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P109 The Influence of Sex on Cuff Blood Pressure Accuracy

Elif Stoneman[1,*], Dean Picone[1], Martin Schultz[1], Matthew Armstrong[1], Willem Bos[2,3], Nathan Dwyer[1,4], Peter Lacy[5], Esben Laugesen[6], Stefano Omboni[7,8], Giacomo Pucci[9], Philip Roberts-Thomson[1,4], George Stouffer[10], Kenji Takazawa[11], Thomas Weber[12], Berend Westerhof[13], James Sharman[1]

[1]*Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia*
[2]*Department of Internal Medicine, Leiden University Medical Center, Leiden, The Netherlands*
[3]*St Antonius Hospital, Department of Internal Medicine, Nieuwegein, The Netherlands*
[4]*Royal Hobart Hospital, Hobart, Tasmania*
[5]*Institute of Cardiovascular Sciences University College London (UCL) and National Institute for Health Research (NIHR) UCL/UCL Hospitals Biomedical Research Centre, London, United Kingdom*
[6]*Department of Endocrinology and Internal Medicine, Aarhus University Hospital, Aarhus, Denmark*
[7]*Clinical Research Unit, Italian Institute of Telemedicine, Varese, Italy*
[8]*Scientific Research Department of Cardiology, Science and Technology Park for Biomedicine, Sechenov First Moscow State Medical University, Moscow, Russian Federation*
[9]*Unit of Internal Medicine at Terni University Hospital, Department of Medicine, University of Perugia, Perugia, Italy*
[10]*University of North Carolina, US*
[11]*Center for Health Surveillance and Preventive Medicine, Tokyo Medical University Hospital, Tokyo, Japan*
[12]*Cardiology Department, Klinikum Wels-Grieskirchen, Wels, Austria*
[13]*Department of Pulmonary Diseases, VU University Medical Center, Amsterdam, The Netherlands*

ABSTRACT

Background: Cuff blood pressure (BP) is intended to approximate central aortic BP and accuracy is paramount. Sex differences in BP physiology could influence the accuracy of cuff BP as an estimate of invasive aortic BP, but this has not been explored in-depth and was the aim of this study.

Methods: Cuff and invasive aortic BP were measured in 1701 subjects (31.9% female, aged 63 ± 12) during coronary angiography from the INvaSive blood PressurE ConsorTium (INSPECT) database. Cuff accuracy was defined as cuff–invasive BP. In a sub-sample ($n = 376$, 27% female, aged 63 ± 11), invasive brachial BP was recorded to assess systolic (SBP) amplification (invasive brachial–aortic SBP).

Results: Invasive aortic SBP was higher in females compared with males (mean [95% CI]: 141.8 mmHg [137.1, 146.3] versus 132.9 mmHg [129.4, 136.4], $p < 0.001$). Cuff SBP significantly underestimated invasive aortic SBP in females compared with males (−3.1 mmHg [−5.9, −0.2] versus 1.4 mmHg [−1.1, 4.0], $p < 0.001$ for difference). Sex differences remained after adjustment for age and height. In the sub-sample, aortic-to-brachial SBP-amplification was lower in females (7.1 mmHg [3.3, 10.8] versus 10.2 mmHg [5.1, 15.4], $p = 0.0070$). Sex, SBP-amplification, height and age were associated with cuff BP inaccuracy, but only SBP-amplification and age remained associated in multivariable analysis ($p < 0.05$).

Conclusion: Females have greater propensity towards cuff BP inaccuracy through underestimation of aortic SBP. Both age and the magnitude of aortic-to-brachial SBP-amplification are related to cuff BP inaccuracy, which provide greater understanding of sex differences in BP physiology and may help improve the accuracy of cuff BP methods.

*Corresponding author. Email: elif.stoneman@utas.edu.au