

Attenuation corrected normal stress database in myocardial perfusion scintigraphy better predicts the need for a rest study and improves infarct detection

Elin Trägårdh-Johansson, MD, PhD,¹ Karl Sjöstrand, PhD,^{2,3} Lars Edenbrandt, MD, PhD,^{1,3}

¹Nuclear Medicine in Malmö, Lund University, Skåne University Hospital, Malmö, Sweden, ²Informatics and Mathematical modeling, Technical University of Denmark, Copenhagen, Denmark, ³EXINI Diagnostics, Lund, Sweden

Conclusions

Computer interpretation using attenuation corrected normal stress database could be of value when determining the need for a rest study. Using attenuation corrected normal stress database instead of non-attenuation corrected database for comparison, specificity for infarction increased.

Purpose

The American Society of Nuclear Cardiology and the Society of Nuclear Medicine conclude in their joint statement in 2004 that incorporation of attenuation corrected (AC) images in myocardial perfusion scintigraphy (MPS) will improve diagnostic accuracy. The aims of the present study were to compare the accuracy of 1) computer interpretation of myocardial infarction when using a non-attenuation corrected (NC) normal stress database (NC-NSD) vs. an AC normal stress database (AC-NSD) and 2) computerized determination of the need for a rest study when using either NC-NSD or the AC-NSD.

Methods

311 patients admitted to 99Tc MPS in Malmö in 2007 were included. Only patients who had both stress and rest study were included. The final reports according to clinical routine were regarded as gold standard. Due to missing data from the clinical report, 288 patients were included for the infarction sub study and 287 for the rest sub study. The EXINI heart™ software package was used for interpretation. Analyses were carried out twice; when using NC-NSD and when using AC-NSD. The software analyzed the images using artificial neural networks.

Results

The sensitivities, specificities, positive predictive values, negative predictive values and overall accuracy for computer interpretation of infarction when using either NC-NSD or AC-NSD are shown in the table, as well as values for the need for a rest study. For patients compared to AC-NSD, only 5 would have been sent home without a rest study, when a rest study was needed according to gold standard.

	Need for rest study		Infarction	
	NC-NSD	AC-NSD	NC-NSD	AC-NSD
Sensitivity	93%	96%	89%	79%
Specificity	54%	58%	85%	92%
PPV	63%	66%	74%	82%
NPV	90%	95%	94%	91%
Accuracy	72%	75%	86%	88%

