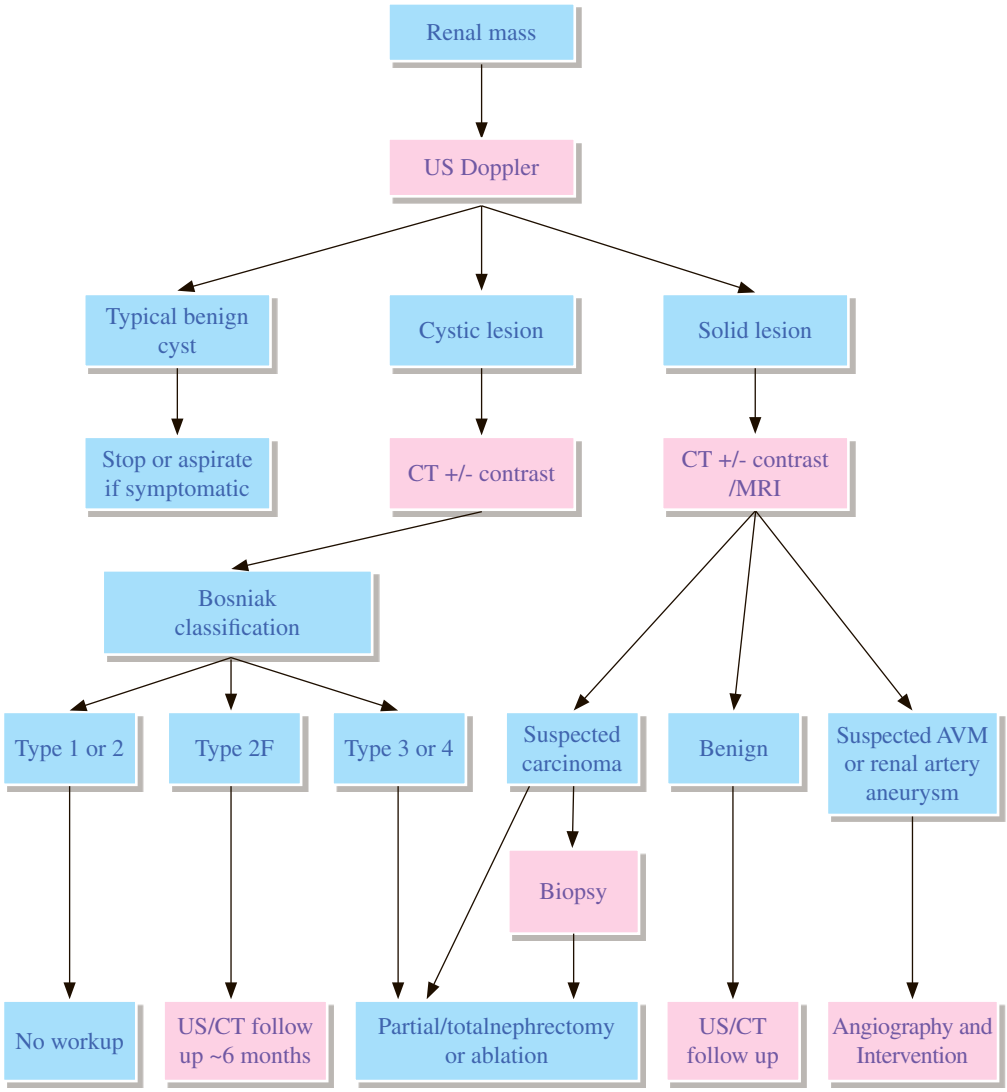

Bosniak Classification 2005 version

Bosniak 1
- simple cyst: imperceptible wall, rounded

Bosniak 2
- minimally complex: a few thin <1 mm septa or thin calcifications (thickness notmeasurable); 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 marginated

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 <1.5cm 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.

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