Abstract 395: Impact of age on functional decline following radical nephrectomy: Analysis of the International Marker Consortium for Renal Cancer (INMARC)

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Background:

- Radical Nephrectomy (RN) is a mainstay of management of localized renal tumors >4 cm.
- RN is associated with renal functional decline, however impact of age on functional decline after RN is unclear.
- We investigated impact of age on post RN function, focusing on decline to moderate and severe chronic kidney disease (CKD).

Methods:

- Retrospective analysis of the INMARC registry of patients who underwent RN.
- Primary outcome was development of de novo CKD stage IIIB [estimated glomerular filtration rate (eGFR) <45 mL/min/1.73m2).
- Secondary outcomes included de novo CKD stage III (eGFR<60) and CKD Stage IV (eGFR<30).
- Patients were stratified by age groups (<50, 50-70 and >70 years old).
- Multivariable logistic regression analysis (MVA) was utilized to identify risk factors with renal functional decline to different CKD stages.
- Kaplan-Meier analysis (KMA) was utilized to evaluate functional outcomes with respect to the different age groups.

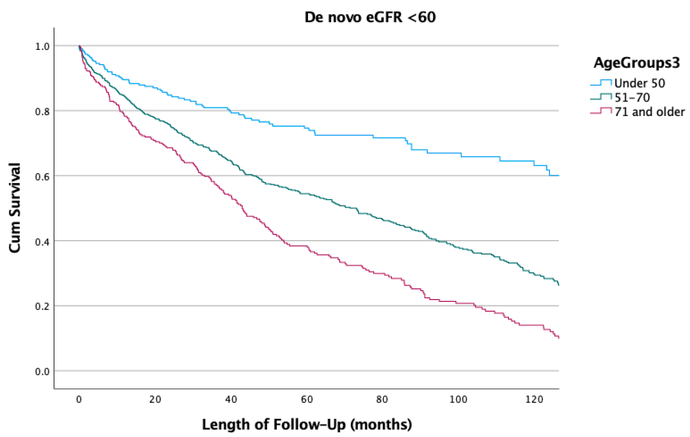
Tables and Figures:

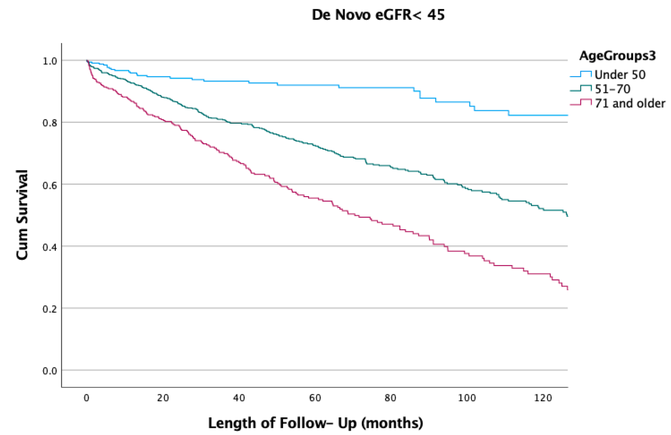
Demographics

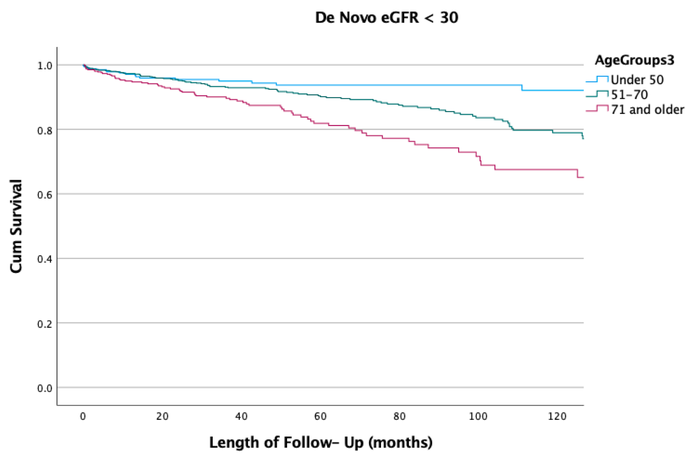
	Under 50	50-70	Over 70	P-Value
All Patients	513 (21.1%)	1344 (55.2%)	579 (23.8%)	
Sex (n, %)				<0.001
Female	192 (19.5%)	543 (55.1%)	251 (25.5%)	
Male	321 (22.1%)	801 (55.2%)	328 (22.6%)	
Race/Ethnicity (n, %)				<0.001
African-American	100 (24.2%)	239 (57.9%)	74 (17.9%)	
White	214 (18.3%)	648 (55.4%)	309 (26.4%)	
Asian	103 (20.0%)	274 (53.2%)	138 (26.8%)	
Other	96 (28.6%)	182 (54.2%)	58 (17.3%)	
Mean BMI (kg/m² ± SD)	28.7 ± 6.9	8.4 ± 7.2	26.5 ± 5.4	0.138
HTN (n, %)	118 (12.3%)	560 (58.5%)	279 (29.2%)	<0.001
Diabetes (n, %)	86 (13.8%)	383 (61.7%)	152 (24.5%)	<0.001
CAD (n, %)	22 (8.5%)	152 (58.5%)	86 (33.1%)	<0.001
Mean Tumor Size (cm ± SD)	6.6 ± 4.2	6.6 ± 4.0	6.4 ± 3.1	0.379
Mean Preoperative eGFR (mL/min/1.73m2± SD)	73.3 ± 39.5	63.7 ± 30.8	62.3 ± 23.1	<0.001
Mean eGFR at Last Follow up (mL/min/1.73m2 ± SD)	61.4 ± 31.5	49.5 ± 25.1	43.5 ± 26.1	<0.001
Mean Delta eGFR mL/min/1.73m2 ± SD)	-13.5 ± 30.7	-15.3 ± 24.1	-19.5 ± 17.8	<0.001
De novo CKD III	76 (10.7%)	396 (55.9%)	236 (33.3%)	<0.001
De novo CKD IIIb	30 (6.3%)	259 (54.8%)	184 (38.9%)	<0.001
De novo CKD IV	19 (10.4%)	93 (51.1%)	70 (38.5%)	<0.001
Median length of follow-up (months, IQR)	34.3, 74	32.4, 64	28.2, 54	

Multivariable analysis for predictors of de novo eGFR<45

Variables	HR (95% CI)	95% C.I.	P-Value
Age (<50, referent)			<.001
51-70	3.35	2.14 – 5.25	<.001
Over 70	7.70	4.77- 12.43	<.001
Ethnicity (AA vs. other)	1.60	1.12- 2.28	0.01
Increasing BMI (continuous)	1.03	1.01- 1.05	0.002
DM (Yes vs. No)	1.37	1.03- 1.83	0.03
CAD (Yes vs. No)	1.70	1.13- 2.55	0.01
Tumor Size (<4cm, referent)			0.23
4-7cm	0.82	0.60- 1.13	0.23
>7cm	0.76	0.55- 1.04	0.09







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Results:

- 2436 patients were analyzed (≤50 years, n=513; 50-70 years, n=1344; >70, n=579; median follow up 31.9 months).
- On MVA, increasing age was independently associated with increased risk of development of CKD Stage IIIb [compared to ≤50 years (referent), 50-70 years, OR 3.35, p<0.001 and >70 years OR 7.7, p<0.001].
- Increasing age was also independently associated with an increased risk of development of CKD Stage III [compared to ≤50 years (referent), 50-70 years, OR 3.4 p<0.001 and >70 years OR 9.4, p<0.001].
- Age >70 years was independently associated with increased risk of development of CKD Stage IV [OR 1.96, p=0.027].
- KMA demonstrated age associated declines in 5-year freedom from CKD Stage III (≤50 years 73.9%, 50-70 years 53.7%, and >70 years 37.06%, p<0.001), CKD Stage IIIb (age ≤50 years 92.7%, 50-70 years 71.8%, and >70 years 55.5%, p<0.001) and CKD Stage IV (age ≤50 years 93.7%, 50-70 years 89.8%, and >70 years 81.2%, p< 0.001).

Conclusions:

- Increasing age is a risk factor for progressive and clinically significant renal functional decline after RN.
- Prioritization for nephron sparing management should be considered when safe and feasible in elderly patients.

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