

A systolic inter-arm blood pressure difference predicts reduced event free survival over ten years in people with hypertension in primary care.

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Introduction

We have previously demonstrated an association of a systolic inter-arm blood pressure (BP) difference with reduced event-free survival after five years.¹ A further analysis of our cohort after ten years has now been undertaken.

Methods

Subjects with hypertension attending one rural surgery for review had bilateral sequential BP measurements recorded on three occasions. Cardiovascular events and deaths were recorded prospectively. Mean inter-arm BP differences were calculated and survival stratified by inter-arm BP difference was analysed.

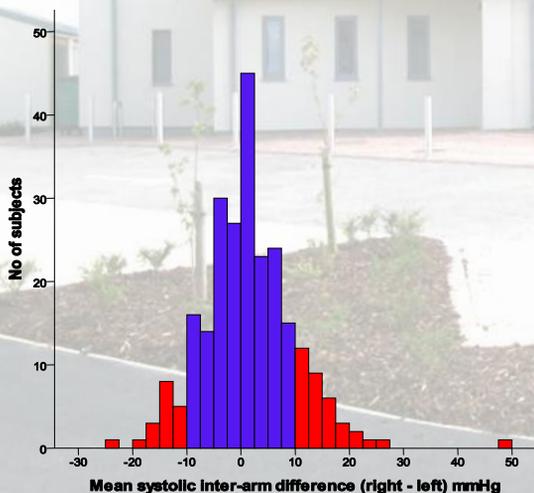


Fig 1. Distribution of inter-arm systolic BP difference for 247 hypertensives at recruitment to study; red bars indicate differences ≥ 10 mmHg

Results

- 247 (90% of hypertension register) subjects were recruited.
- Prevalences of inter-arm difference ≥ 10 mmHg were 23% systolic (fig 1) and 6% diastolic.
- Mean survival for all subjects without cardiovascular event or death was 5.5 years (95% confidence interval 4.7 to 6.4) with systolic inter-arm difference ≥ 10 mmHg compared to 7.4 (7.0 to 7.9) for < 10 mmHg; hazard ratio 2.8 (1.9 to 4.2), $p < 0.001$

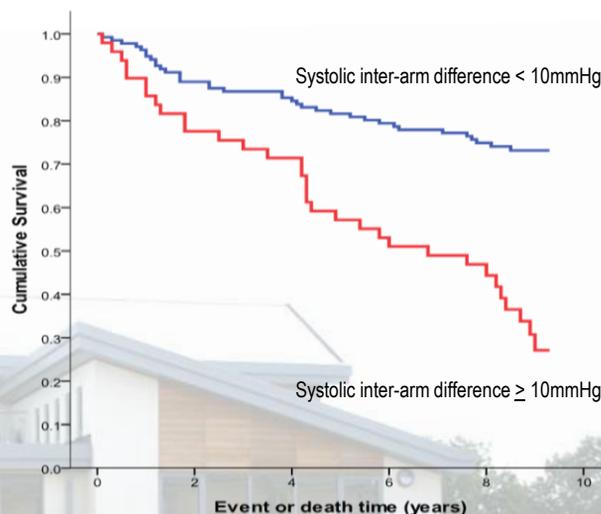


Fig 2. Kaplan-Meier survival plot for 185 hypertensives without cardiovascular disease at recruitment stratified by systolic inter-arm difference

- 185 subjects without pre-existing cardiovascular disease (CVD) also had significantly lower survival with a systolic difference ≥ 10 mmHg (5.8 years (4.9 to 6.8) vs 7.7 (7.2 to 8.2); hazard ratio 3.3 (2.0 – 5.3), $p < 0.001$; fig 2).
- Cox regression analysis correcting for age, gender, pre-existing CVD, diabetes, left ventricular hypertrophy, smoking status, absolute BP and BMI, identified inter-arm difference as an independent predictor of survival.
- 25% of those with a difference ≥ 10 mmHg did not have an elevated cardiovascular risk defined by conventional risk equations.

Conclusions

Systolic inter-arm BP difference ≥ 10 mmHg predicts reduced event-free survival over ten years. This supports its potential value as a novel simple clinical indicator of increased cardiovascular risk.

Initial assessment of blood pressure in both arms should become a core component of blood pressure measurement in primary care.

Funding

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Reference

1. Clark, C.E., Powell, R.J., & Campbell, J.L. 2007. The interarm blood pressure difference as predictor of cardiovascular events in patients with hypertension in primary care: cohort study. *J Hum Hypertens*, 21, 633-6