1-19-2016

Initial Evaluation of Coronary CT Angiography Image Quality on the Revolution CT System

Muhammad Latif
*Baptist Health Medical Group*, MuhammadL@baptisthealth.net

Frank Sanchez
*Miami Cardiac & Vascular Institute*, frankws@baptisthealth.net

Karl Sayegh
*Baptist Health Medical Group, Medical Staff*

Emir Veledar
*Baptist Health South Florida*, emirv@baptisthealth.net

Arthur Agatston
*Baptist Health Medical Group*, ArthurSAg@baptisthealth.net

See next page for additional authors

Follow this and additional works at: [https://scholarlycommons.baptisthealth.net/se-all-publications](https://scholarlycommons.baptisthealth.net/se-all-publications)

Citation
Latif, Muhammad; Sanchez, Frank; Sayegh, Karl; Veledar, Emir; Agatston, Arthur; Batlle, Juan; Janowitz, Warren; Pena, Constantino; Ziffer, Jack; Nasir, Khurram; and Cury, Ricardo, "Initial Evaluation of Coronary CT Angiography Image Quality on the Revolution CT System" (2016). *All Publications*. 948.
[https://scholarlycommons.baptisthealth.net/se-all-publications/948](https://scholarlycommons.baptisthealth.net/se-all-publications/948)

This Conference Poster – Open Access is brought to you for free and open access by Scholarly Commons @ Baptist Health South Florida. It has been accepted for inclusion in All Publications by an authorized administrator of Scholarly Commons @ Baptist Health South Florida. For more information, please contact Carrief@baptisthealth.net.
Authors
Muhammad Latif, Frank Sanchez, Karl Sayegh, Emir Veledar, Arthur Agatston, Juan Batlle, Warren Janowitz, Constantino Pena, Jack Ziffer, Khurram Nasir, and Ricardo Cury

This conference poster – open access is available at Scholarly Commons @ Baptist Health South Florida:
https://scholarlycommons.baptisthealth.net/se-all-publications/948
**INTRODUCTION**

**METHODS**

**QUALITATIVE ANALYSIS**

- All Volumetric and 64-Slice CT scans were subjectively evaluated by one experienced Level 3 CTA reader (DM) with 3 years of post-fellowship experience, on an offline workstation (AW 4.3–4.4 Advantage Workstations, GE Healthcare). The CT reader was blinded to the image acquisition protocols.

- All scans were graded using a modified Likert scale.

- An overall image quality score was assigned to each coronary CTA, which takes into account the degree of stenosis, signal-to-noise ratio in the coronary arteries and the presence of image noise and motion artifact.

- A separate image quality score was assigned to the coronary arteries on a per-segment basis.

**RESULTS**

- **Heart Rate**: The median heart rate of patients undergoing the Volume CT was 60 bpm ± 10 (range: 49–86).

- **Volume CT and 64-slice CT**

  - **Volume CT**: 375 ± 73 (range: 254–477) blood pool.
  - **64-slice CT**: 375 ± 73 (range: 254–477) blood pool.

  - **Volumetric and 64-slice CTA**: 775 ± 73 (range: 600–900) blood pool.

**CONCLUSIONS**

- **CT Perfusion allows for the evaluation of myocardium in particular for the detection of ischemia and infarction.** Previous studies have, however, described beam hardening artifacts within the myocardium, which may have an effect on identifying true perfusion defects. Larger or eccentrically placed coronary CT scanners have shown promise in reducing myocardial heterogeneity but have been limited by cone beam artifacts and slower rotation speeds.

- We sought to evaluate the performance of a new volume CT detector (Revolution CT, GE Healthcare) enabled with novel wide cone reconstruction software (Volume HD reconstruction) and improved temporal resolution with regards to image quality and signal homogeneity.

---

**RESULTS (CONT'D)**

- **Heart Rate**: The median heart rate of patients undergoing the Volume CT was 60 bpm ± 10 (range: 49–86).

- **Volume CT and 64-slice CT**

  - **Volume CT**: 375 ± 73 (range: 254–477) blood pool.
  - **64-slice CT**: 375 ± 73 (range: 254–477) blood pool.

  - **Volumetric and 64-slice CTA**: 775 ± 73 (range: 600–900) blood pool.

**CONCLUSIONS**

- **CT Perfusion allows for the evaluation of myocardium in particular for the detection of ischemia and infarction.** Previous studies have, however, described beam hardening artifacts within the myocardium, which may have an effect on identifying true perfusion defects. Larger or eccentrically placed coronary CT scanners have shown promise in reducing myocardial heterogeneity but have been limited by cone beam artifacts and slower rotation speeds.

- We sought to evaluate the performance of a new volume CT detector (Revolution CT, GE Healthcare) enabled with novel wide cone reconstruction software (Volume HD reconstruction) and improved temporal resolution with regards to image quality and signal homogeneity.