INTRODUCTION

- The amount of calcium deposits in the coronary arteries is an indirect marker of total atherosclerotic and has been strongly associated with future cardiac events in asymptomatic patients.
- As calcium has high X-ray attenuation, the detection can be easily performed with a gated non-contrasted CT of the heart;
- This procedure increased significantly in recent years, providing great clinical benefit for patients, however the collective dose was increased considerably;
- Objective: to evaluate the influence of the tube current applied for studies of calcium score.

MATERIAL AND METHOD

- **Institutions**: two private clinics of Rio de Janeiro.
- **CT Scanners**: 64-slice and 256-slice.
- **Scan Parameters**: 80, 120 and 140 kV and 30 to 220 mAs.
- **Phantom**: Cardiac phantom (QRM GmbH, Germany), simulating a large adult thorax attenuation;
  - 9 varying size compartments, simulating cardiac calcification (200, 400 and 800 mg HA/cm²);
- **Agatston and Mass CS**: automatically calculated with a dedicated offline software.
- **Noise**: standard deviation measurement in a ROI placed inside a phantom water compartment.
- **Radiation dose**: DLP obtained in scanner report; E = DLP x 0.014 (conversion factor for chest).

RESULTS AND DISCUSSIONS

1. Agatson Score:

2. Mass Score

3. Image noise:

4. Radiation Dose:

CONCLUSIONS: Although noisier images was obtained with the mAs reduction, the diagnostic information was not compromised and the patient dose was reduced around 50%. This study demonstrated the importance and viability of optimization procedures.

REFERENCES


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