# Clinical and radiologic evaluation had moderate sensitivity and specificity for detecting idiopathic pulmonary fibrosis

Hunninghake GW, Zimmerman MB, Schwartz DA, et al. **Utility of a lung biopsy for the diagnosis of idiopathic pulmonary fibrosis.** Am J Respir Crit Care Med. 2001 Jul 15;164:193-6.

### QUESTION

How do the diagnostic properties of clinical and radiologic evaluation compare with pathologic evaluation for detecting idiopathic pulmonary fibrosis (IPF)?

### DESIGN

Blinded comparison of clinical and radiologic evaluation with the results of a pathologic evaluation as the diagnostic standard.

### SETTING

8 referral centers in the United States.

### PATIENTS

91 new patients suspected of having IPF and whose medical condition did not preclude having a lung biopsy. Patients with an underlying connective tissue disorder, exposure to environmental agents or drugs known to cause pulmonary fibrosis, or other underlying disorders known to cause pulmonary fibrosis were excluded.

### DESCRIPTION OF TESTS AND DIAGNOSTIC STANDARD

At the referring center, patients were evaluated by clinical history and examination. Each patient had high-resolution computed tomography (HRCT) and bronchoscopy with a transbronchial lung biopsy. The transbronchial biopsy was done to detect lung diseases other than IPF. If the biopsy results did not provide a specific diagnosis, patients had a surgical (open or thoracopic) lung biopsy.

A pulmonologist at each of the referring centers made an initial overall clinical diagnosis (single pulmonologist). 3 pulmonologists independently made a second overall clinical diagnosis of IPF by evaluating symptoms, pulmonary function tests, chest radiographs, and HRCT scan results (pulmonology group). 4 chest radiologists independently made a third overall clinical diagnosis by evaluating only the HRCT scan results (radiology group).

Each of the pulmonologists and radiologists rated the resulting diagnosis of IPF as certain or unlikely to give a confident diagnosis or as uncertain. 3 lung pathologists independently made the pathologic diagnosis or secondary diagnosis by evaluating the same set of pathology slides, blinded to any clinical information.

### MAIN OUTCOME MEASURES

Sensitivity, specificity, and positive and negative likelihood ratios of the 3 tests.

### MAIN RESULTS

59% of patients received a pathologic diagnosis of IPF. Sensitivity, specificity, and positive and negative likelihood ratios of the 3 tests are shown in the Table.

### CONCLUSION

In patients suspected of having idiopathic pulmonary fibrosis, a confident diagnosis by clinical or radiologic evaluation had moderate sensitivity and specificity for detecting idiopathic pulmonary fibrosis.

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**Diagnostic properties of clinical and radiologic evaluation for detecting idiopathic pulmonary fibrosis***

| Test | Sensitivity (95% CI) | Specificity (CI) | +LR | –LR |
|---|---|---|---|---|
| Single-pulmonologist evaluation | 85% (80 to 86) | 43% (32 to 56) | 1.50 | 0.34 |
| If diagnosis "confident"† | 93% (84 to 94) | 36% (20 to 57) | 1.44 | 0.21 |
| Pulmonology-group evaluation | 72% (67 to 74) | 84% (76 to 85) | 4.45 | 0.33 |
| If diagnosis "confident"† | 79% (71 to 81) | 87% (77 to 88) | 5.91 | 0.24 |
| Radiology-group evaluation | 77% (72 to 79) | 72% (65 to 75) | 2.78 | 0.31 |
| If diagnosis "confident"† | 87% (77 to 88) | 95% (81 to 96) | 19.0 | 0.14 |

*Diagnostic terms defined in Glossary; LRs and CI calculated from data in article.
†A confident diagnosis was given for 59%, 69%, and 52% of patients by a single pulmonologist, the pulmonology group, and the radiology group, respectively.

## COMMENTARY

Identifying IPF among the other types of idiopathic interstitial pneumonia is more than academic because it bears on prognosis and may soon determine the choice of new therapeutic options (1, 2). The well-done study by Hunninghake and colleagues indicated that, under certain circumstances, it is possible to correctly reach the diagnosis of IPF on clinical grounds (i.e., without surgical lung biopsy). However, these circumstances remain unclear because no clinical or radiologic criteria were provided for the diagnosis of IPF. Such criteria have been recently proposed in an international consensus statement (3), but they have not yet been formally validated.

Although bronchoalveolar lavage was included in this list of criteria, it was not used in Hunninghake and colleagues' study. Among the 37 patients without IPF, bronchoalveolar lavage might have correctly identified those with hypersensitivity pneumonitis ($n = 7$) and eosinophilic pneumonia ($n = 1$).

This study emphasized that the expert opinion of a team of pulmonologists should be sought before giving a clinical diagnosis of IPF or submitting a patient to surgical lung biopsy. Furthermore, the study suggested that transbronchial biopsy was generally useless in the investigation of interstitial lung disease because it yielded a specific diagnosis in only 2 patients. Above all, the study indicated that even the pathologic diagnosis of IPF (which served as the gold standard in this study) is often challenging and that clinical correlation should not be neglected.

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***References***

1. **Katzenstein AA, Myers JL.** Idiopathic pulmonary fibrosis: clinical relevance of pathologic classification. Am J Respir Crit Care Med. 1998;157:1301-15.
2. **Ziesche R, Hofbauer E, Wittman K, et al.** A preliminary study of long-term treatment with interferon gamma-1b and low-dose prednisolone in patients with idiopathic pulmonary fibrosis. N Engl J Med. 1999;341:1264-9.
3. **King TE, Costabel U, Cordier JF, et al.** Idiopathic pulmonary fibrosis: diagnosis and treatment. International consensus statement. Am J Respir Crit Care Med. 2000;161:646-64.