Renal biopsy is mandatory for every small renal mass

Ben Challacombe
Consultant Urologist

The Urology Centre
Guy’s and St. Thomas’ Hospital NHS Foundation Trust
Oncocytoma
High Risk Partial converted to RN adherent fat++

Oncocytoma
• For things to reveal themselves to us, we need to abandon our views about them.

Thich Nhat Hanh
SRM The issue

- Increasing number of imaging Ix
- Downward stage migration and smaller size at Diagnosis
- SRM (T1a) very common (50%)
- Many elderly and co-morbid
- Most low malignant potential
- Slow growth rates 0.25cm/year

Jewett, M. A. s. & Finelli, A. Nat. Rev. Urol 2014
Despite the increasing experience and indications, biopsies are still significantly underutilised.

**Rationale for Percutaneous Biopsy and Histologic Characterisation of Renal Tumours**

Alessandro Volpe\(^a,\,#\), Antonio Finelli\(^b\), Inderbir S. Gill\(^c\), Michael A.S. Jewett\(^b\), Guido Martignoni\(^d\), Thomas J. Polascik\(^e\), Mesut Remzi\(^f\), Robert G. Uzzo\(^g\)

### Table 3 – Current indications and contraindications of percutaneous renal tumour biopsies

<table>
<thead>
<tr>
<th>Indications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMs that are indeterminate on abdominal imaging (including selected indeterminate cystic lesions)</td>
<td></td>
</tr>
<tr>
<td>Renal masses that are suspicious for metastatic disease in the presence of a known extrarenal malignancy</td>
<td></td>
</tr>
<tr>
<td>Incidentally diagnosed SRMs in patients who are potentially candidates for active surveillance or minimally invasive ablative therapy to support treatment decisions</td>
<td></td>
</tr>
<tr>
<td>Renal tumours during follow-up of thermal ablation to confirm histologic success and monitor for recurrence</td>
<td></td>
</tr>
<tr>
<td>Primary renal tumours in the setting of metastatic disease to select the optimal biologic systemic therapy, particularly when a cytoreductive nephrectomy is not indicated or neoadjuvant systemic therapy is planned</td>
<td></td>
</tr>
<tr>
<td>Unresectable retroperitoneal renal tumours involving the kidney</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute:</td>
<td>Uncorrected coagulopathy</td>
</tr>
<tr>
<td>Relative:</td>
<td>Patients with limited life expectancy or locally advanced or disseminated metastatic disease who are not candidates for any surgical, ablative, or medical treatment except palliation of symptoms</td>
</tr>
</tbody>
</table>

SRM = small renal mass.
2014 GSTT Urology Mantra

• No high risk partial nephrectomies for benign disease
• How do we achieve this? **Biopsy**
• 1,175 RPNs
  – 23% Benign, 29% AS, Rabhar et al 2014
  – 86% of patients classified as high surgical risk (ASA ≥3 and age ≥70) could have had biopsy- guided management.

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“Active” Surveillance of SRMs

• >50% of Clear cell RCCs don’t grow over 3-5 years from diagnosis
• Metastases <2% if >4cm cutoff used.
• Men with prostate cancer routinely undergo multiple needle core biopsies to diagnose the disease, grade it and estimate prognosis.
• Why SRMs suspected of having RCC have a ≥20% risk of undergoing unnecessary surgery for benign disease and are denied an opportunity for full informed consent that might include a prediction that their tumour has a very small risk of growing or metastasizing?

• BAUS PN: 8% Clavien III, 8% +ve margin
Comparisons to other major tumours

- Breast: always do FNA pre surgery
- Colorectal: colonscopy and biopsy
- Prostate: TRUS/TP biopsy mandatory
- Lung: bronchoscopy and biopsy, EBUS + Bx

- “But the kidney is different”
Difficult to access/vascular organs

- **Brain**: biopsy pre surgery/DXT/Chemo
- **Liver Primary Tumour or Metastasis**
  - Always percutaneously biopsy pre surgery
- **Pancreas**
  - ERCP or percutaneously biopsy
- **Enlarged Retroperitoneal lymph nodes**
  - Percutaneous biopsy
AML

Creatinine Level

Creatinine Level (umol/L)

2014

Jul

Aug

Sep

40
50
60
70
80
90
100
110
120
130
140

DIKE, NNEKA CALISTA

Guy's and St Thomas' NHS Foundation Trust
Why wouldn’t you do a renal biopsy?

- Incorrect result: false negative
- Peri-renal bleeding → difficult surgery
- Tract seeding
- Hassle: 2WW pathway
- Cost: cheaper than PN
Lets Dispel some myths
• Biopsy isn't accurate: 90% initial diagnosis
• Biopsy causes bleeding → NO
• Biopsy seeds tumour → No
• Repeat Biopsy isn't worth it → No 10/12 diagnostic, 8 malignant
• 345 Biopsies: Grade 1 complications were experienced in 10.1% of cases, with no major bleeding and no seeding of the biopsy tract. There was one grade 3a complication (0.3%).

<table>
<thead>
<tr>
<th>Study</th>
<th>No. of tumours biopsied</th>
<th>Image guidance</th>
<th>Needle size, gauge</th>
<th>No. of biopsies taken</th>
<th>No. of significant complications' (%)</th>
<th>No. of seeding (%)</th>
<th>No. of significant bleeding** (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuzillet et al. [8]</td>
<td>88</td>
<td>CT</td>
<td>18</td>
<td>≥2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shannon et al. [9]</td>
<td>235</td>
<td>CT/US</td>
<td>18</td>
<td>1–4</td>
<td>2 (0.9)</td>
<td>0</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>Schmidbauer et al. [10]</td>
<td>78</td>
<td>CT</td>
<td>18</td>
<td>2–3</td>
<td>1 (1.3)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lebret et al. [11]</td>
<td>119</td>
<td>CT/US</td>
<td>18</td>
<td>1–4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Masuren et al. [12]</td>
<td>152</td>
<td>CT/US</td>
<td>18</td>
<td>2–4</td>
<td>2 (1.3)</td>
<td>0</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Volpe et al. [13]</td>
<td>100</td>
<td>CT/US</td>
<td>18</td>
<td>≥2</td>
<td>1 (1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wang et al. [14]</td>
<td>110</td>
<td>CT/US</td>
<td>18</td>
<td>≥2</td>
<td>2 (1.8)</td>
<td>0</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Veltri et al. [15]</td>
<td>150</td>
<td>US</td>
<td>18</td>
<td>1–2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leveridge et al. [16]</td>
<td>345</td>
<td>CT/US</td>
<td>18</td>
<td>≥2</td>
<td>1 (0.3)</td>
<td>0</td>
<td>1 (0.3)</td>
</tr>
</tbody>
</table>

CT = computed tomography; US = ultrasound.

* Complications requiring active treatment or hospital admission.

** Bleeding requiring active treatment, including transfusions or hospital admission.
It makes the surgery more difficult
Why do a renal biopsy?

• Get a tissue diagnosis prior to operation
  – Many low grade and slow growing
• Rule out benign causes: >20%
• Even if malignant result may hugely influence practice
  – Grade 1 vs. Grade 3
  – Chromophobe vs. Papillary I vs. Clear Cell
Jewett et al. 2014

- 207 masses
- 603 days
- 0.12cm/year growth
- Age, symptoms at diagnosis, tumour consistency and maximum diameter of the renal mass were not predictors of growth.

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>No. patients</td>
<td>169</td>
<td>—</td>
</tr>
<tr>
<td>No. masses</td>
<td>207</td>
<td>—</td>
</tr>
<tr>
<td>Imaging studies/mass (median)</td>
<td>5</td>
<td>Range (2–14)</td>
</tr>
<tr>
<td>Age (mean)</td>
<td>72.5</td>
<td>Range (52–91)</td>
</tr>
<tr>
<td>Symptomatic (%)</td>
<td>8.4</td>
<td>—</td>
</tr>
<tr>
<td>Asymptomatic (%)</td>
<td>91.6</td>
<td>—</td>
</tr>
<tr>
<td><strong>Tumour characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (median)</td>
<td>2.15 cm</td>
<td>SD (0.79)</td>
</tr>
<tr>
<td>Growth rate (median)</td>
<td>0.12 cm/year</td>
<td>SD (0.016)</td>
</tr>
</tbody>
</table>
Thanks and acknowledgment Prof Michael Jewett
Predicted growth curves, by histology
### Table 9: Estimated growth rates by progression

<table>
<thead>
<tr>
<th>Time period</th>
<th>Average growth, Non-progressors</th>
<th>Average growth, Progressors</th>
</tr>
</thead>
<tbody>
<tr>
<td>First image to one year</td>
<td>0.052</td>
<td>0.27</td>
</tr>
<tr>
<td>One year to second year</td>
<td>0.053</td>
<td>0.30</td>
</tr>
<tr>
<td>Second year to third year</td>
<td>0.054</td>
<td>0.34</td>
</tr>
<tr>
<td>Third year to fourth year</td>
<td>0.056</td>
<td>0.39</td>
</tr>
<tr>
<td>Fourth year to fifth year</td>
<td>0.057</td>
<td>0.44</td>
</tr>
<tr>
<td>Fifth year to fourth year</td>
<td>0.058</td>
<td>0.49</td>
</tr>
<tr>
<td><strong>Average/yr over the 12 years</strong></td>
<td><strong>0.71</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>6.9</strong></td>
</tr>
</tbody>
</table>
AML

- 46 years old
- 4 x 4 cm
What about if there are >1 SRM?
Oncocytomas!
Expect the unexpected

Oncocytoma
Conclusions

• SRMs have a $\geq 20\%$ risk of undergoing unnecessary surgery for benign disease
• Our patients are denied an opportunity for full informed consent:
  – This might include a prediction that their tumour has a very small risk of growing or metastasizing
• Biopsy them all
• The era of the unbiopsied SRM has passed