A SINGLE CENTRE STUDY TO COMPARE THE DIFFERENT ECG CRITERIA TO DIAGNOSE LEFT VENTRICULAR HYPERTROPHY AMONG PATIENTS WITH HYPERTENSION FROM NORTHERN SRI LANKA.

Nirthana Deepakumar[1]*, Thirunavukarasu Kumanan [2], Maheasan Guruparan[3], Rajeshkannan Nadarajah[4]

[1]Medical Unit, Teaching Hospital Jaffna, Sri Lanka[2] Department of Medicine , University of Jaffna, Jaffna Sri Lanka, [3] Cardiology Unit Teaching Hospital Jaffna Sri Lanka

[4] General Practice, Wentworth Ville, Sydney Australia

*Corresponding author: m36060@pgim.cmb.ac.lk

Abstract

Left ventricular hypertrophy (LVH) is an important predictor of cardiovascular morbidity and mortality, making early detection essential. To our knowledge, this is the first Sri Lankan study evaluating the diagnostic performance of different ECG criteria for detecting LVH in patients with hypertension. This cross-sectional study was conducted from May to August 2025 among 170 hypertensive patients with echocardiographically confirmed LVH. ECG criteria evaluated were Sokolow–Lyon, Romhilt–Estes, Cornell voltage, Cornell voltage product, and Peguero–Lo Presti. Data were analyzed using SPSS version 30. Categorical variables were presented as frequencies and percentages and compared using the Chi-square test. Sensitivity with 95% confidence intervals (CI) was calculated for each ECG criterion. Statistical significance was set at $P < 0.05$. The mean age was 61.3 ± 12.6 years, and 58.2% were male. The Peguero–Lo Presti criterion demonstrated the highest sensitivity for detecting LVH (55.3%; 95% CI: 47.5–62.9%), followed by Sokolow–Lyon (22.9%; 95% CI: 16.9–30.0%). No significant difference in detection was observed between males and females for any ECG criterion ($P > 0.05$). Detection was highest in the 40–49-year age group (42.3%) and lowest in the 50–64-year group (7.3%). Age was significantly associated with the Cornell voltage criterion ($P = 0.001$). The Peguero–Lo Presti criterion showed the highest sensitivity for detecting LVH and may be useful for ECG-based screening of hypertensive patients in routine clinical practice. As all participants had echocardiographically confirmed LVH, only sensitivity could be assessed. However, these findings provide useful evidence for clinical decision-making and serve as a basis for larger prospective diagnostic accuracy studies including AI-based ECG algorithms tailored to be used in Sri Lankan population.

Keywords: ECG criteria, Left Ventricular Hypertrophy, Hypertension, Northern Sri Lanka, Sensitivity