P109 The Influence of Sex on Cuff Blood Pressure Accuracy

Elif Stoneman1,*, Dean Picone1, Martin Schultz1, Matthew Armstrong1, Willem Bos2,3, Nathan Dwyer1,4, Peter Lacy5, Esben Laugesen6, Stefano Omboni7,8, Giacomo Pucci9, Philip Roberts-Thomson1,4, George Stouffer10, Kenji Takazawa11, Thomas Weber12, Berend Westerhof13, James Sharman1

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

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