Review: fever and cough are the most accurate single tests for diagnosing influenza


Q In patients with influenza-like illnesses, what is the accuracy of clinical signs and symptoms for diagnosing influenza?

METHODS

Data sources: Medline (1966 to September 2004) and bibliographies of relevant articles.

Study selection and assessment: published studies on the assessment of clinical signs and symptoms as predictors of influenza; prospective cohort, randomised controlled trial, or meta-analysis study designs; >1 outcome being influenza type A or B infection; and independent blinded comparison of signs or symptoms with a criterion standard in consecutive patients who might have influenza. Quality assessment criteria included study design and validity of criterion standard.

Outcomes: likelihood ratios and diagnostic odds ratios (DORs) of clinical signs and symptoms. The DOR was calculated as the odds of signs or symptoms among persons having influenza compared with the odds of signs or symptoms among persons not having influenza.

MAIN RESULTS

6 studies (n = 7105) with a broad spectrum of patients with influenza-like illnesses were included. Prevalence of influenza ranged from 7–67%. The test characteristics of clinical signs and symptoms for diagnosing influenza are summarised in the table.

CONCLUSIONS

Fever and cough are the most accurate single tests for diagnosing influenza. The absence of fever, cough, or nasal congestion decreases the likelihood of an influenza diagnosis. Patient reports of fever, myalgia, sore throat, or sneezing are not useful diagnostic tests for influenza.

Test characteristics of clinical signs and symptoms for diagnosing influenza*

<table>
<thead>
<tr>
<th>Test</th>
<th>Number of studies (n)</th>
<th>Positive likelihood ratio</th>
<th>Negative likelihood ratio</th>
<th>Diagnostic odds ratio (CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever (37.8–38.5 °C)</td>
<td>3</td>
<td>1.8</td>
<td>0.40</td>
<td>4.5 (1.8 to 11.0)‡</td>
</tr>
<tr>
<td>Feverish (patient report)</td>
<td>2</td>
<td>Not reported</td>
<td>Not reported</td>
<td>1.1 (0.88 to 1.4)‡</td>
</tr>
<tr>
<td>Cough</td>
<td>4</td>
<td>1.1</td>
<td>0.42</td>
<td>2.8 (2.1 to 3.7)‡</td>
</tr>
<tr>
<td>Myalgia</td>
<td>3</td>
<td>0.93</td>
<td>1.2</td>
<td>0.79 (0.54 to 1.1)†</td>
</tr>
<tr>
<td>Headache</td>
<td>4</td>
<td>1.0</td>
<td>0.75</td>
<td>1.4 (1.2 to 1.8)</td>
</tr>
<tr>
<td>Sore throat</td>
<td>3</td>
<td>1.0</td>
<td>0.96</td>
<td>1.1 (0.87 to 1.31)</td>
</tr>
<tr>
<td>Sneezing</td>
<td>2</td>
<td>1.2</td>
<td>0.87</td>
<td>1.3 (0.95 to 1.93)</td>
</tr>
<tr>
<td>Nasal congestion</td>
<td>2</td>
<td>1.1</td>
<td>0.49</td>
<td>2.3 (1.9 to 2.8)</td>
</tr>
</tbody>
</table>

*CI defined in glossary.
†Calculated as the odds of the symptom or finding among patients with the disease compared with the odds of the symptom or finding among those not having the disease.
‡Not significant.

Commentary

Call et al examined whether identification of key signs and symptoms could aid in the diagnosis of influenza, thereby helping clinicians to determine when antiviral agent use is appropriate. Influenza is usually diagnosed clinically. However, the accuracy of a diagnosis of influenza based on clinical features is limited because symptoms overlap considerably with those caused by other organisms. The authors noted that most samples in the US in the 2003 and 2004 influenza season were negative for influenza, implying that many patients had benign, self-limiting, upper respiratory tract infections. Although signs and symptoms of influenza usually resolve within a week, complications can occur, including morbidity and increased mortality. Early diagnosis is necessary because antiviral agents have been shown to reduce the duration of clinical illness by about 1 day when given within 48 hours of symptoms; insufficient evidence exists on their effectiveness in preventing serious cases and reducing complications.

Recommendations for the use of antiviral agents vary between countries. In the UK, strict guidelines for their use exist, and they are not recommended for treating or preventing influenza in children or healthy adults <65 years of age. Standard treatments are recommended for healthy people.

The secondary objective of the review was to assess the operating characteristics of rapid diagnostic tests for influenza. The conclusion was that the role of rapid influenza tests has not been fully established, although increased testing options may be available in the future. This view was supported by Prodigy, who noted that new patient rapid tests currently lack sensitivity and specificity, and that influenza diagnosis should be made on clinical grounds. The conclusion of the review supports current advice that clinicians should diagnose influenza based on clinical findings combined with current epidemiological data. The review also provides a guide to the predictive values of clinical signs and symptoms.

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