



Bosniak Classification 2005 version

Bosniak 1

- simple cyst: imperceptible wall, rounded

Bosniak 2

- minimally complex: a few thin <1 mm septa or thin calcifications (thickness not measurable); non-enhancing high-attenuation (due to proteinaceous or haemorrhagic fluid) renal lesions of less than or up to 3 cm are also included in this category; these lesions are generally well margined

Bosniak 2F

- minimally complex: increased number of septa, minimally thickened wall or septa with nodular or thick calcifications but no measurable contrast enhancement, hyperdense (>20 Hounsfield unit) cyst >3 cm diameter, mostly intrarenal (less than 25% of wall visible)

Bosniak 3

- indeterminate: thick, nodular multiple septa or wall, with measurable enhancement, hyperdense on CT (see 2F)

Bosniak 4

- clearly malignant: solid mass with a large cystic or a necrotic component

REMARKS

1 Plain radiograph

- 1.1 Kidney, ureter and bladder radiograph (KUB) has a very low sensitivity and specificity in detecting renal mass.

2 Intravenous urogram (IVU)

- 2.1 IVU with nephrotomography has only 67% sensitivity in detecting renal masses ≤ 3 cm in diameter, and without tomography the sensitivity is even less. It is rarely used in current management of the indeterminate renal mass.

3 US

- 3.1 When all the criteria of a simple benign cyst (anechoic, good through transmission, thin, sharply marginated, smooth walls) are found on US, no further imaging study is needed.
- 3.2 A hyperechoic mass is highly suggestive of angiomyolipoma. CT or angiogram may be required in doubtful cases.

4 CT

- 4.1 CT is used to clarify all hypoechoic masses or complex cysts not fulfilling all the criteria of a simple cyst e.g. cyst with septa, thick or calcified walls, infection or haemorrhage.
- 4.2 CT is more accurate than US in detecting small renal lesions less than 1.5cm. Small lesion < 1.5 cm suspected to be renal cell carcinoma can be followed up by CT at 6-month, 1 year and then yearly interval.
- 4.3 Demonstration of a small amount of fat in a lesion on CT can accurately suggest an angiomyolipoma.

5 MRI

- 5.1 MRI is indicated when CT cannot be performed due to the risk of contrast media reaction or renal insufficiency.
- 5.2 MRI is as accurate as CT. However, MRI is more sensitive in detecting thrombus in renal veins and inferior vena cava.

6 Angiography

- 6.1 Although two-thirds of renal tumours have enough vascularity to allow identification of tumour neovascularity, one-third will be of such a hypovascular or “avascular” state that angiography will not help identify the lesion as benign or malignant.
- 6.2 Angiogram is useful to exclude arteriovenous malformation (AVM) and renal artery aneurysm.

7 Pathological diagnosis

- 7.1 Tissue diagnosis is rarely necessary in establishing diagnosis of renal mass and a negative result does not exclude malignancy. However, it is useful to confirm infected cyst, lymphoma and metastasis.

REFERENCES

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