DOES PATHOLOGICAL T3A UPSTAGING OF CLINICAL T1 STAGE HAS ANY DIFFERENCE ON LONG TERM SURVIVAL WHEN COMPARED TO PATHOLOGICAL & CLINICAL T1 STAGE RENAL CELL CARCINOMA

Nouman Khan, M. Arshad Irshad Khalil, Azfar Ali, Aleesha Naem, Abdul Rahman, Khurram Mir
Surgical Oncology department Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore, Pakistan

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Abstract

**Background:** A high number of cT1 stage Renal Cell Cancer (RCC) are upstaged to pT3a stage on histopathological findings. Several studies results show that there is no survival difference among those cT1 stage who are upstage on histopathological findings to those who remain pT1 stage RCC.

**Objectives:** To assess any survival difference for cT1 stage Renal Cell Carcinoma (RCC) which are upstaged to pT3a stage as compared to those which remain pT1 stage RCC on histopathological findings.

**Methods:** It was retrospective cohort study looking at patient aged ≥18 years with cT1 RCC who underwent nephrectomy between Jan 2006 and Dec 2016. Patients were divided into two groups based on histopathological findings (pT1 vs. pT3a). Survival was analysed for the two groups using Kaplan Meier method and the difference in survival was calculated using log rank model.

**Results:** The study included 187 patients. The mean age at presentation was 52.56 years, with 58.3% of the patients being male while 41.7% were female. The most common presentation was incidental diagnosis (50.3%). Overall 5 years survival for cT1a & pT1a RCC was 68% while that for cT1a & pT3a RCC was 100%. There was no significant survival difference among the two groups (P = 0.316). The overall 5 year survival for cT1b & pT1b RCC was 81% while that for cT1b & pT3a was 65%. There was no significant survival difference among the two groups (P = 0.136).

**Conclusion:** We found no survival difference in cT1 RCC who were upstaged to pT3a on histopathology as compared to cT1 RCC staged pT1 on histopathology.

**Key words:** Renal cell carcinoma, radical nephrectomy, cT1 stage, pT3a stage, survival.

**Introduction:**

According to the American joint committee for cancer (AJCC) 8th edition [1] clinical T1 stage (cT1) RCC is 7 or less than 7cm in size with no evidence of perinephric fat, renal sinus fat, pelvicalyceal system segmental or renal vessels or adrenal invasion on imaging modalities. Pathological T3a stage (pT3a) tumours are those tumours that have evidence of involvement of perinephric fat or pelvicalyceal system or renal sinus fat or segmental/renal vessels on pathological findings irrespective of tumour size. There is significant survival difference among the various pT stage tumours and has been observed in multicentre cohort studies [2, 3]. According to several studies there is no significant survival difference between the renal cell carcinoma that are clinically and pathologically T1 stage when compared to cT1 stage tumours but pT3a tumours [4,5]. Main aim of our study was to assess any survival difference between cT1 stage RCC which was upstaged to pT3a on histopathological examination.

**Materials and Methods**

This study involved retrospective collection of data from Jan 2006 to Dec 2016 following approval from Institutional Review Board of Shaukat Khanum Cancer Hospital & Research Centre Lahore. Data included demographic features, clinical, pathological and oncological variables. CT/MRI images and histopathological reports were reviews and AJCC 8th
All those patients, who underwent surgery for renal tumours from January 2006 to December 2016 with proven histology of renal cell carcinoma having clinical stage T1 on initial diagnosis, were included in the study. Patients with histology other than RCC, nodal disease, metastatic disease or clinical T stage greater than 1 were excluded from the study.

The patients were further divided into 2 groups. Group 1 included those patients who had clinical T1 stage disease on initial diagnosis and pathological T1 stage on histopathological findings. Group 2 included those patients who had clinical T1 stage but T3a histopathological stage. Data was analysed using SPSS 20 software, survival analysis was performed on the two groups using Kaplan Meier method and any significant survival difference among the two groups was calculated using log rank model. P value < 0.05 was considered significant.

Results

A total of 187 patients were included in our study. The mean age at presentation was 52.56 years. There was a male preponderance (n=109, 58.3%) and 41.7% (n=78) were female patients. The most common presentation was incidental diagnosis (50.3%), 30.5% patients presented with pain and 18% patients with haematuria. Other characteristics are summarised in table 1.

Over all 98 patients had cT1a stage tumour at presentation among which 91 (92.9%) had pT1a stage tumour and 7(7.1%) had pT3a on histopathological findings. Median survival for cT1a & pT1a was 108 months while that for cT1a & pT3a was 132 months. Using Kaplan Meier analysis 5-year overall survival for cT1a & pT1a RCC was 68% (SE: 0.102) while that for cT1a & pT3a RCC was 100% (Figure 1). There was no significant difference among the two groups in terms of overall survival using log rank test (P = 0.316).

Table 1: Patient Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Male</td>
<td>109</td>
<td>58.3%</td>
</tr>
<tr>
<td>2  Female</td>
<td>78</td>
<td>41.7%</td>
</tr>
<tr>
<td>3  Right renal tumour</td>
<td>93</td>
<td>49.7%</td>
</tr>
<tr>
<td>4  Left renal tumour</td>
<td>94</td>
<td>50.3%</td>
</tr>
<tr>
<td>5  Pain at presentation</td>
<td>57</td>
<td>30.5</td>
</tr>
<tr>
<td>6  Hematuria at presentation</td>
<td>35</td>
<td>18%</td>
</tr>
<tr>
<td>7  Diagnosed incidentally</td>
<td>94</td>
<td>50.3%</td>
</tr>
</tbody>
</table>

Similarly 89 patients had T1b stage tumour at presentation among which 76 (85.4%) had pT1b stage tumour and 13 (14.6%) patients had pT3a tumour. Median time of survival for cT1b & pT1b was 120 months and that for cT1b & pT3a stage tumour was 72.3 months as described in table 2.

The overall 5 year survival for cT1b & pT1b RCC was 81% (SE: 0.062) while that for cT1b & pT3a was 65% (SE: 0.17) using Kaplan-Meier model as shown in figure 2. There was no significant survival difference among the 2 groups using log rank test (P = 0.136). However, the projected difference in survival beyond 5 years needs to be further looked into.

Table 2: Median and Overall Survival

<table>
<thead>
<tr>
<th>Clinical &amp; Pathological T stage</th>
<th>Median survival (months)</th>
<th>Overall survival 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>cT1a &amp; pT1a</td>
<td>108</td>
<td>68%</td>
</tr>
<tr>
<td>cT1a &amp; pT3a</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>cT1b &amp; pT1b</td>
<td>120</td>
<td>81%</td>
</tr>
<tr>
<td>cT1b &amp; pT3a</td>
<td>72.3</td>
<td>65%</td>
</tr>
</tbody>
</table>

Incidentally diagnosed patients had 5-years survival of 82% while those who presented with symptoms had 5-years survival of 72% (figure 3). There was no significant overall survival difference among the two groups (P = 0.119).
Figure 2: Survival function cT1b vs pT3a

Discussion

We found that 7.1% & 14.6% of cT1a & cT1b RCC are upstaged to pT3a on pathological evaluation respectively. However there was no significant difference in the median or overall survival of the two groups over 5 years.

Most of renal cancers are diagnosed incidentally [6, 7] and globally the most common stage at presentations is clinical T1 [8]. Overall and disease free survival of cT1 RCC is good and can be managed with radical nephrectomy, nephron sparing surgery or active surveillance [9]. As high as 30% of patients with cT1 stage tumour turn out to be pT3a stage tumour on histopathological findings. Since pT3a has an adverse survival outcome as compared to pT1 stage tumours [2, 3], a high number of patients with cT1 stage are upgraded on final histopathological findings.

In our study the upstaging was noted in 7.1% & 14.6% of cT1a & cT1b tumours respectively which was similar to other international studies (5-15%) [5, 10]. The question, whether this upstaging of cT1 stage tumour on histopathological findings has any effect on survival outcomes, has been addressed in several studies and have concluded that there is no survival difference among the cT1 that are upstaged to pT3a as compared to pT1 stage tumours [11,12]. We found that 5-year overall survival for cT1a & pT1a RCC was 68 ± 0.2% (SE: 0.102, CI 95%) while that for cT1a & pT3a RCC was 100%. No significant difference was noted among the two groups in terms of overall survival using log rank test (P = 0.316). Similarly the overall 5 year survival for cT1b & pT1b RCC was 81± 0.121 % (SE: 0.062, CI 95%) while that for cT1b & pT3a was 65%, there was no significant survival difference between the two groups (P = 0.136).

In our study we noted 10.96% upstaging of cT1 stage renal cell cancer to pT3a stage and this upstaging is not associated with poor long term outcomes. The number of patients in our study was much smaller but our findings and literature review shows similar results which demands further studies on this topic with large number of patients.

Conclusion

We found no survival difference in cT1 RCC who were upstaged to pT3a on histopathology as compared to cT1 RCC staged pT1 on histopathology.

References


