Eponymes and the diagnosis of aortic regurgitation: what says the evidence?  
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CRD summary
This review assessed the accuracy of eponymous signs for the diagnosis of aortic regurgitation. The review was generally well conducted but relevant studies might have been missed by the searches. The authors’ conclusion, that there was limited evidence to support these signs, is supported by the results presented.

Authors' objectives
To examine the peer-reviewed literature on the eponymous signs of aortic regurgitation and to explore the possible roles of these signs in the clinical evaluation of chronic aortic regurgitation. The authors also examined current textbook content so this could be compared with the peer-reviewed literature. This assessment and comparison was not included in this abstract as it did not constitute a systematic review.

Searching
MEDLINE was searched from 1966 to October 2002; the search terms were reported. The search was restricted to papers reported in the English language. The bibliographies of all retrieved papers and prominent review articles were screened for additional studies.

Study selection
Study designs of evaluations included in the review
Studies that included at least 10 participants were eligible for inclusion. No details of the study designs used in the included studies were reported.

Specific interventions included in the review
Studies of eponymous signs of aortic regurgitation on physical examination were eligible for inclusion. Studies that involved prosthetic heart valves or acute aortic regurgitation were excluded. The included studies assessed the Austin Flint Murmur, Hill sign, Corrigan pulse, Duroziez sign, Quinke sign, Traube sign, de Musset sign, Mayne sign and Rosenbach sign.

Reference standard test against which the new test was compared
No inclusion criteria relating to the reference standard were specified. The reference standards used in the included studies were phonocardiography, angiography, echocardiography, auscultation, nuclear magnetic resonance imaging, autopsy, operation and clinical examination.

Participants included in the review
Studies carried out in adults were eligible for inclusion. Many studies were restricted to patients with aortic regurgitation.

Outcomes assessed in the review
The studies had to report analysable data on diagnostic accuracy or prognostic value to be included. The outcome measures reported in the review were the sensitivity and specificity.

How were decisions on the relevance of primary studies made?
One reviewed screened citations and assessed full reports for inclusion.

Assessment of study quality
Three reviewers independently assessed study quality. The studies were assessed for study design, study size, test review bias, diagnostic review bias, verification bias and selection bias.
Data extraction
Where possible, the sensitivity and specificity were calculated for each study. The authors did not state how many authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The results were combined in a narrative. Only signs assessed by three or more studies were reviewed in depth.

How were differences between studies investigated?
Differences between the studies were not formally investigated.

Results of the review
Twenty-three studies met the inclusion criteria.

The quality of the studies was generally poor. In particular, almost all studies suffered from selection bias. Most studies included fewer than 35 patients and were restricted to patients with aortic regurgitation, thus it was only possible to calculate the specificity for a small proportion of studies. Blinding was rarely reported and, where reported, was often not carried out. A variety of reference standards were used.

Austin Flint Murmur (12 studies).
Three studies were excluded as they dealt with patients who had both aortic regurgitation and mitral stenosis; an Austin Flint murmur cannot occur in the presence of mitral stenosis. The sensitivity ranged from 25 to 100%, and was higher in patients with severe aortic disease (57 to 100%) than among those with mild to moderate disease (0 to 50%).

Hill sign (7 studies).
The sensitivity ranged from 0 to 100%. Four studies provided data on specificity, which ranged from 71 to 100%.

Corrigan pulse (6 studies).
The sensitivity ranged from 38 to 95%. Specificity was only reported in one study, which found a specificity of 16%.

Duroziez sign (5 studies).
The sensitivity ranged from 33 to 81% and the specificity from 35 to 100% (although the 100% estimate was based on only 2 patients).

The Quinke sign (2 studies), Traube sign (2 studies), de Musset sign (1 study), Mayne sign (1 study) and Rosenbach sign (1 study) were not included in the results as they were all investigated in fewer than three studies.

Authors’ conclusions
There was little evidence in the published literature to support the usefulness of eponymous signs of aortic regurgitation.

CRD commentary
The review question was defined and supported by appropriate inclusion criteria. The literature search was limited to MEDLINE and the screening of references and only articles in English were included. It is therefore likely that relevant studies have been missed and the review may be subject to language and publication bias. Some details of the review process were reported. Only one reviewer assessed studies for relevance and the authors did not report how the data extraction was carried out; errors and/or bias might therefore have been introduced at this stage. A detailed quality
assessment was undertaken independently by at least two reviewers, some results of which were reported in the ‘Results’ section; further details, ideally in a table, would have been helpful.

The table of individual study results (provided online) was limited and further details of the included studies would have been helpful. A more detailed statistical analysis and/or description would have aided interpretation of the results, although it was unlikely to have changed the authors’ conclusion.

**Implications of the review for practice and research**

**Practice:** The authors stated that those who have long embraced time-honoured components of physical examination may be challenged to re-examine their place in contemporary teaching and practice.

**Research:** The authors stated that clinicians and educators should redouble their efforts to update and improve the evidence so that the physical examination can earn a more substantial place in current medical practice.

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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.