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Report of Abstracts

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Comparing Calcium Score in Low Dose CT Performed During Myocardial Perfusion Scintigraphy vs Dedicated Coronary Computed Tomography Angiography 64-slices

Abstract content

Background: The calcification of coronary arteries is a marker of atherosclerosis and has been assessed by calcium score (CS). This study intended to evaluate clinical situations where a combined approach of CS and myocardial perfusion scintigraphy (MPS) is useful for the detection of relevant coronary arterial disease (CAD), providing additional diagnostic and prognostic information. Dedicated Coronary Computed Tomography Angiography (CCTA), provided gold standard CS for this purpose. The objective of this study was to evaluate the accuracy of calcium score with low-dose CT during MPS in hybrid SPECT-CT (Symbia T2) comparative with CCTA.

Methodology: We performed an observational, retrospective, unicentric clinical trial. We analyzed the demographic findings, scintigraphy and computed tomography (SPECT-CT), CS in low dose gated CT and 64-slice CCTA of 27 consecutive patients without CAD, from July to December of 2013, MPS rest and stress associated with CT low dose obtained for attenuation correction in SPECT CT Symbia T2 (Siemens), also performing CS and ACT in 64-slice CT (GE) for anatomical detail and CS. The CT was performed gated with current average 80 mAS and cut 5mm thick for low dose CT. The analysis was performed on the CS software Syngo CaScoring® with Agatston score. The Pearson's Correlation co-efficient and Fisher exact test were employed for statistical analysis.

Results: 27 patients (20 men) were analyzed without previous CAD mean age 58 (+/- 12 years) and underwent SPECT-CT for the evaluation of CAD and sequential CCTA with 64-slice for non conclusive MPS or clinical suspicion de DAC. In low dose CS, we observed the following distribution of CS in the coronary arteries for patients: (1) zero CS = 11 (40.7%), (2) 1-10 = 5 (18,5%), (3) 11-100 = 5 (18,5%), (4) 101 – 400 = 3 (11,1%), (5) 401 – 1000 = 2 (7,4%) and (6) > 1000 = 1 (3,7%), and for CCTA: (1) zero CS = 9 (33,3%), (2) 1-10 = 2 (7,4%), (3) 11 – 100 = 7 (25,9%), (4) 101-400 = 5 (18,5%), (5) 401-1000 = 2 (7,4%) and (6) >1000 = 2 (7,4%). Statistical analysis for Pearson's Correlation co-efficient was excellent (r = 0.86) demonstrating optimal correlation between both methods. However, when evaluating the low-dose CT of 11 patients with zero CS, only 9 were confirmed with CCTA (p< 0,001 - IC 95%).

Conclusion: The analysis of the CS with low dose CT during MPS is useful and has good correlation with CCTA 64-slice results. When evaluating zero CS, we have 2 cases of false positive (CS 3 and 83 respectively). We conclude that when the low dose CT demonstrates calcium, it is present in reality, but when the desire is to discard the calcification, low dose CT does not offer the same accuracy.

Country/Organization invited to participate

Brasil

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