

BLOOD PRESSURE PROFILE IN CHRONIC HAEMODIALYSIS PATIENTS - BASELINE DATA FROM THE CORDIAL STUDY

The Cardiovascular Outcomes Registry in DIALysis Study

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INTRODUCTION

Cardiovascular diseases are the main cause of death in chronic kidney disease (CKD) patients. Hypertension is a very common cardiovascular risk factor among CKD patients on hemodialysis, with prevalence rates over 80% in many studies. Despite drug treatment, appropriate levels of blood pressure are difficult to achieve in this population for many reasons, with uncontrolled hypertension rates reaching around 70% or even higher.

We aimed to assess the prevalence and profile of hypertension in the population of patients on maintenance hemodialysis in Porto Alegre, a southern metropolitan Brazilian city.

METHODS

All 1215 adult patients in haemodialysis for chronic renal disease in the 15 dialysis units of Porto Alegre (Brazil) in 2010-2011 were included. Eligibility criteria for enrollment included age 18 years or more, being in chronic outpatient dialysis for more than 30 days, and ability to provide informed consent for participation. The study complies with the Declaration of Helsinki and the protocol was approved by the Ethics Committee for Research of Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA) and by the review boards of the clinical centers included.

From August 2010 to March 2011, all CKD patients on haemodialysis in each of the fifteen dialysis centers of the city of Porto Alegre were interviewed. Data for blood pressure (BP) – pre and post-dialysis, and in days off-dialysis – were obtained from registries of the CORDIAL Study, being available for 1200 individuals.

Hypertension was defined as a pre-dialysis systolic and/or diastolic BP respectively of ≥ 140 and ≥ 90 mmHg, or the use of any antihypertensive drug.

Control of hypertension was defined as pre-dialysis BP $< 140/90$ mmHg and post-dialysis $< 130/80$ mmHg. For all purposes, we considered an average of the last 3 measurements of pre- and post-dialysis BP from the dialysis individual charts. As concerning to BP in days off-dialysis, we considered an average of 3 or more values obtained in periodic medical appointments in the last 2 months.

Table – Arterial blood pressure profile in patients with and without hypertension in the CORDIAL study

	Hypertensive (n=1049)			Non-hypert n=151
	No control n=836	Control n=213	P (Chi-square)	
Pre-dialysis arterial blood pressure				
Systolic (mmHg) – mean (SD)	157.8 (18.0)	121.8 (11.1)		122.4 (15.4)
Diastolic (mmHg) – mean (SD)	87.1 (13.1)	72.7 (9.6)		72.9 (10.8)
Systolic ≥ 140 mmHg and/or diastolic ≥ 90 mmHg – %	100			
Pulse pressure (mmHg) – mean (SD)	71.0 (18.1)	49.5 (12.4)		49.5 (11.4)
Pulse pressure ≥ 60 mmHg – %	84.8	23.5	< 0.0001	31.1
Post-dialysis arterial blood pressure				
Systolic (mmHg) – mean (SD)	142.1 (22.8)	124.0 (17.6)		117.7 (19.4)
Diastolic (mmHg) – mean (SD)	80.1 (12.6)	71.2 (10.5)		70.1 (10.7)
Systolic ≥ 130 mmHg and/or diastolic ≥ 80 mmHg – %	83.6			
Pulse pressure (mmHg) – mean (SD)	62.0 (18.8)	52.1 (15.8)		49.5 (18.8)
Pulse pressure ≥ 60 mmHg – %	59.7	34.7	< 0.0001	18.5
Out-of-dialysis arterial blood pressure				
Systolic (mmHg) – mean (SD)	152.8 (24.2)	132.0 (20.6)		118.5 (14.0)
Diastolic (mmHg) – mean (SD)	87.0 (14.2)	79.5 (11.7)		75.0 (10.3)
Systolic ≥ 140 mmHg and/or diastolic ≥ 90 mmHg – %	82.2	35.8		
Pulse pressure (mmHg) – mean (SD)	65.8 (20.1)	52.5 (15.7)	< 0.0001	43.5 (11.6)
Pulse pressure ≥ 60 mmHg – %	71.7	36.4	< 0.0001	17.2

RESULTS

Data were available for 1200 individuals. The mean (SD) age of these patients was 52.7(11.6) yrs-old, and 60.9% were males.

The prevalence of hypertension in these 1200 patients was 87.4%, and only 20.3% of the hypertensive individuals had BP controlled values.

Only around 16% of patients with uncontrolled pre-dialysis BP end dialysis with controlled BP ($< 130/80$ mmHg); in off-dialysis days, only 18% had controlled BP ($< 140/90$ mmHg).

Prevalence of pulse pressure (PP) ≥ 60 mmHg was significantly higher in non-controlled when compared to controlled or to non-hypertensive patients in the three situations (pre-, post-, and off-dialysis) – $p < 0.0001$ (Chi-square) for all.

CONCLUSIONS

Prevalence of uncontrolled hypertension was high in this cohort, either for pre- and post-dialysis as during off-dialysis days.

At least two thirds of hypertensive patients presented PP persistently over 60 mmHg.

These results are similar to those of previous studies from other countries.

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