

# Nuclear medicine technologists are able to accurately determine when a myocardial perfusion rest study is necessary

Elin Trägårdh, Liselott Johansson, Camilla Olofsson, Sven Valind, Lars Edenbrandt

Clinical Physiology and Nuclear Medicine, Lund University, Skåne University Hospital, Malmö, Sweden

## Conclusion

The nuclear medicine technologists were able to accurately determine whether a rest study was necessary. There was very good agreement between nuclear medicine technologists and physicians in the assessment of the need for a rest study. We found no differences in the number of rest studies performed before and after the routine was implemented. This routine improves effectiveness of the laboratory.

## Background

In myocardial perfusion imaging (MPI), typically a stress and a rest study is performed. If the stress study is considered normal, there is no need for a subsequent rest study. The aim of the study was to determine whether nuclear medicine technologists are able to assess the necessity of a rest study.

## Methods

Gated MPI using a 2-day  $^{99m}\text{Tc}$  protocol for 121 consecutive patients were studied. All nuclear medicine technologists performing MPI had to review 82 training cases of stress MPI images with comments regarding the need for rest studies, and thereafter a test consisting of 20 stress MPI images. After passing this test, the nuclear medicine technologists in charge of a stress MPI study assessed whether a rest study was needed or not or if he/she was uncertain and wanted to consult a physician. After that, the physician in charge assessed the images and decided whether a rest study was required or not.

**Follow up:** The new routine was implemented in mid-November 2011. January-October 2011 (10 months) were used as reference (physicians made decisions about the need for a rest study). December 2011- March 2012 (4 months) decisions were made by nuclear medicine technologists) were compared to the reference period. The number of stress and rest studies for each period was calculated.

## Results

The nuclear medicine technologists and the physicians in clinical routine agreed in 103 of the 107 cases (96%) for which the technologists felt certain regarding the need for a rest study. In the remaining 14 cases the technologists were uncertain, i.e. wanted to consult a physician. The agreement between the technologists and the physicians in clinical routine was very good resulting in a kappa value of 0.92. There was no statistically significant difference in the evaluations made by technicians and physicians ( $P=0.617$ ).

**Follow up:** For the reference period, in total 1141 patients were examined by MPI, of which 641 also performed a rest study (56.2%). For the period when decisions were made by nuclear medicine technologists, 553 MPI studies were performed, of which 312 had a rest study included (56.4%) ( $P = \text{not significant}$ ).

Example of one of the test cases. The upper panels show stress images for non-attenuation corrected and attenuation corrected images. The lower image shows stress bulls eye plots as well as computerized interpretation. The correct answer to this example was "no rest study necessary".

