Is pulse palpation helpful in detecting atrial fibrillation: a systematic review

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CRD summary
This well-conducted review reliably concluded that pulse palpation can be useful for ruling out atrial fibrillation.

Authors' objectives
To determine the accuracy of pulse palpation to detect atrial fibrillation (AF).

Searching
MEDLINE and EMBASE were searched from inception to June 2005; details of the search strategy were reported. The reference lists of all possibly relevant studies, including review articles, were screened.

Study selection
Study designs of evaluations included in the review
No inclusion criteria relating to the study design were specified. Two studies were diagnostic cohort studies and one was a diagnostic case-control study.

Specific interventions included in the review
Studies in which all patients received pulse palpation were eligible for inclusion. In all studies a nurse carried out the pulse palpation.

Reference standard test against which the new test was compared
Studies in which all patients received an electrocardiogram (ECG) as the reference standard were eligible for inclusion. In all studies a cardiologist carried out the ECG diagnosis.

Participants included in the review
No inclusion criteria relating to the participants were specified. All studies included patients aged over 65 years from UK general practices.

Outcomes assessed in the review
The studies had to report sufficient data to calculate the sensitivity and specificity, or this had to be provided by the study authors.

How were decisions on the relevance of primary studies made?
Two reviewers independently screened the results of the searches. Full text documents of relevant papers were obtained, and the two reviewers assessed these for inclusion according to predetermined criteria. Included articles were agreed by both authors.

Assessment of study quality
Study quality was assessed using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool (see Other Publications of Related Interest). Two reviewers independently assessed quality.

Data extraction
Two reviewers independently extracted the data.

Methods of synthesis
How were the studies combined?
Pooled sensitivity and specificity values were calculated using Metatest (New England Medical Center, Boston). Pooled positive and negative likelihood ratios (LRs) were calculated with the random-effects model of DerSimonian and Laird, using Cochrane RevMan software.

How were differences between studies investigated?
The studies were assessed for heterogeneity using the chi-squared and I-squared tests in the Cochrane RevMan software.

Results of the review
Three studies (n=2,385) were included in the review.

The sensitivity ranged from 91 to 100% and the specificity from 70 to 77%. The pooled sensitivity was 94% (95% confidence interval, CI: 84, 97) and the pooled specificity 72% (95% CI: 69, 75). Positive LRs ranged from 3.1 to 4.1 and negative LRs from 0.024 to 0.12. The pooled positive LR was 3.4 (95% CI: 3.2, 3.7) and the pooled negative LR 0.11 (95% CI: 0.06, 0.20). The chi-squared test for heterogeneity was 3.87 (P=0.14) for the positive LR and 1.49 (P=0.49) for the negative LR, indicating the consistency of results between studies.

Authors' conclusions
Pulse palpation can be used to rule out AF as it has a high sensitivity, although specificity is relatively low. It may also be used to screen opportunistically for previously undetected AF.

CRD commentary
This was a well-conducted and very clearly reported review. The review question was supported by clearly defined inclusion criteria. A reasonable literature search was conducted, although further attempts to identify unpublished studies could have been undertaken. Details of the review process, including appropriate steps to minimise bias, were reported. A flow diagram showed the flow of studies through the review. The methods used to pool studies were appropriate. The authors' conclusions are supported by the results presented.

Implications of the review for practice and research
Practice: The authors stated that it may be worth considering opportunistic testing for AF, particularly in patients with ischaemic heart disease or heart failure. Even among these patients, cases of paroxysmal AF may be missed, whether using pulse palpation or ECG. You may, therefore, want to repeat the test periodically.

Research: The authors did not state any implications for research.

Bibliographic details

PubMedID
16451780

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM
MeSH
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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.