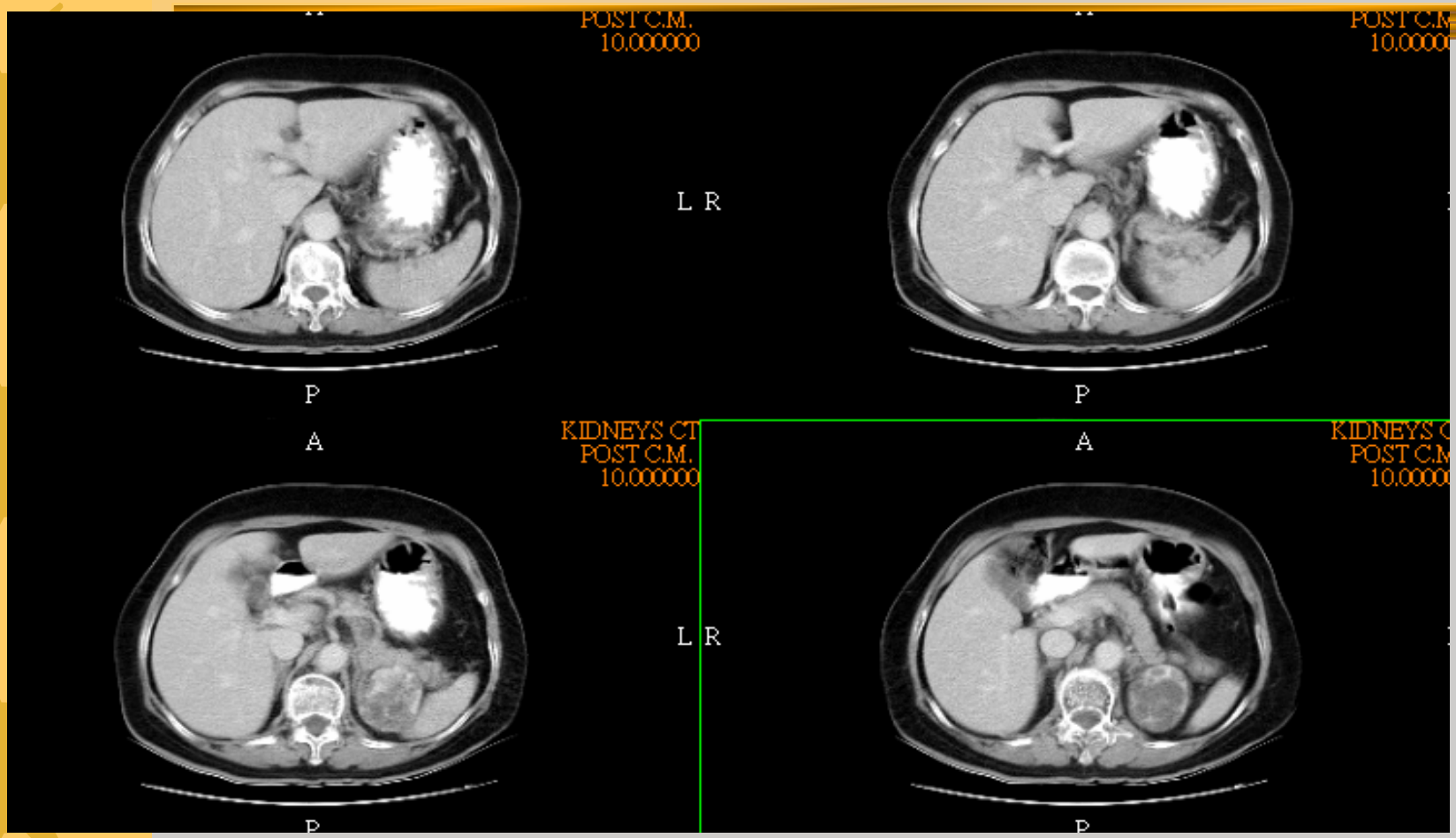
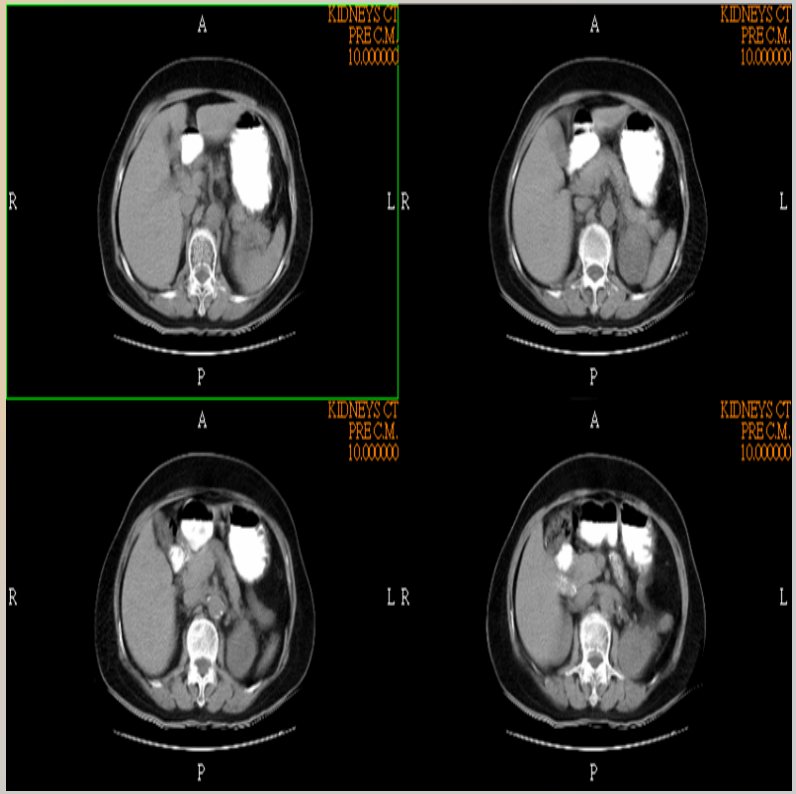


Image-CXR

- 93/7/05
- Tortuosity of aorta
- Nodular density at right lower chest due to nipple

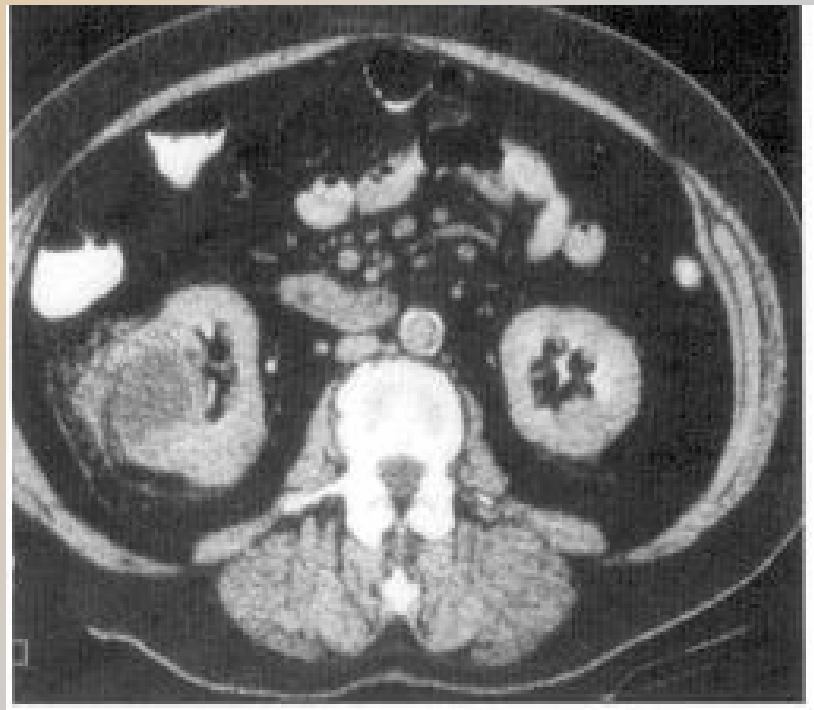


Differential diagnosis

- 1. Renal cell carcinoma
- 2.oncocytoma
- 3.angiomyolipoma
- 4.complicated cyst (Bosniak 3-4)
- 5.lymphoma
- 6.metastases to kidney

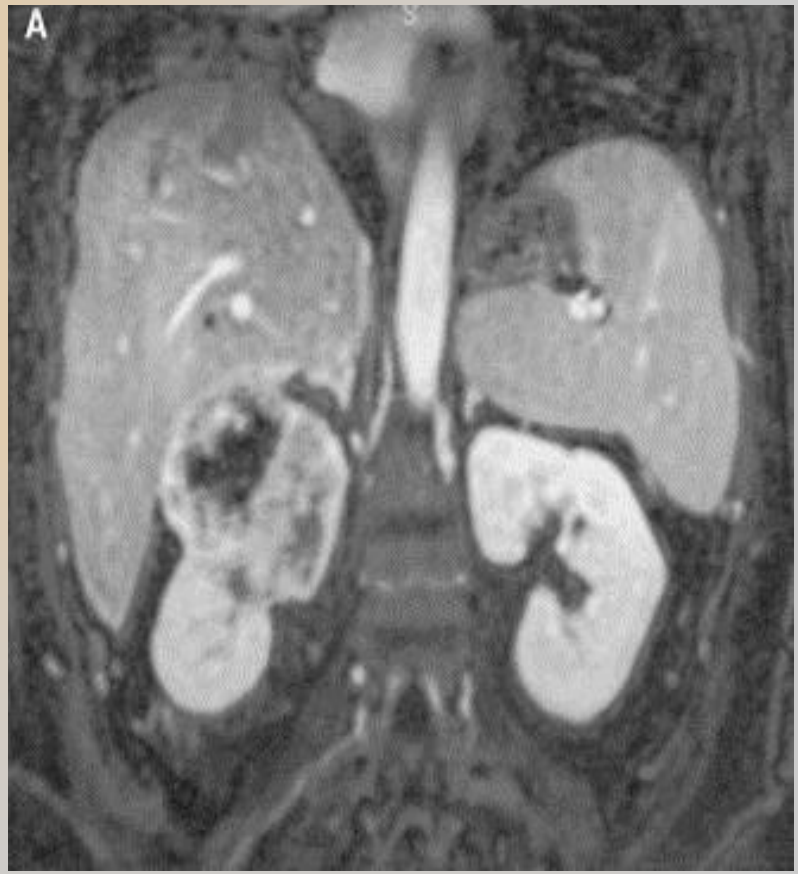
Renal cell carcinoma

- The most common renal neoplasm (80%)
- CT is first choice
- more than 50% of RCCs are now detected incidentally
- Enlarged hilar or retroperitoneal lymph nodes of 2 cm

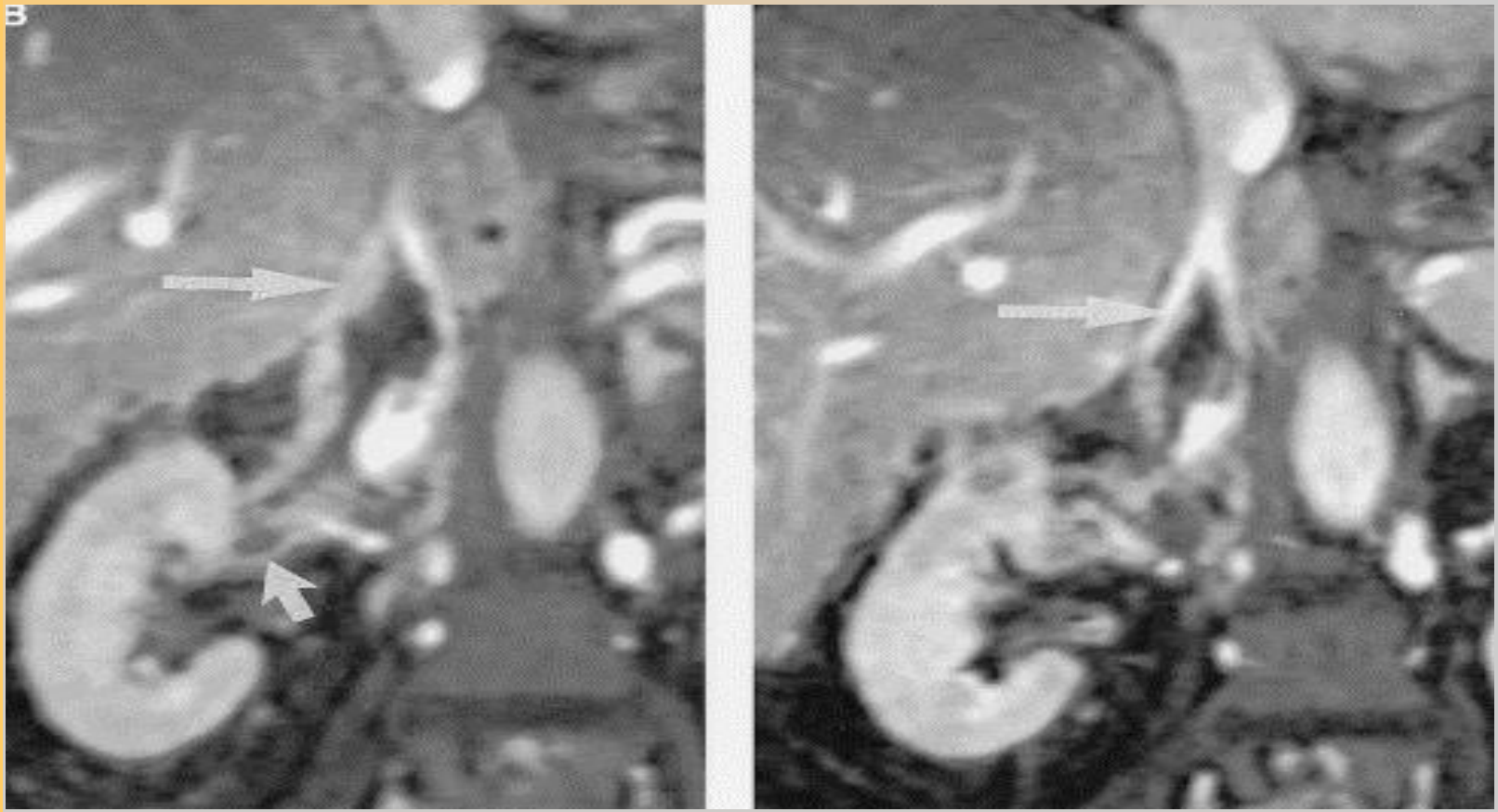


Renal cell carcinoma

- MRI
- locally advanced malignancy,
- possible venous involvement, renal insufficiency,
- or allergy to intravenous contrast



Renal cell carcinoma



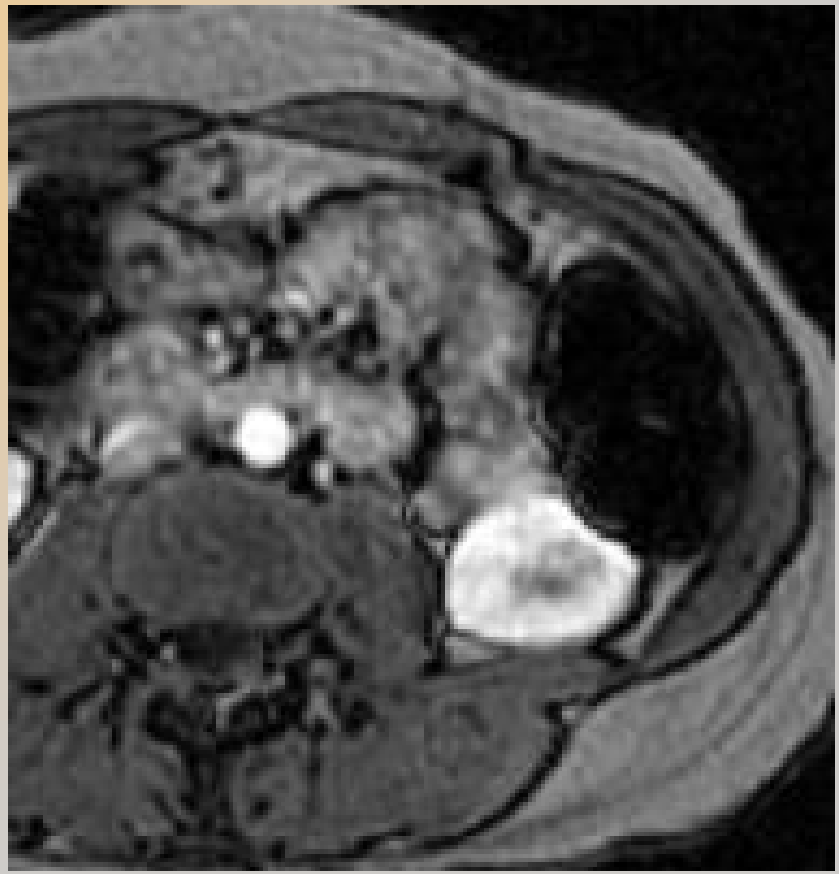
Oncocytoma

- Derived from distal tubules
- Grossly, light brown, homogeneous,well-circumscribed
- CT-stellate scar
- Angiography-spoke-wheel pattern of feeding artery
- MRI--stellate scar, distinctive intensities T1and T2

Oncocytoma

- **most renal oncocytomas cannot be differentiated from malignant RCC based on clinical or radiographic means**
- Mean age , male-to-female predominance
- asymptomatic ,Mean tumor size from 4 to 6 cm
- Aggressive treatment

Oncocytoma



Angiomyolipoma

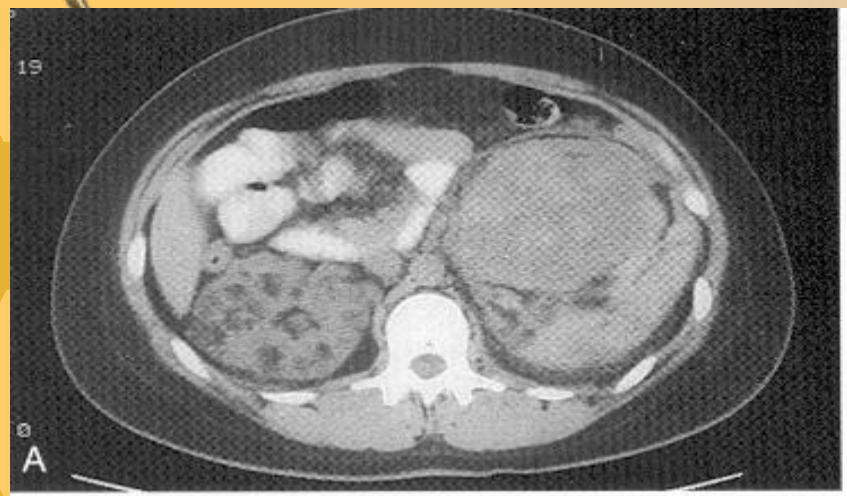
Benign neoplasm from perivascular epithelioid cells

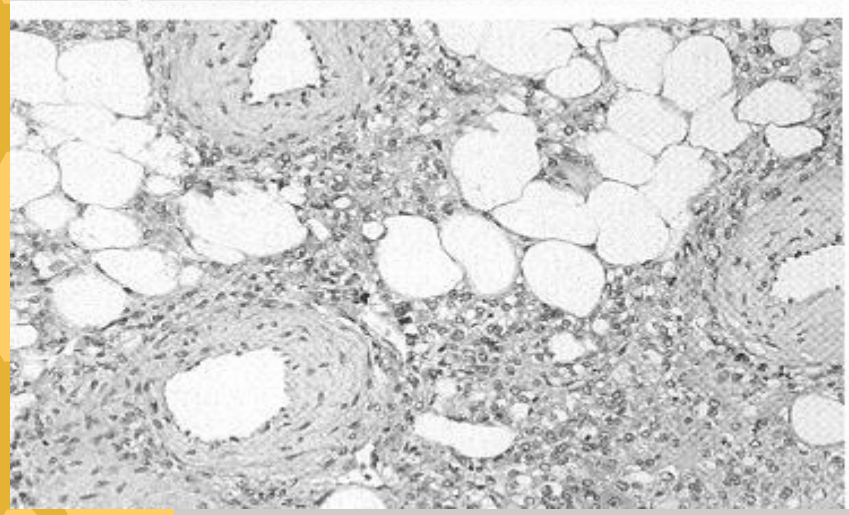
Mature adipose tissue, smooth muscle, and vessels

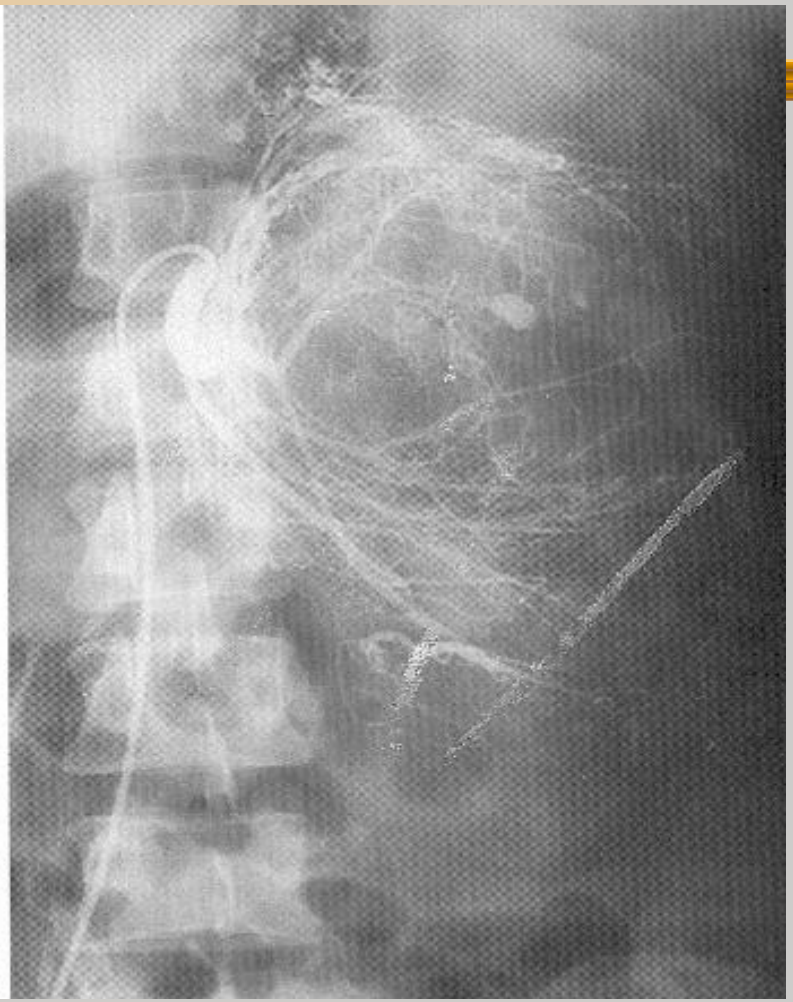
20% associated with tuberous sclerosis(mental retardation, epilepsy, and adenoma sebaceum)

Massive retroperitoneal hemorrhage

angiomyolipoma







angiomyolipoma

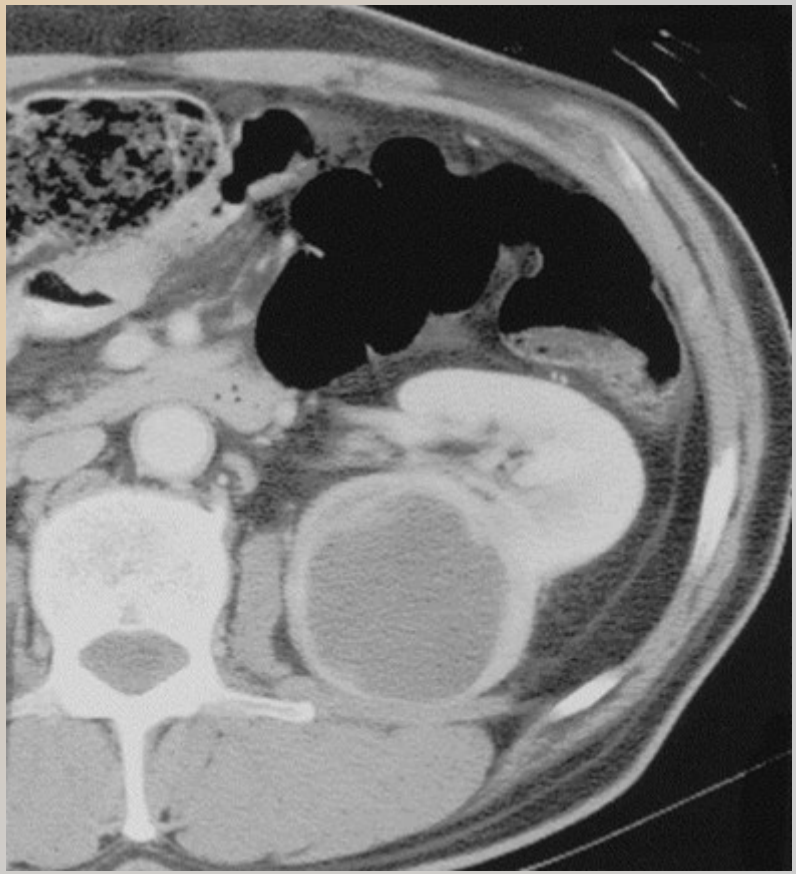
- CT-a small amount of fat within a renal lesion (confirmed by Hounsfield units ≤10)
- Calcifications
- Sono-a well-circumscribed, highly echogenic lesion, often associated with shadowing
- angiography -aneurismal dilation
- MRI –hyperintense signal T1-weighted

complicated cyst

- Bosniak classification of renal cysts introduced in 1986
- The thickness of the wall
- Number of septae
- Calcification
- Interface with the kidney
- Enhancing soft tissue components

Bosniak classification

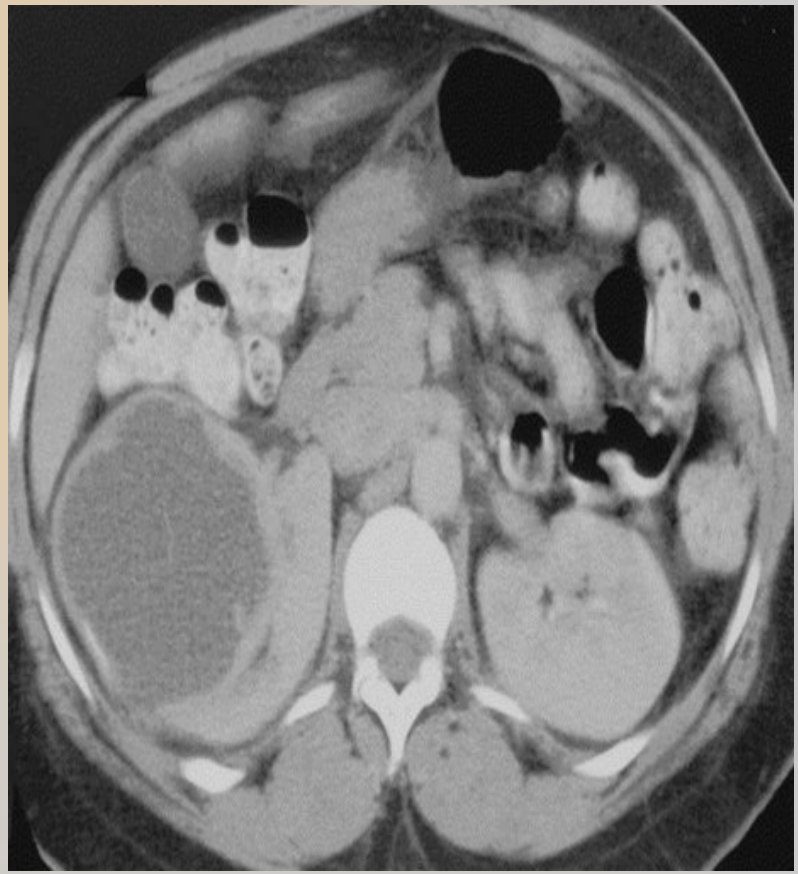
- Category1-simple benign cysts with thin wall-water density
- Category 2-
- Hairline thin septation, fine calcification
- Less than 3 cm



Bosniak classification

- Category 3-
- Thickened irregular walls or septation
- Calcification
- Surgical exploration is necessary

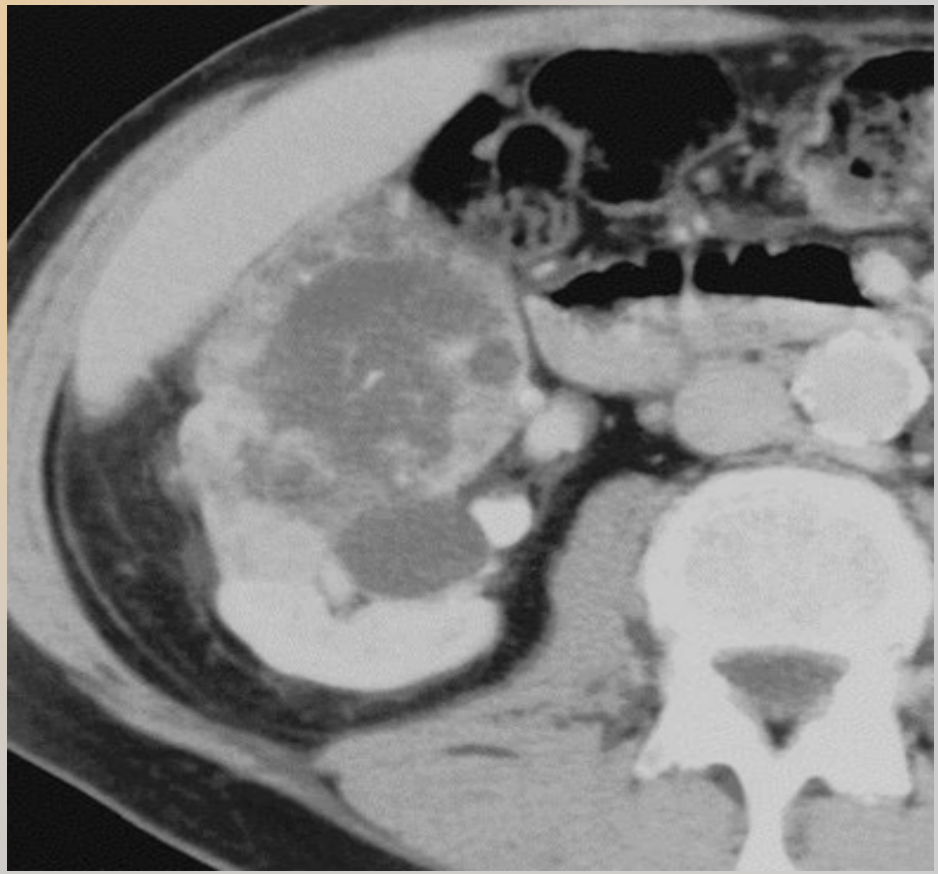
- 6 cm RCC



Bosniak classification

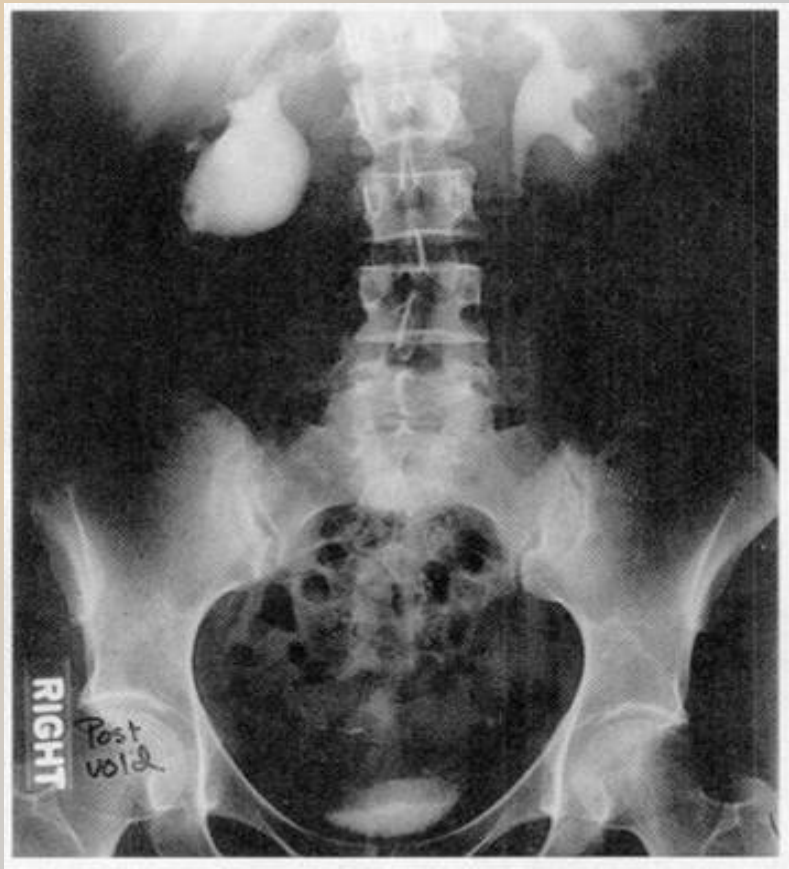
- Half
- 7 cm infected

  Renal cyst



Bosniak classification

- Category 4-
- Malignant cystic masses contained enhancing soft tissue



Surgical intervention

- Laparoscopic partial nephrectomy

Pathology

- a nodule measuring 5.2 x 3.4 x 2.8 cm. in size
- solid and cystic, yellow-gray, and rubbery
- Micro- and macrocysts are present, lined by similar clear cells, and filled with acidophilic fluid.
- one focus of cauterization area of this specimen is involved by tumor.

Discussion

- Renal cell carcinoma
- 3% of all adult malignancies
- 40% of patients with RCC have died from their cancer
- Most sporadic , only 4% are familial

Renal cell carcinoma

- Etiology
- clear cell -proximal convoluted tubules
- chromophobic and papillary RCC -nephron
- Pathology
- Most RCCs are round to ovoid and circumscribed by a pseudocapsule .
- most RCCs are not grossly infiltrative, exception of some sarcomatoid variants

Subtype	Incidence	Genetic Alterations	Clinical Features
Conventional	70–80%	Loss of VHL gene	Garden-variety renal cell carcinoma
		Deletion of chromosome 3	Hypervascular
Papillary	10–15%	Activation of MET proto-oncogene	Increased incidence of multicentricity
		Trisomy chromosomes 7 and 17	Often hypovascular
Chromophobic	4–5%	Not defined	Not defined
Collecting duct	<1%	Not defined	Poor prognosis
Medullary cell	<1%	Not defined	Poor prognosis
Oncocytoma	3–7%	Loss of chromosomes 1 and Y	Benign

Renal cell carcinoma

- tobacco use -environmental risk factor
- end-stage renal failure-5 to 10 folds of incidence
- von Hippel-Lindau syndrome (VHL): (RCC, pheochromocytoma, retinal angiomas, and hemangioblastomas of the brain stem, cerebellum, or spinal cord) RCC develops in about 50% of patients with VHL,early age of onset, often in the third, fourth, or fifth decades of life, bilateral and multifocal involvement
- familial forms of RCC:
- tuberous sclerosis
- autosomal-dominant polycystic kidney disease:

Renal cell carcinoma

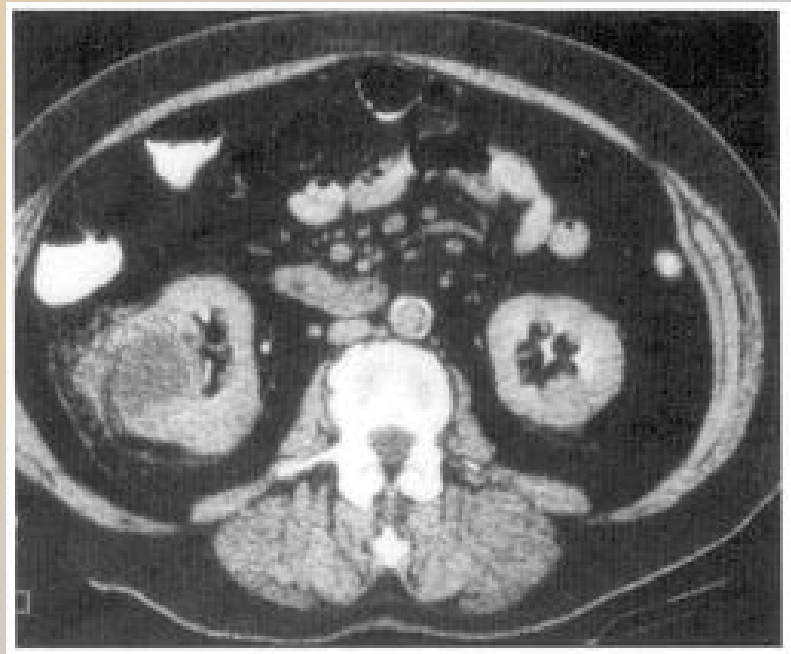
- The classic triad of flank pain, gross hematuria, and palpable abdominal mass is now rarely found
- Paraneoplastic syndromes are found in 20% of patients –
- **Hypercalcemia** – vigorous hydration, furosemid, corticosteroids , calcitonin
- **Hypertension and polycythemia**

Renal cell carcinoma

- Staging
- Robson and TNM Staging Systems
- Diagnosis
- CT is first choice
- MRI for IVC tumor thrombus
- The sensitivities and specificities of FNAB -80% to 95%

Renal cell carcinoma

- right renal tumor with perinephric stranding.

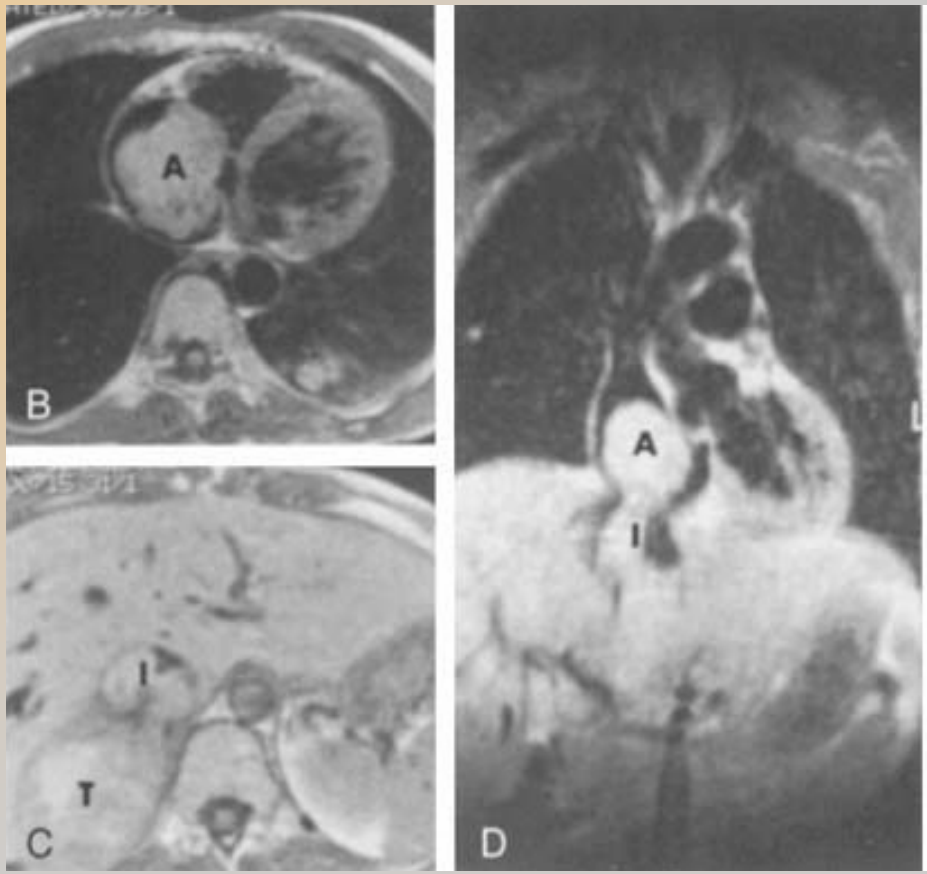


Renal cell carcinoma

- Intravenous pyelogram shows ureteropelvic junction obstruction.

Renal cell carcinoma

- A large right-sided renal cell carcinoma (T) with direct tumor extension into the IVC(I) and right atrium



Renal cell carcinoma

- Treatment
- Surgery is the mainstay
- complete lymphadenectomy-undetermined
- Laparoscopic radical nephrectomy for low-volume (8 cm or smaller), localized RCCs with no local invasion, renal vein involvement, or lymphadenopathy.

Renal cell carcinoma

- Treatment for metastatic RCC
- Hormonal Therapy-disappoint
- Chemotherapy resistant
- RT-adjuvant therapy after surgery
- Immunobiologic Therapy-most popular
- combination of IL-2, interferon-α, and 5-FU response rate of 20%

Thank you very much

Campbell's Urology, 8th ed

Brenner & Rector's The Kidney, 7th ed

Renal imaging for diagnosis and staging of renal cell carcinoma. *Urol Clin North Am* - 01-AUG-2003; 30(3): 499-514