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Improved efficiency of myocardial perfusion SPECT with prone and half time imaging

Gutstein, A[1]; Solodky, A[2]; Mats, I[2]; Belzer, D[2]; Hasid, Y[2]; Battler, A[2]; Zafrir, N[2]
[1]Rabin Medical center, Holon, Israel; [2]Rabin Medical Center, Petach Tikva, Israel

Background: Prone imaging during myocardial perfusion SPECT imaging has been shown to improve specificity. However it requires an additional set of images that is time consuming. Recently, half time imaging (HT) has allowed to halve time acquisition.
Objectives: To compare image quality between prone HT imaging and prone regular (R) imaging in a selected population, to recognize predictors of reduced soft tissue attenuation by prone imaging.
Methods: Patients weighting up to 90 Kg who underwent one day stress rest imaging with Tc 99m sestamibi and needed prone imaging for soft tissue attenuation correction were enrolled. Prone imaging following supine gated imaging was performed, in regular time acquisition in 46 patients and in HT protocol and in 100 patients. Summed stress score (SSS) was visually assessed and compared between prone and supine imaging. Image quality was rated between 1 (suboptimal) to 4 (excellent). A SSS > 4 was considered as an ischemic scan and SSS 4₪‰ג as an equivocal scan.
Results:Total time acquisition for supine and prone stress HT acquisition was 11 minutes Vs 22 minutes for the R group($p<0.001$). Image quality was good or excellent, for prone imaging, in 80% of HT Vs 86% of R patients ($p=0.55$). Prone imaging changed the diagnosis from equivocal to normal, ischemic to normal, ischemic to equivocal and reduced the amount of ischemia in 37(25%), 29(20%), 6(4%), 13(9%) whereas in 56(38%) patients it had no impact on diagnosis. Patients whose diagnosis was changed by prone imaging where significantly taller 172.5 cm Vs 164.5 cm, heavier 85.2kg Vs 73.5kg and likelier to be men (79 %Vs 62%) or to have a large belly. By logistic regression only the height was associated with any change in diagnosis while using prone imaging
Conclusions: HT is associated with a similar image quality as R acquisition for prone imaging in patients weighting up to 90kg. Prone imaging has significant impact on the diagnosis of IHD especially in taller patients.