

Survival Outcomes of Non-metastatic, Non-clear cell Renal Cell Carcinoma (non-ccRCC) after Surgery



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Introduction

- Clear cell carcinoma is the most common type of RCC, comprising 75-85% of RCC.
- Prior studies show non-clear cell renal cell carcinoma (ccRCC) including papillary, chromophobe, and oncocytic RCC have favorable prognosis while collecting duct RCC has worse prognosis compared to ccRCC.
- To date, most studies focused on survival differences in non-ccRCC in metastatic setting.
- In this study, we aim to identify characteristics and treatment outcome for non-metastatic ccRCC.

Materials and Methods

- National Cancer Database was utilized to identify patients with non-metastatic RCC (T1-T4, N0-N1), including papillary, chromophobe, sarcomatoid, collecting duct, and clear cell histology between 2004 and 2016.
- Inclusion criteria: diagnosis of RCC, age ≥ 18, received treatment
- Exclusion criteria: inadequate treatment information, > 1 cancer during lifetime
- Overall survival (OS) was defined as time from diagnosis of RCC until death due to any cause. Median OS (mOS) is calculated as time from diagnosis until 50% of patients are still alive.
- Cox regression models were used to assess overall survival.

Results

- A total of 42,104 patients with non-metastatic, non-ccRCC were identified, including papillary (65.3%), chromophobe (30.3%), sarcomatoid (3.7%), and collecting duct (1%).
- 178,066 patients with non-metastatic, ccRCC were identified for comparison. Treatment modalities included surgery, radiation, and/or chemotherapy and were utilized in 94.9%, 0.3%, and 1.4% of patients.
- The 5-year OS for chromophobe, papillary, clear cell, collecting duct, and sarcomatoid RCC were 91%, 82%, 81%, 44%, and 40%, respectively.
- After adjusting for demographic and treatment characteristics, the OS in papillary was not found to be significantly different from the clear cell.
- Patients with collecting duct and sarcomatoid histology were at over two times increased risk of death compared to patients with clear cell. Conversely, patients with chromophobe were at 36% decreased risk of death compared to clear cell.

Figure 1 – OS by histology

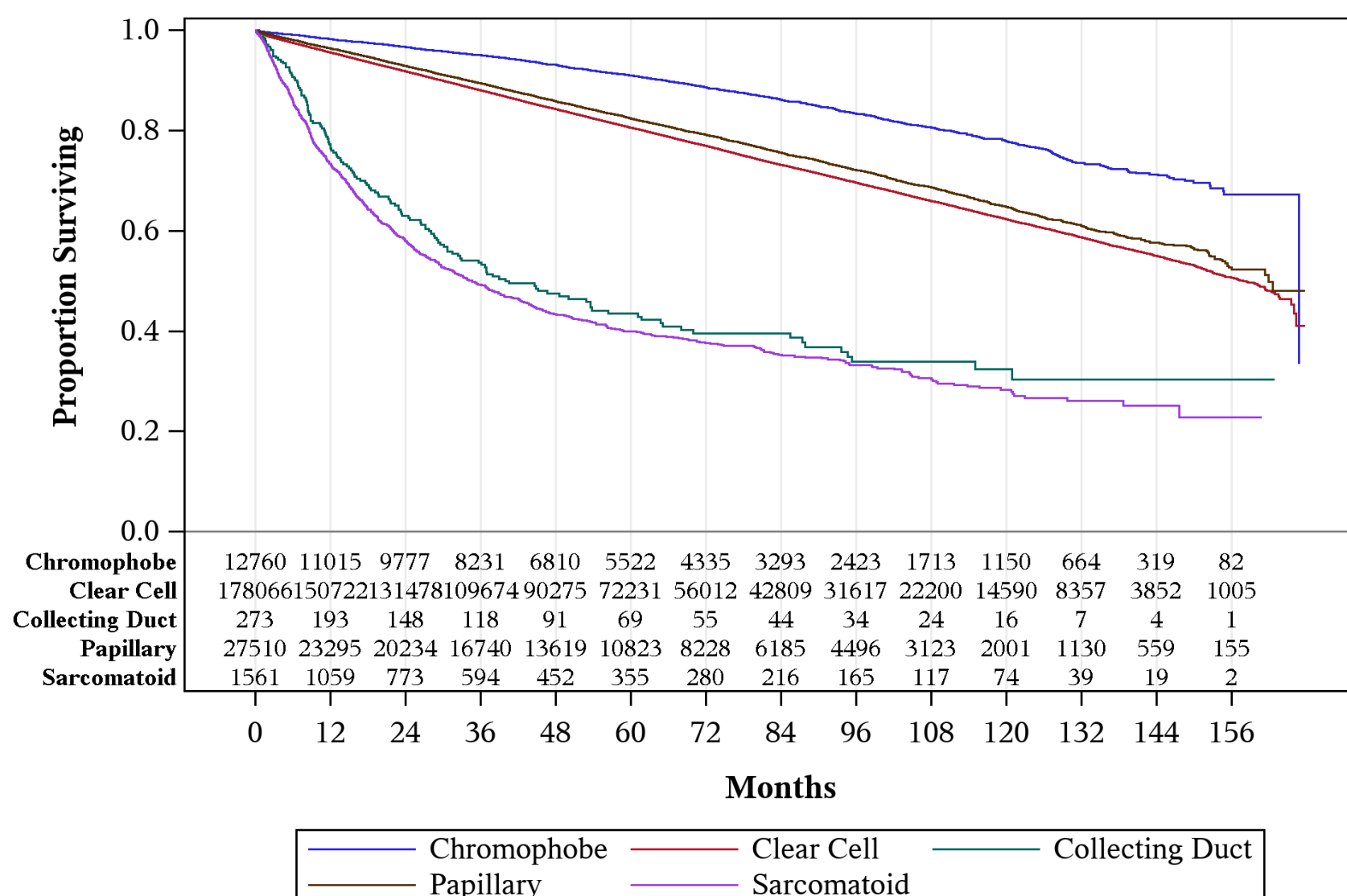


TABLE 1 – Multivariable results

Covariate	Level	N	Overall Survival			
			Hazard Ratio	95% CI	P-value	
Facility Type	Non-academic	91200	1.00	0.96	1.04	0.98
	Academic	60056	Ref	-	-	
Facility Location	Central	68701	1.06	1.02	1.10	0.03
	Mountain & Pacific	21949	1.03	0.98	1.09	
	New England & Atlantic	60606	Ref	-	-	
	15+ cases	24784	1.07	1.03	1.10	
Cases For Year of Diagnosis	<15 cases	126472	Ref	-	-	<.01
	15+ cases	126472	1.07	1.03	1.10	
Sex	Male	91605	1.16	1.13	1.19	<.01
	Female	59651	Ref	-	-	
Age	65+	60644	1.75	1.69	1.82	<.01
	<65	90612	Ref	-	-	
Race \ Ethnicity	Black	15920	1.11	1.06	1.16	<.01
	Hispanic	10083	0.76	0.72	0.81	
	Other	4365	0.82	0.75	0.90	
	White	120888	Ref	-	-	
Primary Payor	Not insured	4859	1.42	1.31	1.54	<.01
	Public	71712	1.68	1.62	1.75	
	Private	74685	Ref	-	-	
Median Income Quartiles 2008-2012	<\$48,000	63785	1.18	1.15	1.22	<.01
	\$48,000+	87471	Ref	-	-	
Area	Urban/Rural	27507	0.98	0.94	1.01	0.21
	Metro	123749	Ref	-	-	
Distance to hospital	50+ miles	23351	1.04	1.00	1.08	0.08
	<50 miles	127905	Ref	-	-	
Charlson-Deyo Score	2-3	13818	1.99	1.92	2.06	<.01
	0-1	137438	Ref	-	-	
	Well differentiated	21089	0.71	0.69	0.73	
Grade	Moderately differentiated	82571	0.70	0.67	0.73	<.01
	Poorly or Undifferentiated	47596	Ref	-	-	
	Chromophobe	6723	0.64	0.59	0.68	
Histology	Collecting Duct	188	2.26	1.82	2.82	<.01
	Papillary	19086	1.03	0.99	1.07	
	Sarcomatoid	1083	2.60	2.33	2.91	
	Clear Cell	124176	Ref	-	-	
NCDB Analytic Stage Group	Stage II	17695	1.35	1.31	1.40	<.01
	Stage III	24540	1.94	1.88	2.00	
	Stage I	109021	Ref	-	-	
Surgery	None	1787	2.92	2.68	3.18	<.01
	Ablation/Excision	5660	1.19	1.12	1.27	
	Partial	49597	0.61	0.58	0.63	
	Simple	16100	1.00	0.96	1.04	
Regional Lymph Node Surgery	Radical	78112	Ref	-	-	<.01
	Yes	15465	1.24	1.19	1.28	
Radiation	No	135791	Ref	-	-	<.01
	Yes	350	1.90	1.58	2.29	
Chemotherapy	No	150906	Ref	-	-	<.01
	Yes	1942	1.79	1.64	1.95	
	No	149314	Ref	-	-	

TABLE 2 – 5-year OS by histology

Variable	Level	5 Year OS (95% CI)
Histology	Chromophobe	91% (90-92%)
	Clear Cell	81% (80-81%)
	Collecting Duct	44% (37-50%)
	Papillary	82% (82-83%)
	Sarcomatoid	40% (37-43%)

Conclusions

- Collecting duct and sarcomatoid histology are uncommon but are associated with poor survival after surgery when compared to the other RCC subtypes.
- Further studies are needed to evaluate the role of adjuvant treatment in these subtypes to improve their outcomes

References

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