**OPTIMIZING EVALUATION OF PATIENTS WITH LOW TO INTERMEDIATE RISK ACUTE CHEST PAIN: WHAT IS THE RELATIVE VALUES OF STRESS MYOCARDIAL PERFUSION IMAGING WHEN INCORPORATING STRESS-ONLY IMAGING VERSUS CARDIAC COMPUTED TOMOGRAPHY**

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There remains considerable controversy regarding the relative value of stress myocardial perfusion (SPECT) versus cardiac computed tomography angiography (CTA) for evaluating patients (pts) with acute chest pain (ACP). In this regard, we recently performed a prospective randomized observational study in 598 ACP pts. who had CTA vs. SPECT assessing several important clinical metrics: length of hospital stay, test feasibility, time to diagnosis, diagnostic accuracy, radiation exposure and overall cost. Stress-only (SO) SPECT was performed in 24% pts. Pts. were followed for a median of 6.5 months with a 3.8% cardiac event rate defined as death or an acute coronary syndrome. Of 2994 patients screened, 1703 (56.9%) were not candidates for CTA due to prior cardiac disease (41%) or imaging contraindications (16%). Time to diagnosis (8.1±8.5 vs. 9.4±7.4 hours) and length of hospital stay (19.7±27.8 vs. 23.5±34.4 hours) were significantly shorter with CTA vs. SPECT (p=0.002). However, time to diagnosis (7.0±6.2 vs. 6.8±5.9 hours, p=0.20), length of stay (15.5±17.2 vs. 16.7±15.3 hours, p=0.36) and hospital costs ($4,242±$3,871 vs. $4,364±1781, p=0.86) were comparable with CTA vs. SO SPECT, respectively. SO was also superior to conventional SPECT regarding all of the above metrics and significantly reduced radiation exposure (5.5+4.4 vs. 12.5+2.7 mSv, p<0.0001). Thus, stress SPECT when optimized with SO imaging is similar to CTA in time to diagnosis, length of hospital stay, and cost with improved prognostic accuracy and less radiation exposure. Our results emphasize the importance of SO imaging particularly in low-intermediate risk ED patients who are a population likely to have a normal test result.