Macroscopy of urothelial and renal neoplasms
Ghent 2011
Dan Berney
• Best to see one/do one!
• Orientation tips
• Methodology tips
• Pitfalls
Renal Neoplasms

Â Weigh
Â Measure:
  • pole-pole
  • cortex-hilum
  • Antero-posterior
Clues to orientation

• Peritoneal reflections on anterior surface
• Vein anterior to artery (usually)
• Don’t necessarily trust the surgeons....
Dissection

- Renal artery and vein (close inspection)
- Ureter
- Lymph nodes (if found..)
- Photos useful
All tumours

- Staging
  - Renal medullary sinus
  - Vascular invasion
  - Margins
  - Extra-renal spread

- Cut up vital
Cardiff protocol

Vascular invasion level

Cum Survival

-1 0 1 2 3 4 5 6 7 8 9

years

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Cum Survival

No Vascular Inv

Renal Vein Inv

MicroVas Inv

IVC Inv
T1a: 4 cm or smaller
T1b: 4 cm and 7 cm
T2a: 7 cm to 10 cm
T2b: More than 10 cm
T3a: Renal vein or muscle containing branches OR perinephric fat (Inc medullary sinus fat!)
T3b: vena cava below diaphragm
T3c: Vena cava above the diaphragm or the walls of the vena cava.
T4: Areas beyond Gerota's fascia or adrenal gland
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Organ confined, ≤2.5 cm</td>
<td>Organ confined, ≤7 cm</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>T1a</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Organ confined, ≤4 cm</td>
<td>Organ confined, ≤4 cm</td>
</tr>
<tr>
<td>T1b</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Organ confined, 4-7 cm</td>
<td>Organ confined, 4-7 cm</td>
</tr>
<tr>
<td>T2</td>
<td>Organ confined, &gt;2.5 cm</td>
<td>Organ confined, &gt;7 cm</td>
<td>Organ confined, &gt;7 cm</td>
<td>NA</td>
</tr>
<tr>
<td>T2a</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Organ confined, &gt;10 cm</td>
</tr>
<tr>
<td>T2b</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Organ confined, &gt;10 cm</td>
</tr>
<tr>
<td>T3a</td>
<td>Perinephric tissue or</td>
<td>Perinephric tissue or</td>
<td>Perinephric tissue, renal sinus,</td>
<td>Perinephric tissue, renal sinus,</td>
</tr>
<tr>
<td></td>
<td>contiguous into adrenal gland</td>
<td>contiguous into adrenal gland</td>
<td>or contiguous into adrenal gland</td>
<td>or renal vein</td>
</tr>
<tr>
<td>T3b</td>
<td>Renal vein</td>
<td>Renal vein or vena</td>
<td>Renal vein or vena cava</td>
<td>Vena cava below the diaphragm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cava below diaphragm</td>
<td>below diaphragm</td>
<td></td>
</tr>
<tr>
<td>T3c</td>
<td>Vena cava below diaphragm</td>
<td>Vena cava above diaphragm</td>
<td>Vena cava above diaphragm</td>
<td>Vena cava above diaphragm or into</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>wall of vena cava at any level</td>
</tr>
<tr>
<td>T4</td>
<td>Beyond Gerota's fascia or vena cava above diaphragm</td>
<td>Beyond Gerota's fascia</td>
<td>Beyond Gerota's fascia</td>
<td>Beyond Gerota's fascia or directly into adrenal gland</td>
</tr>
</tbody>
</table>
What is the point of staging?

- Calculation of recurrence risk
- Nomograms
- Other factors, type, symptoms etc
- Choice of treatment? Not yet...
Where do I block?

- Necrotic
- Non necrotic
- Pale/haemorrhagic areas
- Capsule especially if fat adherent
- Medullary sinus +++
- Normal
- Satellite
Partial nephrectomies

• Ink!
• Margins very important
Stage

Renal vein invasion
Cystic disease

Adult polycystic disease  Infantile polycystic disease
Clear Cell Carcinoma
Simple cyst
Oncocytoma
Angiomyolipoma
PRCC Type 1
Clear Cell Carcinoma
Multicystic nephroma
Sarcomatoid change
Papillary adenoma
Oncocytoma
Papillary RCC type 2
Multicystic clear cell carcinoma
Chromophobe carcinoma
Oncocytoma
Classical angiomyolipomas
Epithelioid angiomyolipomas
Rhabdoid and sarcomatoid changes in conventional RCC
Renal cell carcinoma in ACKD
Urothelial carcinoma

Relative distribution

Bladder 95
Renal pelvis 3
Ureter 1
Urethra <1
Urothelial carcinoma

Low-grade: Exophytic, papillary
Ureters
Trigone
Urethra
Urothelial carcinoma

Low-grade: Exophytic, papillary
Urothelium  Superficial cells (Umbrella cells)

Abundant cytoplasm
Urothelial carcinoma in situ
Bladder

Â Orientation
Â Prostate/prostatic urethra... if there is one!
Â Peritoneal reflection (deeper on posterior)
Measurements

- 3 dimensions
- Find the ureters
  (differentiate from vasa)
Sample margins

À Urethra
À Ureters
À Probe urethra (with luck catheter still in!)
À Anterior/posterior halves
• Inspect for macro invasion of peri-vesical fat
• Perpendicular sections through wall (? Ink)
• Uninvolved bladder
• Prostate: how many?
Urothelial carcinoma

High-grade: Endophytic, ulcerated
Urothelial carcinoma

High-grade: Endophytic, ulcerated
deep invasion into the bladder wall
Partial cystectomies

Å Disc with tumour
Å Pin out on cork
Å Ink
Conclusions

• No need to splash vast quantities of ink!
• Careful dissection vital for staging
• Good sampling can aid typing
• Photos helpful
• The future....?
• Thanks to Ian Roberts and Lars Egevad
Interested in GU Pathology?

Â· RCPath course Sept
Â· November: BAUP 13\textsuperscript{th}/14\textsuperscript{th} Nov
Â· Path Soc 15\textsuperscript{th} Nov Borderlands of GU and molecular pathology