

The Negative Predictive Value of Exercise Treadmill Testing at One Year

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Background: The majority of clinical studies about treadmill exercise testing focus on sensitivity and specificity determination. The aim of our study was to evaluate the negative predictive value of the treadmill test. The primary outcome was the incidence of myocardial infarction and death from all causes during the year following the test.

Methods: A retrospective study on patients subjected to treadmill tests (Bruce protocol), where 85% of maximum heart rate was reached, at the Sherbrooke university hospital center (CHUS), from January 1, 2002, through December 31, 2006. Data were collected from the institutional database. CHUS being the only center of reference in the Sherbrooke region, only the patients from that region were included in the study to diminish the risk of missing out on major events during follow-up. Exclusion criteria included prior cardiac stratification in the 5 years preceding the study. All patients hospitalised the year following treadmill testing were identified, and the cause of hospitalisation was noted.

Results: A total of 3990 patients underwent a treadmill exercise stress test. Tests with a doubtful or non conclusive result were excluded. There were 3560 remaining patients: 476 with a positive result, 3084 with a negative one. One hundred and thirty-two patients were hospitalised in the following year for these reasons: unstable angina (86), heart failure (13) and, myocardial infarction or death (33). Seventeen of these 33 patients had a negative treadmill test and therefore had a false negative test. These patients were older, had reduced physical capacity and lower pre-test predictive values than patients with a true negative result. The negative predictive value of the treadmill test at the CHUS during the study period was 99.4%. None of the 151 patients with a treadmill test result considered false positive at the time of the initial reading (positive but judged clinically negative) suffered myocardial infarction or death at one year. Finally, 92% of the patients had one or more clinical visits at the CHUS more than one year after the treadmill test, confirming that the CHUS is the center of reference of the study population.

Conclusion: Patients with a negative treadmill exercise stress test result at the CHUS are unlikely to be hospitalised for a myocardial infarction or suffer death from all causes in the year following the test, and the negative predictive value of the test is very high.

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Aucun conflit d'intérêts