

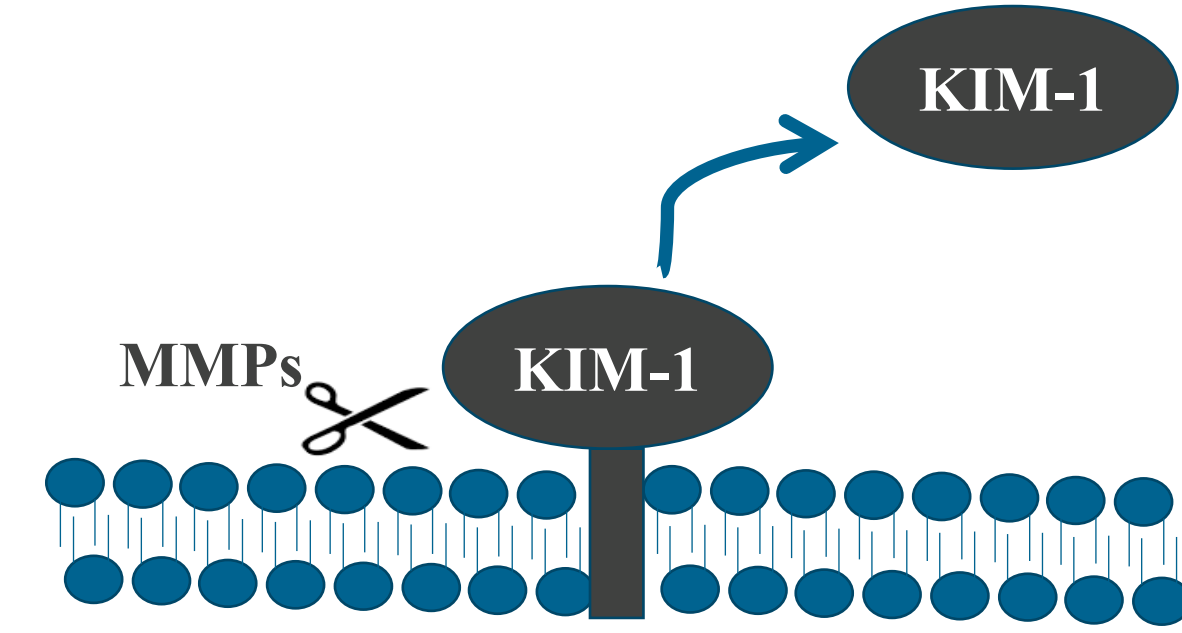
Plasma KIM-1 for preoperative identification and risk stratification of renal cell carcinoma

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BACKGROUND

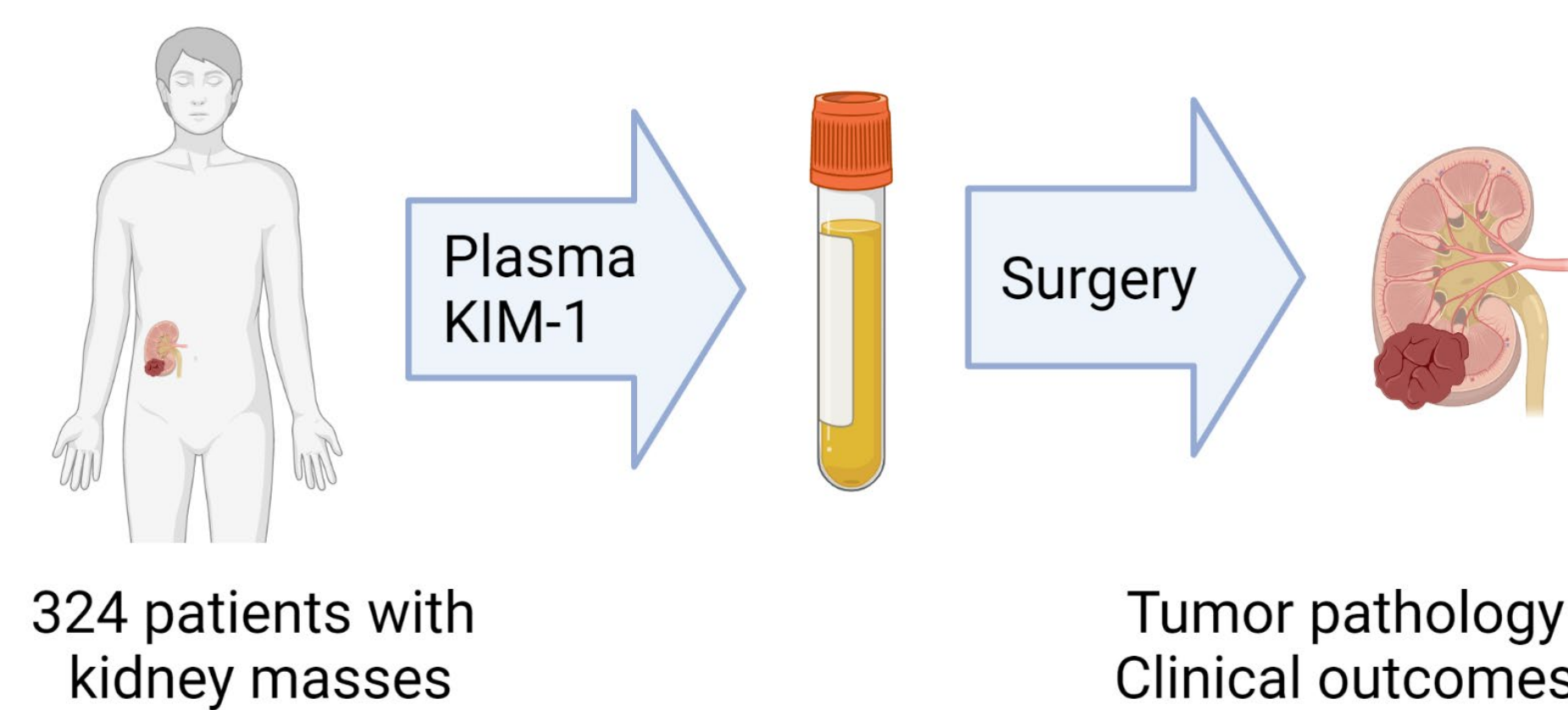
- Deciding between active surveillance versus surgery for patients with small renal masses is a challenge.
- Kidney injury molecule-1 (KIM-1), shed into plasma from renal cell carcinoma cells, is a candidate circulating biomarker for renal cell carcinoma detection and risk stratification.^{1,2}
- In the E2805/ASSURE trial, high KIM-1 after nephrectomy was associated with worse DFS and worse OS.³
- We sought to determine whether plasma KIM-1 can assist in the pre-nephrectomy risk stratification of patients with suspicious kidney masses.



Specific Hypotheses:

- Can plasma KIM-1 help distinguish benign vs malignant renal masses?
- Can KIM-1 be used to prognosticate patients prior to surgery for suspected RCC?

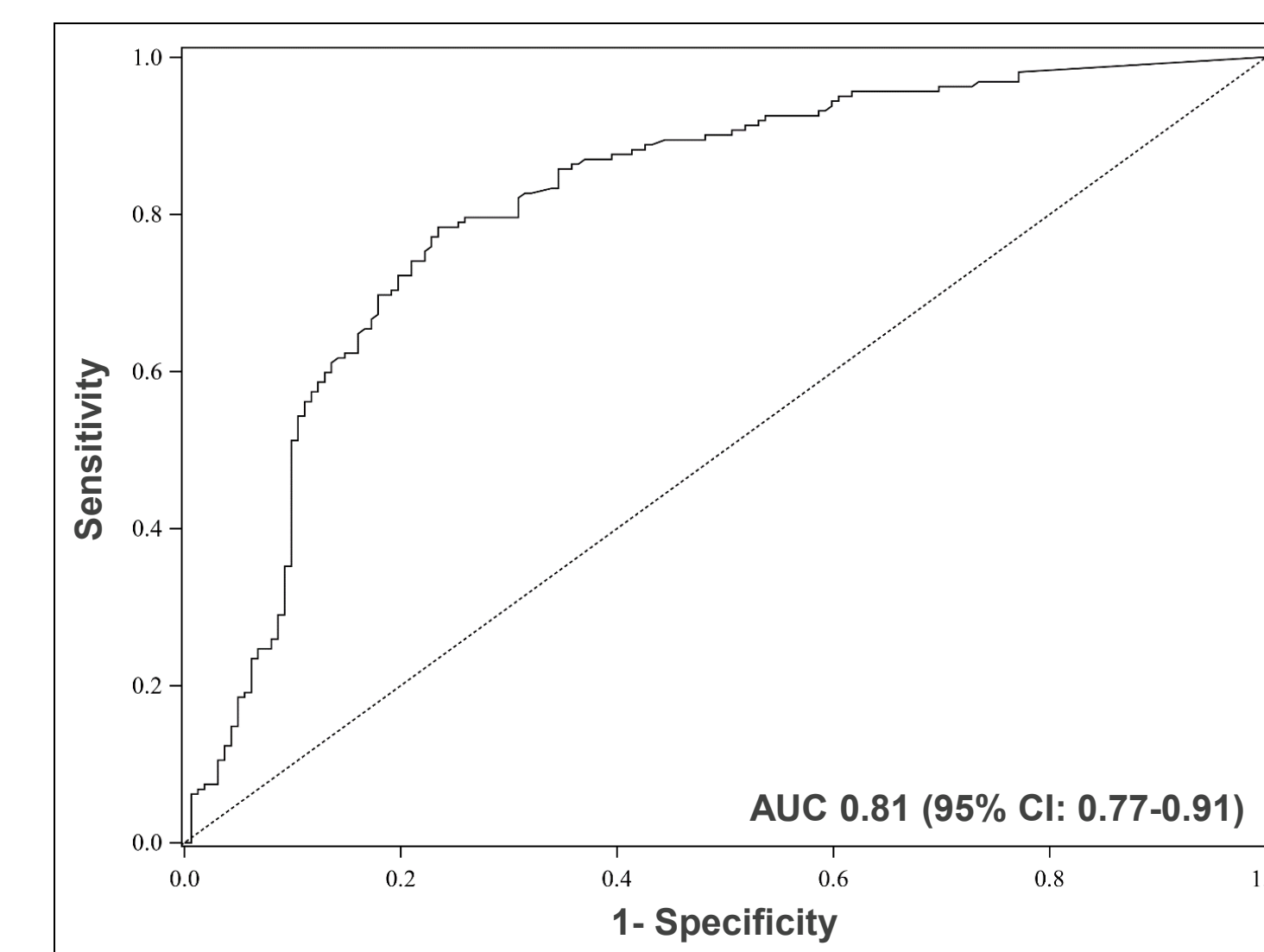
METHODS



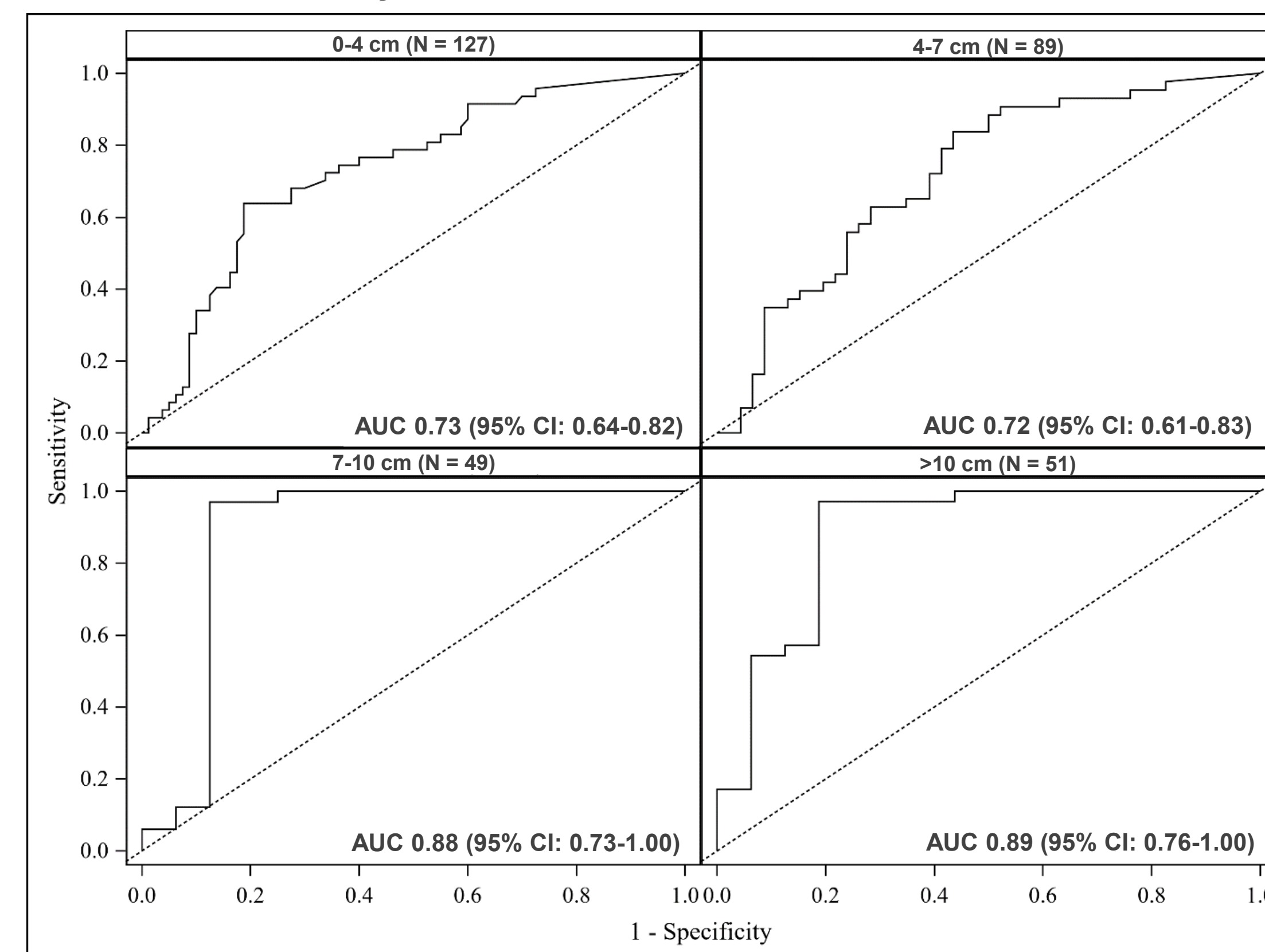
- The WHO/IARC K2 study prospectively enrolled adults with kidney masses at the N.N. Blokhin Russian Medical Research Center for Oncology Moscow from 2007-2012.
- We measured plasma KIM-1 in banked plasma from 162 patients subsequently found to have ccRCC (cases) and 162 patients with benign renal masses (controls).
- KIM-1 was measured using a microbead-based ELISA assay
- Patients were followed prospectively to determine clinical outcomes.

Plasma KIM-1 distinguishes clear cell RCC vs benign renal masses

All patients



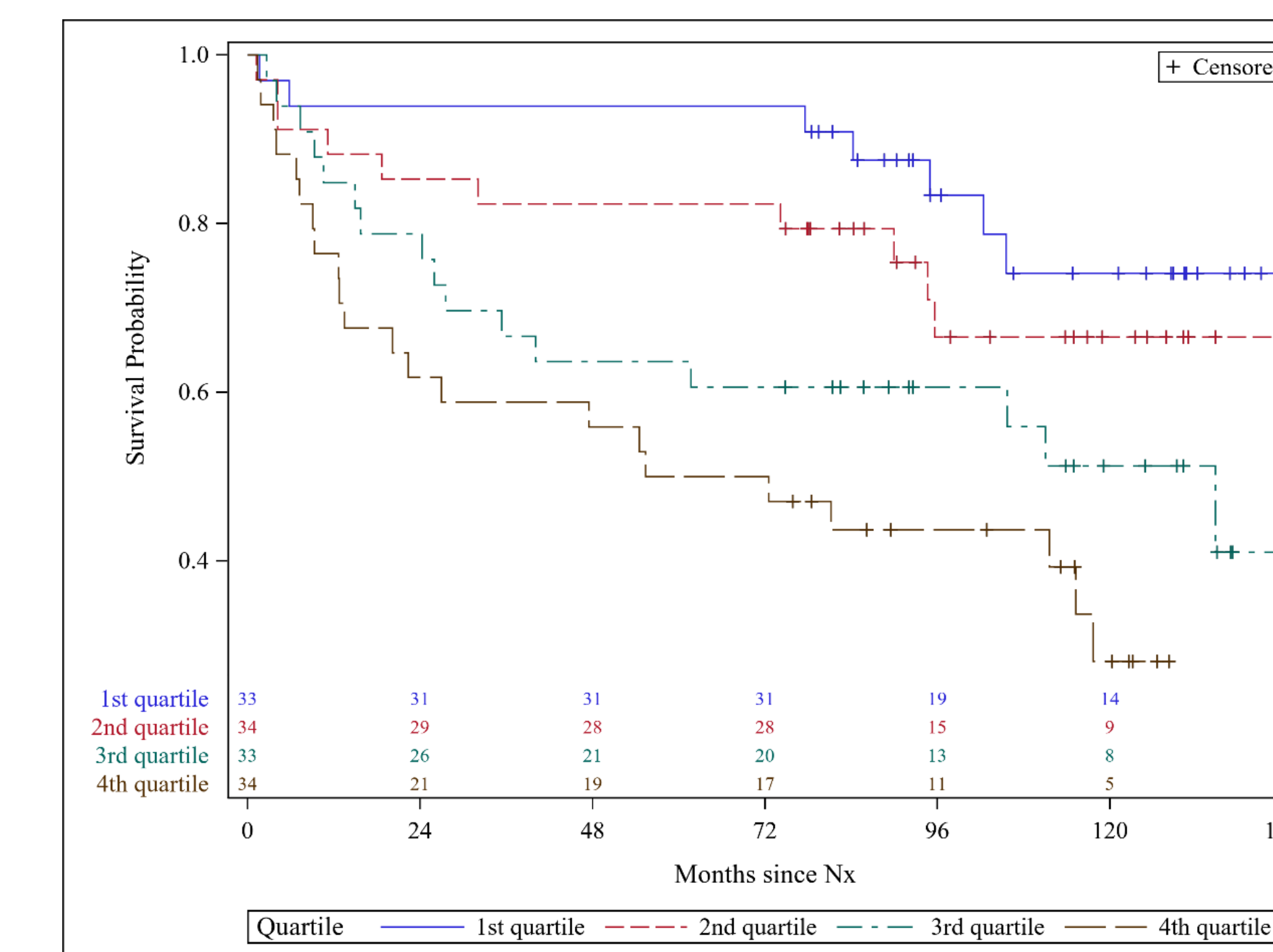
Patients stratified by tumor size



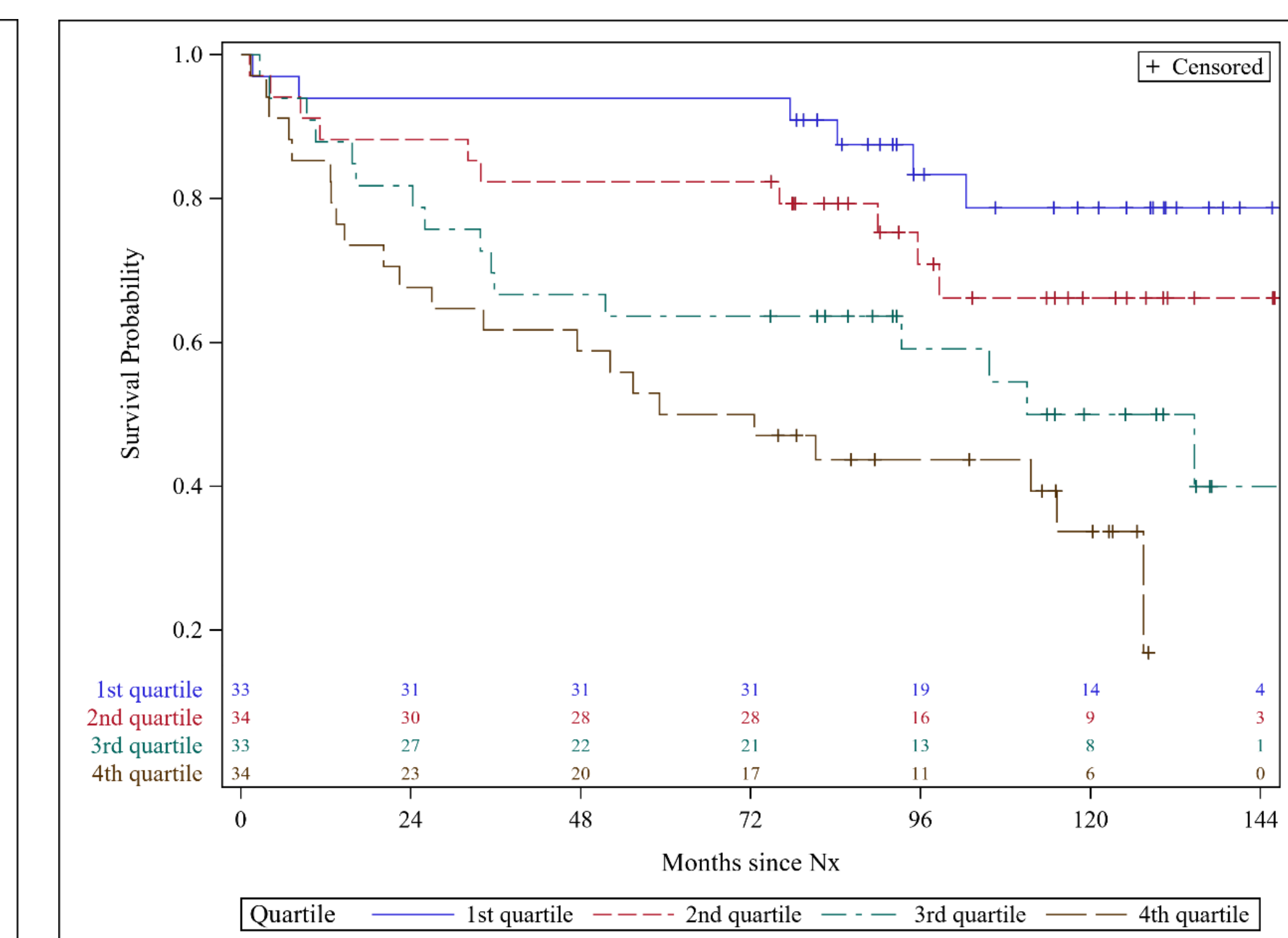
RESULTS

Higher plasma KIM-1 is associated with worse metastasis free survival and worse overall survival among patients with clear cell RCC

Metastasis free survival



Overall survival



Multivariable Cox model for metastasis free survival

	Hazard Ratio	95% CI	P-value
Log KIM-1	1.29	1.10-1.53	0.0025
Age	1.01	0.98-1.03	0.66
Male sex	1.26	0.71-2.26	0.43
Radical nephrectomy	1.34	0.60-2.97	0.47
Cancer stage			
II	1.17	0.47-2.91	0.73
III	2.03	1.03-3.98	0.040
IV	4.15	1.15-15.02	0.030

Multivariable Cox model for overall survival

	Hazard Ratio	95% CI	P-value
Log KIM-1	1.31	1.10-1.54	0.0019
Age	1.01	0.98-1.03	0.67
Male sex	1.21	0.67-2.18	0.53
Radical nephrectomy	1.32	0.60-2.93	0.49
Cancer stage			
II	1.17	0.47-2.92	0.73
III	2.18	1.10-4.31	0.026
IV	4.49	1.22-16.51	0.024

All hazard ratios are calculated relative to a reference group with female sex, partial nephrectomy, and stage I renal cell carcinoma.

CONCLUSIONS

- Pre-nephrectomy plasma KIM-1 helped distinguish between clear cell renal cell carcinoma vs benign renal masses.
 - Among patients with ccRCC, higher pre-nephrectomy KIM-1 was associated with worse MFS and OS.
- Plasma KIM-1 may be useful for RCC detection alone or in combination with other biomarkers. Validation in additional cohorts is underway.

REFERENCES

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