Pathologic Determinants of Recurrence and Survival in Stage II Renal Cell Cancer

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Introduction

- Stage II RCC has heterogeneous oncologic outcomes
  - Risk of progression, recurrence, and survival may vary widely
- Objective: Analyze pathologic risk factors associated with oncologic outcomes from Stage II RCC in a multicenter, international cohort

Methods

- Retrospective international multicenter analysis of patients who underwent surgical excision of localized stage II renal masses (T2N0M0/AJCC Stage II) from 1987-2015.
- Primary endpoint: recurrence-free survival (RFS)
- Secondary endpoint: overall survival (OS)
- Multivariable analysis (MVA) and Kaplan−Meier Analysis (KMA) were performed

Results

- 1,328 patients analyzed
  - Mean age: 59.2 years
  - Median follow-up: 62.7 months
  - 66.4% male, 33.6% female
  - 20% partial nephrectomy, 80% radical nephrectomy
  - Total number of recurrences: 22.3% (296)
    - No significant difference in age, gender, comorbidities

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Preoperative Tumor Characteristics

Variable	Recurrence	No Recurrence	p-value
Clinic Tumor Size	9.9 ± 2.6	10.0 ± 2.7	0.388
Surgical Approach			**<0.001**
RN	259 (87.5%)	804 (77.9%)	
PN	37 (12.5%)	228 (22.1%)	

Pathologic Details

Variable	Recurrence (n=296)	No Recurrence (n=1032)	p-value
pTumor Size	10.2 ± 3.2	9.4 ± 2.8	**<0.001**
Fuhrman Grade			**<0.001**
Low (1&2)	42.9%	61.6%	
High (3&4)	57.1%	38.4%	
Necrosis	41.8%	38.4%	0.377
LVI	27.7%	14.4%	**<0.001**
Positive Margin	7.1%	1.6%	**<0.001**
All-Cause Mortality	72.9%	21.8%	**<0.001**
Length of Follow Up (months)	52.0 ± 46.8	66.1 ± 58.2	**<0.001**

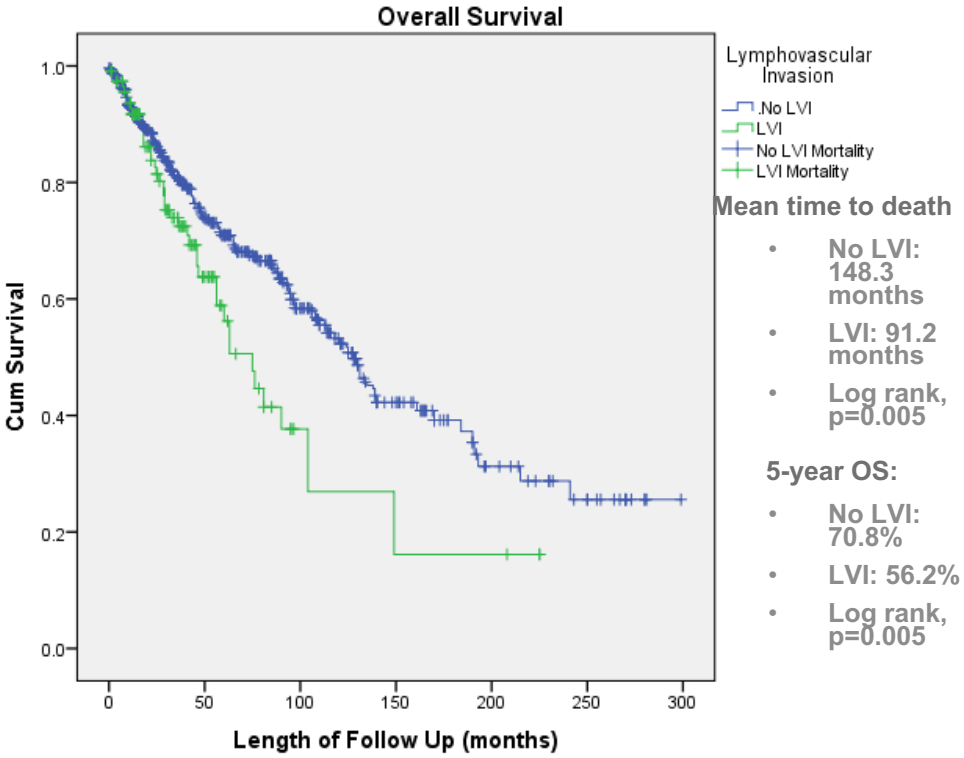
Logistic Regression for Recurrence

Variable	OR	95%CI Low	95%CI High	sig
Tumor Size	.999	.894	1.117	.990
Radical Neph	4.682	1.455	15.066	.010
LND	.999	.541	1.845	.998
# Nodes Removed	.983	.935	1.033	.502
High Grade	2.353	1.451	3.815	.001
Necrosis	.917	.556	1.514	.736
LVI	2.034	1.131	3.657	.018
Positive Margin	2.67	2.165	3.215	.012

Logistic Regression for All-Cause Mortality

Variable	OR	95%CI Low	95%CI High	sig
Tumor Size	.966	.885	1.053	.429
Radical Neph	4.158	1.828	9.457	.001
LND	1.417	.893	2.247	.139
# Nodes Removed	.991	.957	1.027	.623
High Grade	1.224	.852	1.758	.274
Necrosis	1.225	.857	1.752	.266
LVI	.663	.399	1.104	.114
Positive Margin	3.952	.350	44.669	.267

Results

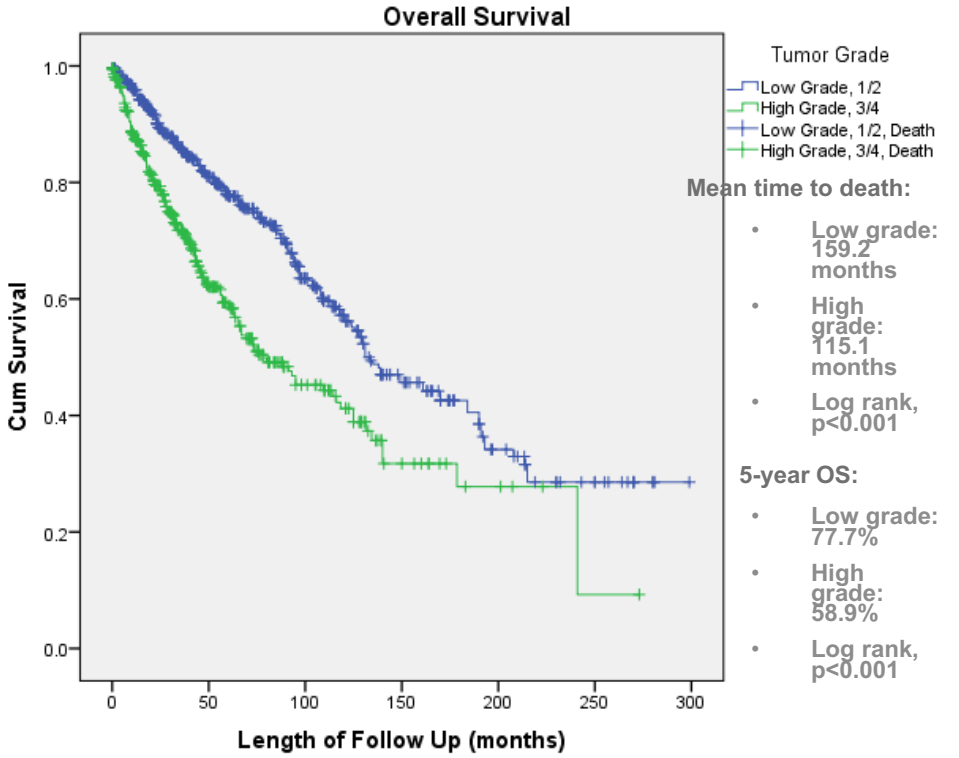


Mean time to death

- No LVI: 148.3 months
- LVI: 91.2 months
- Log rank, p=0.005

5-year OS:

- No LVI: 70.8%
- LVI: 56.2%
- Log rank, p=0.005



Mean time to death:

- Low grade: 159.2 months
- High grade: 115.1 months
- Log rank, p<0.001

5-year OS:

- Low grade: 77.7%
- High grade: 58.9%
- Log rank, p<0.001

Conclusions

- For stage II RCC, LVI and Tumor Grade 3/4 are independently associated with increased recurrence and worse overall survival
- Further investigation is requisite and may add weight to consider these specific stage II RCC patients as a higher risk subgroup with implications for staging revision and clinical trial design.

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