THE INCIDENTAL RENAL MASS: HOW TO HANDLE

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DISCLOSURES

NONE
THE INCIDENTAL RENAL MASS

- Very common
- ½ of patients over 50
- Most small
- Most benign
INCIDENTAL RENAL MASS

- Incidence of cyst and RCC increases with age
- Most incidental masses are benign
- Most RCCs are detected incidentally
LOW DOSE CT
INCIDENTAL RENAL MASS

- Stone CT, VC ...
- Job even tougher
- AML
- Many indeterminate
- Small lesions → benign
INCIDENTAL RENAL MASS GOALS

- Detect
- Characterize
- Manage
INCIDENTAL RENAL MASS DETECT

- Phase of enhancement
- Mass enhancement
- Size
Renal Mass Protocol

vs

Routine Abdominal CT
INCIDENTAL RENAL MASS: CHARACTERIZE

- Size
- Densitometry
  - Cyst vs solid
- Fat
- Complexity
- ? Enhancement
INCIDENTAL RENAL MASS LESS THAN 1 CM IN SIZE

- Tough to characterize
- We could do better → ? worth effort
- Presumably benign
- Increased concern (VHL)
IS IT A BENIGN CYST?

- Bosniak classification
- Unenhanced - 0 – 20 HU
- Enhanced – (0-20 HU) → (20-30 HU) ?
- Enhancement
  - 0 – 10 HU - None
  - 20 or more HU - Enhance
  - 10 – 20 HU - ?
INCIDENTAL CYSTIC RENAL MASS

♦ Is it a mass or TSTC?
♦ Consider patient factors
♦ Bosniak I/II → - Done
♦ Bosniak III/IV → - Do Something (Biopsy)
♦ Bosniak IIIF → - Follow (5yrs)
WHAT TO SAY?

- It is a cyst
- It is likely a cyst
- It is statistically likely to be a cyst
- It is indeterminate but likely benign
- I do not know what it is but I can see it
- I see nothing
IMPLICATION OF DICTATION

- Level of concern
- What to do next
- How long to wait
- Legal ramifications
INCIDENTAL RENAL MASS: SOLID

♦ Primary or metastatic neoplasm (history)
♦ Look for fat (AML) - some have no fat
INCIDENTAL SOLID RENAL MASS

- Very small (< 1 cm) – Follow
- Small (1-3 cm) – Image, Biopsy, Intervene
- Larger (>3 cm) – Do Something
SMALL RENAL MASS (SRM)

- Less than 4 cm
- Surgery – PN, RN, AT
- Biopsy
- Active surveillance
BIOPSY OF SRM

- Can you do it?
- Can you read it?
- Diagnosis + Grade
- Some still non-diagnostic
THE CASE FOR RENAL MASS BIOPSY

- Biopsy to reduce number of patients who receive unneeded surgery
- Find benign and non-aggressive lesions → change management
- Biopsy is a cost-effective approach for SRM

Pandharipande et al, Radiology 2010
THE CASE AGAINST RENAL MASS BIOPSY

- False negative biopsy for RCC
- Seeding of biopsy track
AS: INTERVAL GROWTH OF SRM

- 65 masses
- Followed for many months by imaging
- More than ½ did not grow at all
- Growth seen in benign and malignant lesions

Kollarik, Bratisl Listy
ACTIVE SURVEILLANCE (AS)

- Serial imaging
- Change in size
- Achieve threshold size (3,4 cm)
- New tumor related symptoms
PRO - AS

- Up to a third of SRM are benign
- Majority of small RCC are lower grade
- Mets infrequent/rare
- Delayed surgery/intervention still effective
CON - AS

- Many SRM’s grow on follow-up, often benign
- Cannot predict future growth by imaging
- Cost/Dose
SRM ACTIVE SURVEILLANCE

- Incidental sporadic solid mass
- 2 kidneys
- Less than 4 cm
- Biopsy
- No nodes or Mets
SRM ACTIVE
SURVEILLANCE EXCLUSIONS

♦ Hereditary syndrome
♦ ECOG more than 2
♦ Compliance concerns
♦ Unable to image for follow-up
ACTIVE SURVEILLANCE

- Image every 6 months for 2 years
- Yearly after 2 years
- Treat if >3mm in 6 months, or >5mm in 12 months
INCIDENTAL RENAL MASS SUMMARY

- Detect
- Characterize
  - Additional imaging with CT/MR
- Find the “leave them alone” masses
- Suspicious mass
  - Biopsy, Excision, Ablation, Follow-up
Figure 1. Incidental cystic renal mass flowchart.

LEGEND

1. These recommendations are to be followed only if non-neoplastic causes of a renal mass (e.g., infections) have been excluded; see Ref. 48 for details. The recommendations are offered as general guidance and do not necessarily apply to all patients. See Table 1 for detailed description of Bosniak Classification.

2. When a mass smaller than 1 cm has the appearance of a simple cyst, further work-up is not likely to yield useful information.

3. Interval and duration of observation may be varied (e.g., longer intervals may be chosen if the mass is unchanged; longer duration may be chosen for greater assurance).

4. In selected patients (e.g., young), early surgical intervention may be considered, particularly if a minimally invasive approach (e.g., laparoscopic partial nephrectomy) can be utilized.

5. Morphologic change refers to change in feature characteristics, such as number of septations or their thickness. Growth should be noted, but by itself does not indicate malignancy.

6. Surgical options include open or laparoscopic nephrectomy and partial nephrectomy; each provides a tissue diagnosis. Open, laparoscopic, and percutaneous ablation may be considered where available, but biopsy would be needed to achieve a tissue diagnosis. Long-term (5- or 10-year) results of ablation are not yet known.

7. Limited life expectancy and co-morbidities that increase the risk of treatment.

8. Cystic masses 1.5 cm or smaller that are not clearly simple cysts or that cannot be characterized completely may not require further evaluation in patients with co-morbidities and in patients with limited life expectancy.

9. Percutaneous biopsy of Bosniak Category III masses may be considered, but may not be diagnostic.
Figure 2. Incidental solid renal mass flowchart.

**Incidental Solid Renal Mass**
Detected on CT

- **<1 cm**
  - General population
  - Follow-up until 1 cm: CT or MRI at 3-6 mo and 12 mo, then yearly

- **1-3 cm**
  - Limited life expectancy and co-morbidities
  - Follow-up until 1.5 cm: CT or MRI at 3-6 mo and 12 mo, then yearly

- **>3 cm**
  - General population
  - Limited life expectancy or co-morbidities
  - Surgery
  - Follow-up

**General population**

- Limited life expectancy and co-morbidities
  - Hyperattenuating, homogeneously enhancing: consider MRI, biopsy
  - Surgery
  - Follow-up

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**LEGEND**

1. These recommendations are to be followed only if non-neoplastic causes of a renal mass (e.g., infections and fat-containing angiomylipoma) have been excluded; see Ref. 48 for details. The recommendations are offered as general guidance and do not necessarily apply to all patients.

2. Differential diagnosis includes renal cell carcinoma, oncocytoma, angiomylipoma. Benign entities are more likely in small renal masses than large ones.

3. Limited life expectancy and co-morbidities that increase the risk of treatment.

4. Interval and duration of observation may be varied (e.g., shorter interval if the mass is enlarging).

5. Probable diagnosis renal cell carcinoma, provided there is no detectable fat at CT or MRI using protocols designed to evaluate renal masses.

6. If hyperattenuating and homogeneously enhancing, consider MRI and percutaneous biopsy to diagnose angiomylipoma with minimal fat.

7. Surgical options include open or laparoscopic nephrectomy and partial nephrectomy; both provide a tissue diagnosis. Open, laparoscopic, and percutaneous ablation may be considered where available, but biopsy would be needed to achieve a tissue diagnosis. Long-term (<3 mm) sections help confirm enhancement.

8. Observation may be considered for a solid renal mass of any size in a patient with limited life expectancy or co-morbidities that increase the risk of treatment, particularly when the mass is small. It may be safe to observe a solid renal mass beyond 1.5 cm; however, there are insufficient data to provide definitive recommendations on the risks and benefits of observation. Thin (≤3 mm) sections help confirm enhancement.

9. Probable diagnosis renal cell carcinoma. Angiomylipoma with minimal fat, oncocytoma, and other benign neoplasms may be found at surgery.

10. Percutaneous biopsy can be utilized preoperatively to confirm renal cell carcinoma.