Needle tract seeding after percutaneous biopsies of pediatric renal masses: valid concern or unfounded fear? A systematic review and call for change.

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DISCLOSURES

• No disclosures to report
INTRODUCTION

• Renal tumors form 6-7% of all childhood malignancies\(^1\)
  • 80-90% - Nephroblastoma/Wilms tumor\(^1\)

• COG (US) vs SIOP (EU) treatment approaches differ

• Pre-op diagnosis largely based on imaging - 5-12% misdiagnosis\(^2-4\)

• Biopsies typically done for the indeterminate lesions and leads to upstaging/radiation therapy.
  • Beneficial to avoid under/over treatment
  • Percutaneous vs open

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OBJECTIVE

• Determine true incidence and outcomes associated with NTR with PCNB of renal masses in children
METHODS

• Systematic Review
• MEDLINE and EMBASE
• 1990 - 2018
• Criteria:
  • Pediatric patients (age 0-18 years)
  • PCNB for evaluation of renal masses
  • Excluded other biopsy approaches (i.e. laparoscopy)
RESULTS

- 90 publications reviewed
- 25 publications included

Overall incidence of PCNB tract recurrence: 0.003% (3/808)

- Median time to recurrence: 4.3 months
- Follow up time: 5 months - 9 years
- All patients alive at time of the respective reports
<table>
<thead>
<tr>
<th>PATIENT</th>
<th>BIOPSY</th>
<th>RECURRENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12 mo F, bilateral masses + lung (1995)</td>
<td>US guided PCNB, lateral direction; Path: FH Wilms</td>
</tr>
<tr>
<td>2</td>
<td>2 yo F, left mass (1996)</td>
<td>18g tru-cut, anterior Path: FH Wilms</td>
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<tr>
<td>3</td>
<td>Unk demo, bilateral masses (2018)</td>
<td>2-3x 16Fr core biopsy needle, posterior Path: FH Wilms</td>
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Biopsy techniques have evolved

• Old methods:
  • Open
  • Laparoscopic
  • Multiple passes, large bore, no sheath

• Modern method:
  • Biopsy needle passed through coaxial sheath
    • Single entry point
1.2cm tumor, FH Wilms

“Spillage” from biopsy? Upstage? Abdominal radiation?
CONCLUSIONS

• There is an extremely low incidence of NTR following PCNB of pediatric renal masses at 0.003%

• Biopsy techniques have evolved.

• Proposal: The role of PCNB in diagnosis of pediatric renal tumors should be revisited in cancer protocols.
  • Upstaging \( \rightarrow \) overtreatment has long-term consequences.
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