Review: Subtle clinical findings can detect left-sided heart failure in adults


Objective
To determine which clinical findings can best detect left-sided heart failure in adults.

Data sources
(English-language studies were identified by searching MEDLINE using the text words physical, clinical, bedside, data, predictors, variables, items, sign, findings, or markers with the terms heart failure, left ventricular, ejection fraction, systolic function or dysfunction, or diastolic dysfunction.)

Study selection
Inclusion criteria were studies that examined the ability of clinical findings or the overall clinical examination to predict filling pressure or left ventricular ejection fraction (LVEF) or that compared several clinical findings with a multivariate analysis. Acceptable diagnostic standards for filling pressure were left ventricular end-diastolic pressure, left atrial pressure, pulmonary capillary wedge pressure, or pulmonary artery diastolic pressure.

Data extraction
Data were extracted or calculated on patients; diagnoses; diagnostic standard used; sensitivity, specificity, and likelihood ratio of a positive and negative test result; study quality (4 levels); clinical features; and disease prevalence.

Main results
11 studies assessed increased filling pressure, 12 assessed systolic dysfunction, and 11 assessed diastolic dysfunction. Findings that were assessed in ≥2 studies and found to be significant in each were classified as "very helpful" (Table). Additional findings were classified as "somewhat helpful."

Operating characteristics of clinical examination for detecting increased filling pressure, decreased ejection fraction, or diastolic dysfunction*

<table>
<thead>
<tr>
<th>Clinical finding for detection of heart failure</th>
<th>Sensitivity range</th>
<th>Specificity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased filling pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiographic redistribution</td>
<td>10% to 58%</td>
<td>79% to 100%</td>
</tr>
<tr>
<td>Jugular venous distention</td>
<td>55% to 65%</td>
<td>74% to 80%</td>
</tr>
<tr>
<td>Ejection fraction &lt; 40%</td>
<td>4% to 33%</td>
<td>87% to 100%</td>
</tr>
<tr>
<td>Radiographic cardiomegaly or redistribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anterior Q-waves</td>
<td>32% to 44%</td>
<td>89%</td>
</tr>
<tr>
<td>Left-bundle branch block</td>
<td>18%</td>
<td>95%</td>
</tr>
<tr>
<td>Abnormal apical impulse</td>
<td>31% to 36%</td>
<td>89% to 95%</td>
</tr>
<tr>
<td>Diastolic dysfunction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current hypertension</td>
<td>60% to 61%</td>
<td>59% to 70%</td>
</tr>
</tbody>
</table>

*Information supplied by authors.

Commentary
Badgett and colleagues have searched the literature to determine which radiographic findings, electrocardiographic findings, and physical signs and symptoms are useful in determining left ventricular filling pressure or decreased LVEF. Knowledge of these 2 hemodynamic variables is vital to proper therapeutic intervention.

The conclusions of the review are partly obvious and partly distressing. What will be obvious to clinicians is that, in patients with known systolic dysfunction, few findings are needed to support a diagnosis of increased filling pressure, whereas in patients without a history of systolic dysfunction, at least 3 findings are needed to confirm this diagnosis. Signs and symptoms can categorize patients as having a high, intermediate, or low probability of decreased LVEF. The more findings, the higher the probability.

What is distressing about this systematic review is the low yield of many of the classic signs and symptoms and the vast overlap between normal and abnormal. However, caution must be used when interpreting studies that use pooled data. Not only do clinicians often have difficulty identifying cardiac sounds (1), but the diagnostic standards used to measure ejection fraction have substantial variation, making correlations with clinical estimates difficult to interpret. Although filling pressures are more reliable, in the studies reviewed here, the time between the clinical examination and the final diagnostic assessment varied.

Few experts approach a patient without first forming a hypothesis. They intuitively calculate pretest probabilities and use each finding from the history, physical examination, and radiographic and electrocardiographic studies to determine risk. The take-home message of this systematic review is that although we need to train our clinicians better, even those with expert skills occasionally must rely on technology.

Harold M. Szerlip, MD
Tulane University School of Medicine
New Orleans, Louisiana, USA

Reference
Review: Subtle clinical findings can detect left-sided heart failure in adults

_Evid Based Med_ 1998 3: 22
doi: 10.1136/ebm.1998.3.22

Updated information and services can be found at:
http://ebm.bmj.com/content/3/1/22.citation

_These include:_

**References**
This article cites 1 articles, 0 of which you can access for free at:
http://ebm.bmj.com/content/3/1/22.citation#BIBL

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/