

Interpretation of ischemia in myocardial perfusion scintigraphy by two computer aided diagnosis systems

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Conclusion

EXINI showed significantly higher sensitivity and specificity for the detection of ischemia compared to PERFEX. The difference in performance should be considered when software packages are used in clinical routine.

Results

Ischemia was found in 257 patients according to gold standard. The sensitivity for detecting ischemia was 69.7% for EXINI and 62.6% for PERFEX ($p=0.045$). The specificity was 93.1% for EXINI and 82.4% for PERFEX ($p<0.0001$).

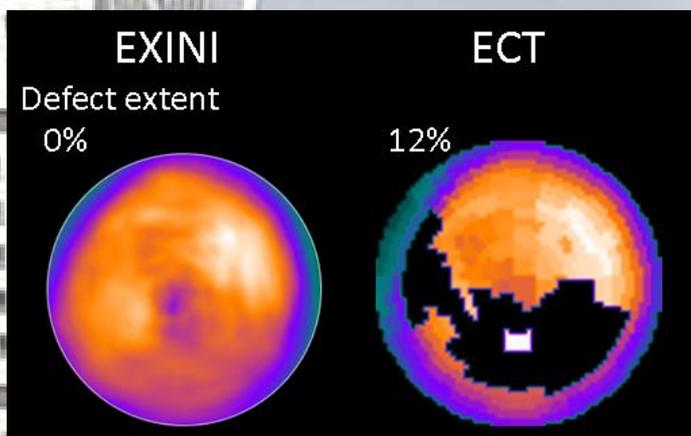
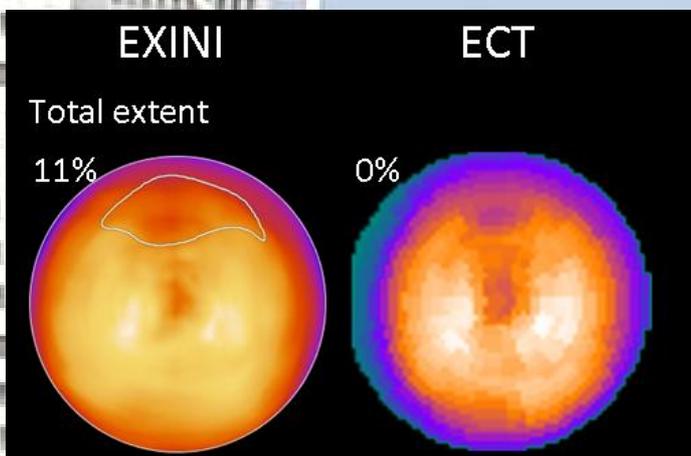
Purpose

Visual interpretation of myocardial perfusion scintigrams (MPS) is dependent on the knowledge of the physician, and subject to inter- and intra-observer variability. Inexperienced physicians could benefit from getting "second opinion" from a computerized interpretation. To compare the diagnostic performance for the detection of ischemia of two computer aided diagnosis software packages (EXINI heart™ and PERFEX Emory Cardiac Toolbox) for interpretation of MPS.

Methods

1052 consecutive patients, 499 (47.4%) men and 553 (52.6%) women, who underwent 2-day stress/rest ^{99m}Tc-sestamibi MPS were included. Patients were stressed using either maximal exercise or pharmacological test with adenosine. The gold standard was obtained from three physicians, with more than 25 years each of experience in nuclear cardiology, who evaluated all MPS images on the presence or absence of ischemia. The majority rule was applied in cases of disagreement. No quantitative results from software packages were available during this evaluation. Automatic processing was done using EXINI (artificial neural networks based) and PERFEX (rule based expert system) software packages.

Disclosure: LE is employed by EXINI Diagnostics.



The upper figure shows results from EXINI and PERFEX Emory Cardiac Toolbox for a patient regarded as ischemic by gold standard. The lower figure shows results from a patient regarded as normal by gold standard.