

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

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Received: 21 February 2018 / Accepted: 25 June 2018

### Abstract

**Background:** A high number of clinical T1 (cT1) stage renal cell carcinoma (RCC) is upstaged to pathological T3a (pT3a) stage on histopathological findings. Several study results show that there is no survival difference among those cT1 stage who are upstaged on histopathological findings to those who remain pT1 stage RCC.

**Objectives:** The objectives of this study were to assess any survival difference for cT1 stage renal cell carcinoma (RCC) which is upstaged to pT3a stage as compared to those which remain pT1 stage RCC on histopathological findings.

**Materials and Methods:** It was a retrospective cohort study looking at patient aged  $\geq 18$  years with cT1 RCC who underwent nephrectomy between January 2006 and December 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-year survival for cT1a and pT1a RCC was 68% while that for cT1a and pT3a RCC was 100%. There was no significant survival difference among the two groups ( $P = 0.316$ ). The overall 5-year survival for cT1b and pT1b RCC was 81% while that for cT1b and 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:** Clinical T1 stage, pathological T3a stage, radical nephrectomy, renal cell carcinoma, survival

### Introduction

According to the American Joint Committee on Cancer (AJCC) 8<sup>th</sup> edition,<sup>[1]</sup> clinical T1 (cT1) stage RCC is 7 or <7 cm 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 (pT3a) stage tumours are those tumours that have evidence of the involvement of perinephric fat or pelvicalyceal system or renal sinus fat or segmental/renal vessels on pathological findings irrespective of tumour size. There is a significant survival difference among the various pT stage tumours and has been observed in multicentre cohort studies.<sup>[2,3]</sup> According to several studies, there is no significant survival difference between the renal cell carcinomas that are clinically and pT1 stage when compared to cT1 stage tumours but pT3a tumours.<sup>[4,5]</sup> The main aim of our study was to assess any

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survival difference between cT1 stage RCC which was upstaged to pT3a on histopathological examination.

### Materials and Methods

This study involved a retrospective collection of data from January 2006 to December 2016 following approval from the Institutional Review Board of Shaukat Khanum Cancer Hospital and Research Centre, Lahore. Data included demographic features, clinical, pathological and oncological variables. Computed tomography/magnetic resonance imaging images and histopathological reports were reviewed, and the AJCC 8<sup>th</sup> edition TNM staging system was used for clinical and pathological staging of the RCC retrospectively.

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 cT stage >1 were excluded from the study.

The patients were further divided into two groups. Group 1 included those patients who had cT1 stage disease on initial diagnosis and pT1 stage on histopathological findings. Group 2 included those patients who had cT1 stage but T3a histopathological stage. Data were 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.  $P < 0.05$  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% of patients presented with pain and 18% of patients with haematuria. Other characteristics are summarised in Table 1.

Overall, 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

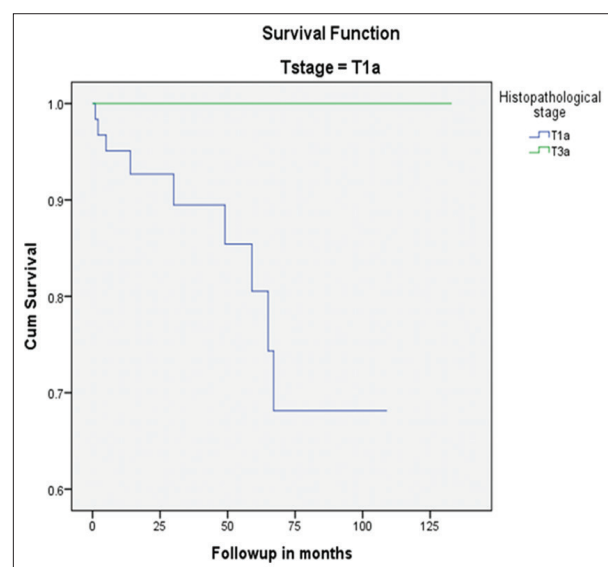
survival for cT1a and pT1a was 108 months while that for cT1a and pT3a tumour was 132 months. Using Kaplan–Meier analysis, 5-year overall survival for cT1a and pT1a RCC was 68% (standard error [SE]: 0.102) while that for cT1a and pT3a RCC was 100% [Figure 1]. There was no significant difference among the two groups in terms of overall survival using log-rank test ( $P = 0.316$ ).

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 and pT1b was 120 months and that for cT1b and pT3a stage tumour was 72.3 months as described in Table 2.

The overall 5-year survival for cT1b and pT1b RCC was 81% (SE: 0.062) while that for cT1b and pT3a was

**Table 1: Patient characteristics**

Characteristics	n (%)
Male	109 (58.3)
Female	78 (41.7)
Right renal tumour	93 (49.7)
Left renal tumour	94 (50.3)
Pain at presentation	57 (30.5)
Haematuria at presentation	35 (18)
Diagnosed incidentally	94 (50.3)



**Figure 1:** Survival function clinical T1a versus pathological T3a

**Table 2: Median and overall survival**

Clinical and pathological T stage	Median survival (months)	Overall 5-year survival (%)
cT1a and pT1a	108	68
cT1a and P T3a	132	100
cT1b and pT1b	120	81
cT1b and pT3a	72.3	65

cT1b: Clinical T1b, pT3a: Pathological T3a

65% (SE: 0.17) using Kaplan–Meier model as shown in Figure 2. There was no significant survival difference among the two groups using log-rank test ( $P = 0.136$ ). However, the projected difference in survival beyond 5 years needs to be further looked into.

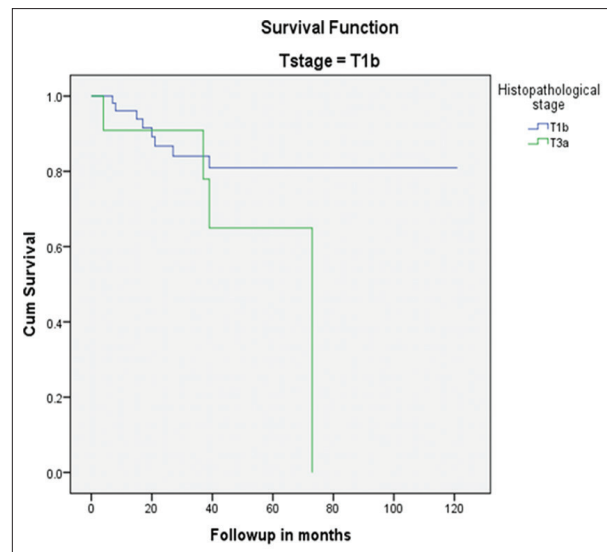
Incidentally diagnosed patients had 5-year survival of 82% while those who presented with symptoms had 5-year survival of 72%. There was no significant overall survival difference among the two groups ( $P = 0.119$ ).

### Discussion

We found that 7.1% and 14.6% of cT1a and 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 the renal cancers are diagnosed incidentally,<sup>[6,7]</sup> and globally, the most common stage at presentations is cT1.<sup>[8]</sup> Overall and disease-free survival of cT1 RCC is good and can be managed with radical nephrectomy, nephron-sparing surgery or active surveillance.<sup>[9]</sup> 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,<sup>[2,3]</sup> a high number of patients with cT1 stage are upgraded on final histopathological findings.

In our study, the upstaging was noted in 7.1% and 14.6% of cT1a and cT1b tumours, respectively, which was similar to other international studies (5–15%).<sup>[5,10]</sup> 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 has concluded that there is no survival difference among the cT1 that is upstaged to pT3a as compared to pT1



**Figure 2:** Survival function clinical T1b versus pathological T3a

stage tumours.<sup>[11,12]</sup> We found that 5-year overall survival for cT1a and pT1a RCC was  $68 \pm 0.2\%$  (SE: 0.102, CI 95%) while that for cT1a and 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 and pT1b RCC was  $81 \pm 0.121\%$  (SE: 0.062, confidence interval 95%) while that for cT1b and pT3a was 65%, and 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 show similar results which demand further studies on this topic with a 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.

### Conflict of Interest

The authors declare that they have no conflict of interest.

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