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Three decades of atherosclerotic disease management-changing outcomes in an observational study

Diana Vassallo, Darren Green, James Ritchie, Constantina Chrysochou, Philip Kalra

Vascular Research Group, Salford Royal NHS Foundation Trust, Salford, UK, M6 8HD

OBJECTIVES

- Improvements in vascular protective therapy since 2000 have optimized cardiovascular outcomes in the general population[1].
- To investigate whether the clinical phenotype and management of atherosclerotic renovascular disease (ARVD) have evolved over the past three decades
- To investigate whether changes in management of ARVD correlate with improved clinical outcomes

METHODS

- Retrospective analysis of an observational study first started in 1986 – data has been collected annually for all patients with ARVD referred to or diagnosed at our renal center into a local database. Date of diagnostic imaging was considered time zero. Estimated glomerular filtration rate (eGFR) was calculated using the Chronic Kidney Disease Epidemiology Collaboration equation (CKD-EPI)[2].
- Clinical end-points – date of death, date of starting renal replacement therapy or reaching eGFR <10ml/min/1.73m^2, date of first cardiovascular event or the first of any of these events.
- Patients were divided into 4 groups based on relationship of diagnosis year to landmark randomized controlled trials (RCT).
  - Group 1 (1986-2000) – early studies, pre-large RCT data[3,4]
  - Group 2 (2001-2004) – post-early RCT[5]
  - Group 3 (2005-2008) – ASTRAL recruitment[6]
  - Group 4 (2009 – 2014) – post-ASTRAL[7]

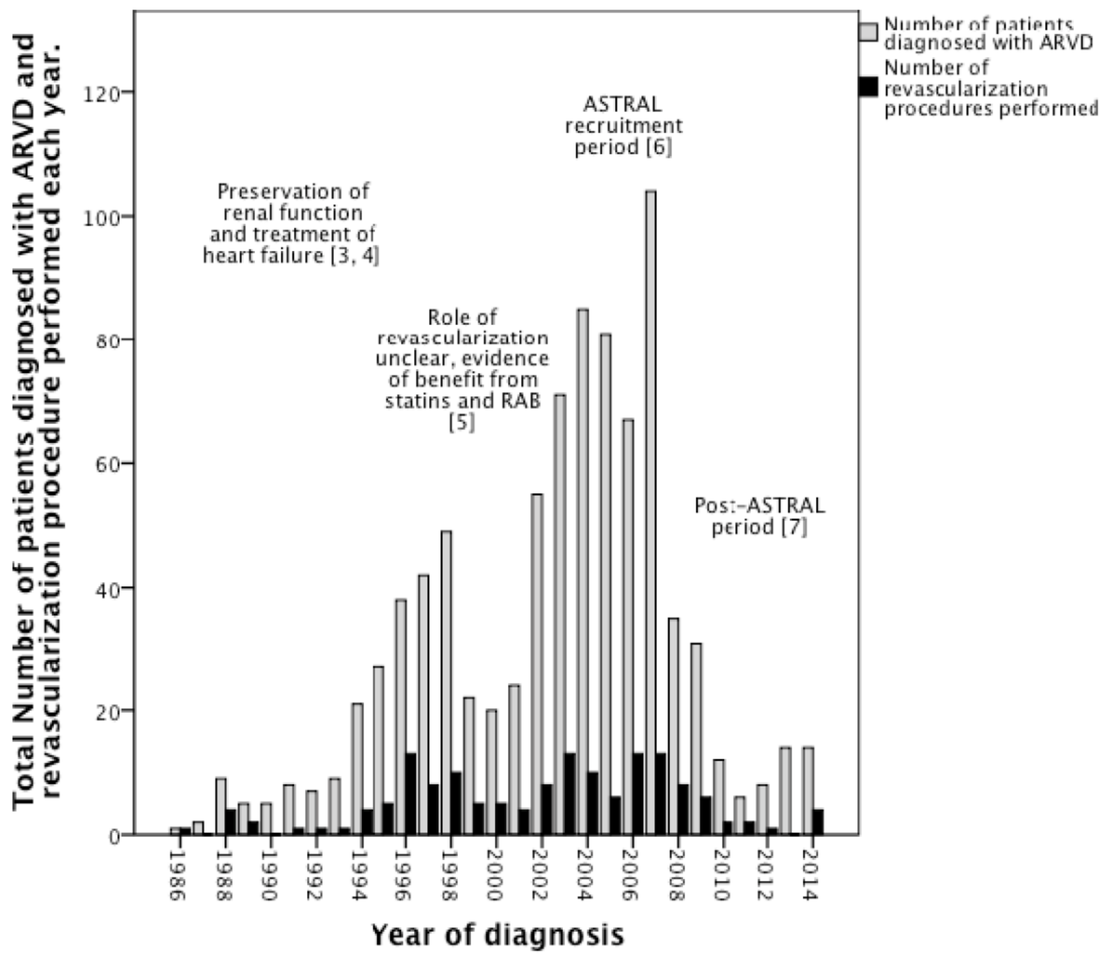
RESULTS

Baseline Characteristics

	All n=872	1986-2000 Group 1 n=265	2001-2004 Group 2 n=235	2005-2008 Group 3 n=287	2009-2014 Group 4 n=85	p-value	Stat test
Median age [IQR] [years]	71.6 [65.6-77.0]	68.3 [61.9-74.2]	72.9 [67.4-77.8]	72.5 [66.9-77.9]	70.4 [63.3-77.8]	<0.0005*	KW
Male [%]	60.0	54.7	65.0	61.1	58.8	0.13	X^2
Diabetic [%]	31.3	21.5	38.3	34.1	32.9	<0.0005*	X^2
CAD [%]	51.3	47.5	53.6	47.7	68.2	0.001^	X^2
CHF [%]	20.0	26.8	19.9	12.0	26.5	0.001^	X^2
FPE [%]	6.8	7.9	6.0	4.9	11.8	0.023^	X^2
PVD [%]	46.2	44.2	52.3	44.9	40.0	0.138	X^2
Median SBP [IQR] [mmHg]	150 [135-170]	160.0 [144.0-190.0]	147.5 [132.0-168.0]	147.0 [128.0-168.0]	158.0 [142.0-180.0]	<0.0005*	KW
Median DBP [IQR] [mmHg]	80.0 [69.0-86.0]	85.0[80.0-94.9]	80.0 [70.0-87.0]	75.0[65.0-84.3]	72.0 [62.0 -86.0]	<0.0005*	KW
Median Patency Score [IQR]	115.0 [80.0-150.0]	100.0 [90.0-150.0]	110.0 [80.0-150.0]	115.0 [75.0- 150.0]	120.0 [60.0-150.0]	0.849	KW
>60% unilat [%]	46.7	49.6	50.5	41.4	45.6	0.147	X^2
>60% bilat [%]	16.7	14.7	14.9	19.5	18.8	0.362	X^2
RAB [%]	49.6	30.8	49.8	61.0	69.4	<0.0005*	X^2
B-blocker [%]	37.0	29.7	38.5	41.0	42.9	0.024	X^2
≥ 3 agents [%]	47.2	31.7	49.4	54.7	64.7	<0.0005*	X^2
Aspirin [%]	54.2	52.1	59.3	53.2	50.0	0.306	X^2
Statin [%]	54.8	20.2	61.9	75.4	74.1	<0.0005*	X^2
Proteinuria [g/24hr] [IQR]	0.5 [0.2-1.0]	0.9 [0.4-1.5]	0.4 [0.2-1.0]	0.6 [0.2-1.1]	0.4 [0.1-1.1]	<0.0005*	KW
Median baseline eGFR [IQR] [ml/min/1.73m^2]	32.7 [23.0-44.7]	27.0 [12.7-43.2]	29.4 [17.6-41.4]	32.8 [22.9-43.9]	34.9 [25.8-50.3]	<0.0005§	KW
Revascularization [%]	17.2	22.6	14.9	13.9	17.6	0.008**	X^2
Median Follow-up [IQR][months]	54.9 [20.2-96.2]	44.9 [12.9-112.4]	58.4 [22.1-100.0]	68.5 [36.0-97.2]	21.7 [12.1-56.6]	<0.0005	KW

*between Group 1 and Group 2; § between Group 1 and Group 4; ^between Group 3 and Group 4; **between Group 1 and Group 3

Number of patients diagnosed with ARVD and number of revascularization procedures performed each year in relation to important events and turning points in the history of management of ARVD.



- The number of investigative angiograms performed decreased from 139 per year between 2006 and 2008 to 74 per year in group 4

CONCLUSIONS

- In the wake of neutral results of ASTRAL and CORAL, fewer patients but a greater proportion with more cardiovascular comorbidities are being investigated for ARVD in our renal centre
- The advent of enhanced vascular protective therapy after 2000 may have contributed towards improved baseline proteinuria and renal function in newly diagnosed patients, and although our results are limited by selection bias, there is a suggestion that this may have also led to improved clinical outcomes in this high-risk population.

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Diana Vassallo

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