Accuracy of an automated blood pressure monitor for the detection of atrial fibrillation: a systematic review

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INTRODUCTION: Atrial fibrillation (AF) is a significant risk factor for stroke and early detection of AF may help to identify patients in need of treatment. Since hypertension is an important risk factor for AF a modified automated blood pressure monitor with implemented algorithm for the detection of AF (BPM-AF, Microlife, Widnau, Switzerland) may be a useful tool for early diagnosis of AF. A systematic review was performed to investigate the overall accuracy of the Microlife BPM-AF for detecting AF.

METHODS: Searching for relevant databases revealed 8 studies investigating the accuracy of the BPM-AF. One study was excluded because of possible data duplication. Five studies (2126 patients, AF-prevalence 13%) were performed in the physician's office (4 studies among selected hospital outpatients and 1 among primary care patients), 1 study (139 subjects, 14 known AF) aimed at investigating the accuracy for screening at home (3.316 days screened) among patients at risk for paroxysmal AF (pxAF) and in 1 study (46 subjects, 10 with AF) the feasibility for AF detection during 24-hour blood pressure monitoring (ABPM) was investigated. In the office studies results of the BPM-AF were compared to 12-lead ECG, in the home study to an event loop recorder and in the ABPM study to a 24-h holter ECG.

RESULTS: Results from the office studies showed sensitivity values of 97-100% and specificity values of 89-92% for detecting AF. The ABPM-study demonstrated that AF detection during 15% of all measurements or more indicates the presence of AF. In addition, one patient with unknown pxAF was found. The home study demonstrated sensitivity and specificity values for detecting AF of 99% and 93%, respectively, and two subjects with no history of AF were detected.

CONCLUSIONS: The Microlife BPM-AF showed to be an accurate tool for screening AF in the physician's office and showed high potential for detecting pxAF for screening at home or during 24-hour blood pressure measurement.

LITERATURE

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