

# Longterm outcomes in atherosclerotic renovascular disease: a single-centre observational study

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## OBJECTIVES

- Timely identification of patients with atherosclerotic renovascular disease (ARVD) who are at risk of developing adverse events would enable aggressive medical therapy and the possibility of targeted revascularization<sup>1,2</sup>.
- In this study, we identify the main determinants of long-term outcomes in ARVD in a large single centre study.

## METHODS

- 872 patients with a radiological diagnosis of ARVD presenting to our renal center were recruited into this single-center prospective cohort study between February 27, 1986 and August 31, 2014.
- Data collected included baseline demographics and co-morbid conditions, annualized prescribed medications, blood pressure and laboratory data (serum creatinine [ $\mu\text{mol/L}$ ], proteinuria [ $\text{g}/24\text{h}$ ]). Estimated glomerular filtration rate (eGFR) was calculated using the Chronic Kidney Disease Epidemiology Collaboration equation (CKD-EPI)<sup>3</sup>.
- Multivariate Cox regression analysis was used to explore the association between these variables and the following end-points: death, end-stage kidney disease (ESKD) or need to start renal replacement therapy (RRT), cardiovascular event (CVE) and the first of any of these events.

## RESULTS

### Multivariate association between risk factors and clinical end-points

	Death		ESKD		CVE		Any	
	Hazard ratio	p	Hazard ratio	p	Hazard ratio	p	Hazard ratio	p
Age	1.38 (1.23-1.56)	<0.0001	1.33 (1.19-1.50)	<0.0001	1.21 (1.09-1.340)	<0.0001	1.09 (0.98-1.21)	0.12
Patency score	0.95 (0.90-1.00)	0.05	0.95 (0.90-1.00)	0.04	0.95 (0.90-1.00)	0.04	0.94 (0.90-0.99)	0.02
Revascularization	0.67 (0.52-0.87)	0.003	0.68 (0.53-0.88)	0.003	-	-	-	-
MVD	1.29 (1.05-1.58)	0.02	1.30 (1.05-1.58)	0.01	1.42 (1.17-1.73)	<0.0001	1.31 (1.07-1.59)	0.007
CHF	1.37 (1.09-1.71)	0.007	1.38 (1.11-1.72)	0.004	1.44 (1.16-1.78)	0.001	1.48 (1.19-1.84)	<0.0001
FPE	2.02 (1.40-2.92)	<0.0001	2.05 (1.44-2.94)	<0.0001	1.99 (1.39-2.85)	<0.0001	1.82 (1.27-2.61)	0.001
Statin	0.81 (0.67-0.98)	0.03	0.85 (0.71-1.02)	0.08	-	-	-	-
Proteinuria (g/day)	1.12 (1.05-1.18)	<0.0001	1.12 (1.06-1.18)	<0.0001	1.09 (1.04-1.15)	0.001	1.11 (1.06-1.16)	<0.0001
eGFR (ml/min/1.73m <sup>2</sup> )	0.98 (0.98-0.99)	<0.0001	0.98 (0.98-0.99)	<0.0001	0.99 (0.98-1.00)	<0.0001	0.99 (0.98-0.99)	<0.0001

### Clinical Outcome Data

	Death	ESKD	CVE	Any
	n=641 (73.5%)	n=177 (20.3%)	n=319 (36.6%)	n=710 (81.4%)
Incidence per 100 patient years	13.9	3.8	6.9	15.6

### Baseline Characteristics

	n=872
Median follow-up (months)	54.9 (20.2-96.2)
Median Age (years)	71.6 (65.3-77.0)
Male (%)	59.7
RAS >70% unilateral (%)	39.7
RAS >70% Bilateral (%)	10.4
Median patency score	115.0 (90.0-150)
Median MAP (mmHg)	101.8 (93.3-113.3)
Macrovascular disease (%)	71.1
Congestive cardiac failure (%)	20.0
Flash pulmonary oedema (%)	6.8
Diabetes (%)	31.3
Renin-angiotensin blocker (%)	49.6
Beta blocker (%)	37.0
Calcium channel blocker (%)	55.1
Aspirin (%)	54.2
Statin (%)	54.8
Median Proteinuria (g/day)	0.44 (0.15-1.01)
Median eGFR (ml/min/1.73m <sup>2</sup> )	34.8 (25.8-46.9)
Revascularized (%)	17.2

## CONCLUSIONS

- The main determinants of adverse clinical outcomes in ARVD are prior cardiovascular disease and intra-renal parenchymal damage manifest by greater proteinuria and reduced renal function.
- More effort is required to optimize medical management of ARVD using multi-targeted vascular protection therapy to help improve cardiovascular risk and decrease overall atherosclerotic burden while mitigating intra-renal parenchymal injury
- Revascularization may have a beneficial effect on long-term outcomes in certain patients, however, more research is required to help characterize this patient sub-group further

## REFERENCES

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