Electrocardiographic Criteria for Left Ventricular Hypertrophy in Asians Differs from Criteria Derived from Western Populations—Community-based Data from an Asian Population

Chang Fen Xu, MD, Eugene SJ Tan, MBBS, Liang Feng, MBBS. PhD, Rajalakshmi Santhanakrishnan, PhD, Michelle MY Chan, MBBS, PhD, Shwe Zin Nyunt, MBBS. MRCP, PhD, Tze Pin Ng. MBBS, MRCP, PhD, Lieng Hsi Ling, MBBS, MD, FRCP, A Mark Richards, MD, PhD, DSc, Carolyn SP Lam*, MBBS. MRCP, MS, Toon Wei Lim*, MBBS, FRACP, PhD

1Department of Cardiology, National University Health System of Singapore, Singapore
2Yong Loo Lin School of Medicine, National University of Singapore, Singapore
3Section of Cardiovascular Medicine, Boston University, Boston, MA, USA
4SingHealth Internal Medicine Residency Program, Singapore Health Services, Singapore
5The National Heart Centre Singapore
6Duke National University of Singapore (Duke-NUS), Singapore
Address for Correspondence: Dr Toon Wei Lim, The National University Heart Centre, Tower Block Level 9, 1E Kent Ridge Road, Singapore 119228. Dr Lam Su Ping Carolyn, The National Heart Centre Singapore, 5 Hospital Drive, Singapore 169609.
Email: toon_wei_lim@nuhs.edu.sg, carolyn_lam@nuhs.edu.sg
*These authors contributed equally to this work

Abstract

Introduction: Electrocardiographic (ECG) criteria for left ventricular hypertrophy (LVH), such as the Cornell and Sokolow-Lyon voltage criteria were derived from Western populations. However, their utility and accuracy for diagnosing echocardiographic LVH in Asian populations is unclear. The objective of this study was to assess the accuracy of ECG criteria for LVH in Asians and to determine if alternative gender-specific ECG cut-offs may improve its diagnostic accuracy.

Materials and Methods: ECG and echocardiographic assessments were performed on 668 community-dwelling Asian adults (50.9% women; 57 ± 10 years) in Singapore. The accuracy of ECG voltage criteria was compared to echocardiographic LVH criteria based on the American Society of Echocardiography guidelines, and Asian ethnicity and gender-specific partition values.

Results: Echocardiographic LVH was present in 93 (13.6%) adults. Cornell criteria had low sensitivity (5.5%) and high specificity (98.9%) for diagnosing LVH. Modified gender specific cut-offs (18 mm in women, 22 mm in men) improved sensitivity (8.8% to 17.5%, 0% to 14.7%, respectively) whilst preserving specificity (98.2% to 94.2%, 100% to 95.8%). Similarly, Sokolow-Lyon criteria had poor sensitivity (7.7%) and high specificity (96.1%) for diagnosing LVH. Lowering the cut-off value from 35 mm to 31 mm improved the sensitivity in women from 3.5% to 14% while preserving specificity at 94.2%. A cut-off of 36 mm was optimal in men (sensitivity of 14.7%, specificity of 95.5%).

Conclusion: Current ECG criteria for LVH derived in Western cohorts have limited sensitivity in Asian populations. Our data suggests that ethnicity- and gender-specific ECG criteria may be needed.

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