15-Year Experience With Renal Cell Carcinoma Caval Tumor Thrombus

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Disclosures

W.L. Gore:
TEVAR Training—course director

Prairie Research (Bard):
LEVANT-2—consultant

Silkroad:
Silkroad—consultant

Renal Cell Carcinoma With IVC Tumor Thrombus

• Poor prognosis
• Ineffective neoadjuvant radiation or cytotoxic therapies
• Current standard of care is radical resection and adjuvant therapy

Purpose

To evaluate the prognostic value of venous tumor thrombus levels on morbidity and mortality of patients with renal cell carcinoma

Neves Classification: Tumor thrombus

Pouliot F, et al J Uro 2010

Hypothesis

A higher level of venous tumor thrombus, which requires a more extensive surgical dissection, would contribute to poorer long-term survival
Methods

• Retrospective review
• Single tertiary academic center
• All patients underwent radical resection for renal cell carcinoma with venous tumor thrombus
• 15-year period (2001-2015)
• Mean follow-up 58 months

Methods: Operative techniques

Neves 0-II (infrahepatic)
• Thoracoabdominal or partial chevron incision
• Mobilization of right colon
• Kocher maneuver to expose the IVC

Neves III-IV (suprahepatic)
• Chevron incision with selective sternotomy
• Pringle maneuver and mobilization of liver
• Selective cardiopulmonary bypass

Methods: Operative techniques

• Ligation of lumbar veins
• No systemic heparin
• Lateral vena cava incision at renal vein confluence
• Grossly negative margins

Results: Demographics

• 37 patients
  – 26 men, 11 women
  – Mean age 61

• Cancer
  – All cancer stage 3 or 4
  – 15 (41%) metastatic disease
    • Pulmonary, hepatic, spinal, brain

Results: Neves level

No statistically significant difference between Neves 0-II (infrahepatic) vs Neves III-IV (suprahepatic):

– Tumor side
– T class
– Cancer stage
– Fuhrman grade
– Margin status
– Metastasis at time of surgery
Results: Perioperative findings

<table>
<thead>
<tr>
<th>Overall</th>
<th>Neves 0-II</th>
<th>Neves III-IV</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time</td>
<td>&gt; 3 hours</td>
<td>41% 30% 70%</td>
<td>0.050</td>
</tr>
<tr>
<td>Estimated blood loss</td>
<td>&gt;=2000 mL</td>
<td>43% 33% 70%</td>
<td>0.005</td>
</tr>
<tr>
<td>Length of SICU stay</td>
<td>&gt; 1 day</td>
<td>38% 30% 60%</td>
<td>0.034</td>
</tr>
<tr>
<td>Length of hospital stay</td>
<td>&gt; 7 days</td>
<td>54% 44% 80%</td>
<td>0.073</td>
</tr>
</tbody>
</table>

Results: 30-day outcomes

- 1 myocardial infarction
- 1 permanent acute renal failure
- No death, stroke, or new pulmonary embolism

Results: Late outcomes

- 1-year survival 93% (n=34)
- 3-year survival 77% (n=30)
- 5-year survival 71% (n=21)
- 5 patients developed recurrence – no local IVC recurrence

Results: Survival (entire cohort)

Results: Survival (Neves 0-II v III-IV)

Comparison Of Survival

<table>
<thead>
<tr>
<th>Authors</th>
<th>Publication year</th>
<th>Number of patients</th>
<th>Survival rate 5-year</th>
<th>Survival rate 30-day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swierczewski et al</td>
<td>1994</td>
<td>100</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>Glazer et al (Neves IV only)</td>
<td>1996</td>
<td>18</td>
<td>89%</td>
<td>57%</td>
</tr>
<tr>
<td>Nesbitt et al</td>
<td>1997</td>
<td>37</td>
<td>97%</td>
<td>34%</td>
</tr>
<tr>
<td>Kakut et al</td>
<td>2008</td>
<td>68</td>
<td>94%</td>
<td>37%</td>
</tr>
<tr>
<td>Ciancio et al</td>
<td>2009</td>
<td>87</td>
<td>97%</td>
<td>46%</td>
</tr>
<tr>
<td>Nooromid et al</td>
<td>2016</td>
<td>37</td>
<td>100%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Summary

- Suprahepatic venous tumor thrombus was associated with increased
  - Operative time
  - Blood loss
  - Length of stay in intensive care unit

- Advanced tumor thrombus did not significantly impact long-term survival

Conclusion

With a multidisciplinary surgical approach to renal cell carcinoma presenting with venous tumor thrombus, perioperative morbidity and overall survival have continued to improve.