Brachial and Central Arterial Pressure

To the Editor:

The report by Dart et al in Hypertension 1 on a selected cohort of the Australian National Blood Pressure Study 2 (ANBP2) trial appears just to extend the controversy created by the original trial.2 The finding that brachial blood pressure but not central (carotid) waveforms predicts mortality contradicts the authors’ previous study, which showed the reverse (in males),3 as well as a host of recent studies, including the Conduit Artery Function Evaluation (CAFE) study.4 The finding also appears incompatible with multiple previous publications from Dart and colleagues using their techniques of carotid tonometry and determination of systemic arterial compliance over a 2-decade span.

Dart et al1 justify confining analysis to females on the basis of power predictions, but data for such calculations were not available until the ANBP2 study was completed. The decision for such analysis was retrospective, not prospective, as claimed. Authors quote their previous ANBP2 methodological article5 to describe the technique, but this was different than what is described in the second article (25 ms minimum to inflection point previously, cf 50 ms here), as were the results. In the recent report, timing to inflection was 80 SD 11 ms, whereas in Reference 5 (authors’ Figure 2) it stretched from 5 to 290 ms. An unusual finding in Dart’s recent article was that standard deviation for carotid systolic and pulse pressure was greater than for brachial values, suggesting the introduction of noise. In the CAFE study,4 standard deviations were similar for radial and aortic pressures.

The authors claim to have undertaken “the first examination in a predominantly asymptomatic population of hypertensive participants on the predictive value of these measures in an outcome study.”1 This may be true of the methods described by Dart et al, but they are not true of other methods. CAFE reported in 2005 for a far larger group and with a different result. The present report for ANBP2 is the outlier in multiple previous studies.

The authors concluded that “blood pressure measurement is superior to arterial waveforms in predicting outcome.” This is misleading. The findings can only apply to the methods used by the authors; these are described inconsistently in this and a previous publication.

In his New England Journal of Medicine editorial on ANBP2,2 Dr Ed Frohlich asked “what are we to believe?” The question remains for this substudy.

Disclosures

Michael F. O’Rourke is a founding director of AtCor Medical. The remaining authors report no conflicts.

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3. Waddell TK, Dart AM, Medley TL, Cameron JD, Kingwell BA. Carotid pressure is a better predictor of coronary artery disease severity than brachial pressure. Hypertension. 2001;38:927–931.