JOURNAL OF CLINICAL AND HEALTH SCIENCES

JCHS

SUPPLEMENTARY ISSUE

MARCH 2026
VOLUME 11 ISSUE 1 (SUPPLEMENTARY)

Official Journal of
Faculty of Medicine
Universiti Teknologi
MARA

UNIVERSITI TEKNOLOGI MARA

eISSN-0127-984X

Journal of Clinical and Health Sciences, Vol 11 Issue 1(Supplementary) 2026
Emerging Trends in Medical Imaging: From Patients to Pixels Symposium, 19 June 2025
https://doi.org/10.24191/jchs.v11i1.10839

e-POSTER PRESENTATION

ET009

Assessment of Image Quality Using Standard Contrast Injection and Weight-Based Contrast Injection Protocols in Coronary CT Angiography

Noor Aina Dayana Noor Na'em, Nurul Dizyana Nor Azman, Mohd Hafizi Mahmud

Centre for Medical Imaging Studies, Faculty of Health Sciences, Universiti Teknologi MARA, Malaysia.

Corresponding author: Mohd Hafizi Mahmud
Email: mhafizi@uitm.edu.my

Introduction: Optimal contrast enhancement is crucial in Coronary Computed Tomography Angiography (CCTA) for accurate visualization of coronary arteries and cardiovascular disease diagnosis. The standard protocol employing a fixed contrast volume, may result in excessive contrast for smaller patients and insufficient enhancement for larger patients, thus leading to the risk of contrast-induced nephropathy and compromising diagnostic accuracy. This study assesses the image quality of CCTA images using a weight-based contrast injection protocol against a standard protocol. **Methods:** A retrospective image analysis was performed on CCTA examination which was acquired using weight-based injection (n=50) and standard injection (n=50) protocols. Signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) were measured in the region of interest of the left coronary artery (LCA) and right coronary artery (RCA). The mean SNR and CNR were compared using independent t-tests. **Results**: The weight-based protocol demonstrated significantly higher SNR (LCA: 8.83 ± 4.03 vs. 4.09 ± 1.70, $p < 0.001$; RCA: 8.42 ± 6.21 vs. 4.14 ± 2.27, $p < 0.001$) and CNR (LCA: 10.35 ± 4.76 vs. 4.31 ± 1.99, $p < 0.001$; RCA: 9.42 ± 6.46 vs. 4.31 ± 2.79, $p < 0.001$) in both coronary arteries compared to the standard protocol. Overall, the weight-based protocol demonstrated 7.96% reduction of contrast volume relative to standard protocol. **Conclusions**: The weight-based contrast injection protocol significantly improves the CT image quality. This technique may offer a cost-effective strategy by optimizing contrast media dose for individual patients, hence leading to improved diagnostic accuracy in CCTA.

Keywords: coronary computed tomography angiography, contrast media, image quality, weight-based protocol