FIVE CONSECUTIVE CASES WHERE LUNG TISSUE SAMPLING LED TO A MISDIAGNOSIS

Presenter: Anthony Gal, MD, Emory University

Moderator: Dao Nguyen, MD, University of Miami
FACULTY DISCLOSURES

Dr. Gal: None

Dr. Nguyen: None
To err is human; to forgive, divine.

Alexander Pope
An Essay on Criticism 1705

“Have no fear of perfection, you’ll never reach it”

- Salvador Dali
<table>
<thead>
<tr>
<th>Leading Causes of Death in United States</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heart Disease</td>
<td>652,091</td>
</tr>
<tr>
<td>2. Cancer</td>
<td>559,312</td>
</tr>
<tr>
<td>3. Stroke</td>
<td>143,579</td>
</tr>
<tr>
<td>4. Chronic lower respiratory diseases</td>
<td>130,033</td>
</tr>
<tr>
<td>5. Accidents (unintentional injuries)</td>
<td>117,809</td>
</tr>
<tr>
<td>Preventable Medical Errors</td>
<td>98,000</td>
</tr>
<tr>
<td>6. Diabetes</td>
<td>75,119</td>
</tr>
<tr>
<td>7. Alzheimer’s Disease</td>
<td>71,599</td>
</tr>
<tr>
<td>8. Influenza/Pneumonia</td>
<td>63,001</td>
</tr>
<tr>
<td>9. Nephritis/Nephrosis</td>
<td>43,901</td>
</tr>
<tr>
<td>10. Septicemia</td>
<td>34,136</td>
</tr>
</tbody>
</table>

Medical Negligence: The Role of America’s Civil Justice System in Protecting Patients’ Rights
The American Association for Justice
ERROR IN ANATOMIC PATHOLOGY

• Preanalytic
  – Clinician error: procedural, tissue sampling, wrong test
  – Transport: preservation, fixative, mix-up
  – Accessioning: paperwork & labeling

• Analytic
  – Laboratory: grossing, mislabeling, floaters, artefacts
  – Interpretative:
    • Generalist vs. specialist, “bad 2nd opinion”, inexperience, cowboy
    • Misuse of special stains
    • Failure to look at previous material or correlate with cytology
    • Reluctance to speak with “appropriate” clinicians
    • Known and unknown pathology traps
  – Reporting: lack of NO, typos, ambiguity, IT infrastructural

• Postanalytic
  – Delayed report, IT issues, paging, e-mail crash
  – Misunderstanding of results & garbled verbal reporting
  – Unexpected & inevitable

Arch of Pathol Lab Med, 2006: 130;604-6
INTERPRETATIVE ISSUES

THE PATHOLOGIST’S DIRTY LITTLE SECRET
INTEROBSERVER VARIATION

VS.

INTRAOBSERVER VARIATION
I think it is X, as I described in my paper.

The author thinks it is X. Therefore it is X.
MISTAKES
After careful study, I think this is Type A, because...
I'm tired, but I think this is Type B, because...

UNCLASSIFIABLE SLIDES
There is no problem. This is Type C.
This material cannot be classified without a special stain.

AMBIGUOUS QUALITATIVE TERMS
Term A means □.
Term A means ●.

IMPRECISE QUANTITATIVE TERMS
Rare means 1% or less.
Rare means 10% or less.

TUMOR HETEROGENEITY
I see ▲, so this is Type A.
I see ●, so this is Type B.

RELATIVE IMPORTANCE OF CRITERIA
I see □ and ◊. □ is more important, so this is Type D.
I see ◊ and ▲. ◊ is more important, so this is Type E.
ARTEFACTS IN BIOPSY

BRONCHOSCOPY
-- Hemorrhage
-- Atelectasis
-- Pinch
-- Crush
-- Dried or not well fixed
- Bx of pleura

LABORATORY
-- Sponge
-- Bubble
-- Bad histology
Clinicians Are From Mars and Pathologists Are From Venus

Clinician Interpretation of Pathology Reports

Arch Pathol Lab Med 2000; 124: 1040-46

Seth M. Powsner, MD; José Costa, MD; Robert J. Homer, MD, PhD
DON’T TRUST COWBOY PATHOLOGISTS
ERROR CLASSIFICATION

Unsophisticated

Sophisticated

Common

Uncommon
78 y.o. former female smoker (>10 yr) presented to an outside pulmonologist for evaluation of dyspnea.

PMH: colorectal carcinoma, HTN, DM, hypothyroidism, hyperlipidemia, CVA & MI

A CT scan showed RML collapse and possible obstructing mass potentially due to previous colorectal carcinoma. The middle lobe bronchi were aerated and appeared occluded.

Fiberoptic bronchoscopy revealed an endobronchial lesion obstructing the broncus intermedius. A biopsy was performed and this was interpreted as small cell carcinoma.

Following the results of this biopsy, she underwent a metastatic workup, including MRI of the brain, CT scan of the abdomen and pelvis and PFT.
• She was referred to an Emory interventional pulmonologist at Emory for further evaluation, debulking and possible stent placement.
At bronchoscopy, there was complete occlusion of the bronchus intermedius by a flesh colored endobronchial mass. The RML was occluded, but the RLL bronchus was patent, but filled with mucous.

2nd biopsy of the RML mass was performed.

Cryotherapy X2 destroyed the tumor and reestablished airways patency.

Post-bronchoscopy she developed hemoptysis and hypertension (250 systolic) and was admitted for one day observation.

She was referred back to the outside physician for further care. She died 2 months later, but no cause.
LUNG, RIGHT MIDDLE LOBE, BIOPSY:
- WELL-DIFFERENTIATED NEUROENDOCRINE TUMOR (CARCINOID).
- SEE COMMENT.

Comment
Immunohistochemical stains show the following results and support the diagnosis:
AE1/3- positive
Chromorphanin- positive
CD56- positive
Synaptophysin- positive
TTf-1 weakly positive
MIB1< 2%

Concurring pathologists: Drs. Gal and Sica.
Dear Dr. **Outside Pathologist**

Thank you for sending 1 H&E slide, representing a lung biopsy from the right middle lobe. Sections show a monotonous population of hyperchromatic tumor cells with scant cytoplasm. Focal rosette like structures are present. Cytologic atypia is minimal. Characteristic features of a small cell carcinoma (brisk mitotic activity, apoptotic debris, necrosis, molding and crush artifact) are not present. Per outside report the tumor cells are strongly positive for CK7 and negative for CK20, CK5/6 and TTF-1 (these slides were not received for review). In addition, the biopsy done at Emory University show identical histologic findings to this specimen.

In summary, this biopsy represents a well-differentiated neuroendocrine tumor (typical carcinoid).

This case has been reviewed by Drs. Anthony Gal and Gabriel Sica (pulmonary pathologists) who agree with the diagnosis.

Thank you for consulting me.

---

**Final Pathologic Diagnosis**

LUNG, RIGHT MIDDLE LOBE, BIOPSY:
- WELL-DIFFERENTIATED NEUROENDOCRINE TUMOR (TYPICAL CARCINOID).
- SEE LETTER ATTACHED.
CASE 1

Carcinoid tumor misdiagnosed as small cell carcinoma
Typical and Atypical Pulmonary Carcinoid Tumor Overdiagnosed as Small-Cell Carcinoma on Biopsy Specimens

A Major Pitfall in the Management of Lung Cancer Patients

Giuseppe Pelosi, MD,* Jaime Rodriguez, MD,† Giuseppe Viale, MD,* and Juan Rosai, MD†


Distinguishing Carcinoid Tumor From Small Cell Carcinoma of the Lung

Correlating Cytologic Features and Performance in the College of American Pathologists Non-Gynecologic Cytology Program

Andrew A. Renshaw, MD; Jennifer Haja, CT(ASCP); Richard L. Lozano, MD; David C. Wilbur, MD; for the Cytology Committee, College of American Pathologists

# Lung cancer cytology: potential pitfalls and mimics - a review

Idowu MO, Powers CN


<table>
<thead>
<tr>
<th>Cytologic features</th>
<th>SCLC</th>
<th>Carcinoid tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cellularity</strong></td>
<td>Hypercellular</td>
<td>Variable cellularity</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>Necrotic</td>
<td>Non necrotic</td>
</tr>
<tr>
<td><strong>Pattern</strong></td>
<td>Individual cells</td>
<td>Trabeculae</td>
</tr>
<tr>
<td></td>
<td>Loose clusters</td>
<td>Glandular</td>
</tr>
<tr>
<td></td>
<td>Molding</td>
<td>3D clusters</td>
</tr>
<tr>
<td></td>
<td>Biphasic viable and dead cells.</td>
<td>No molding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No necrosis</td>
</tr>
<tr>
<td><strong>Cell type</strong></td>
<td>Neuroendocrine</td>
<td>Neuroendocrine</td>
</tr>
<tr>
<td><strong>Cytoplasm</strong></td>
<td>Scant</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Easily stripped</td>
<td>Often stripped</td>
</tr>
<tr>
<td><strong>Nuclear</strong></td>
<td>Small, Oval</td>
<td>Round to oval; spindle</td>
</tr>
<tr>
<td></td>
<td>Elongated</td>
<td>Moderate-high N/C ratio</td>
</tr>
<tr>
<td></td>
<td>Hyperchromatic</td>
<td>Mitosis rare</td>
</tr>
<tr>
<td></td>
<td>High N/C ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brisk mitosis</td>
<td></td>
</tr>
<tr>
<td><strong>Nuclear membrane</strong></td>
<td>Smooth</td>
<td>Smooth</td>
</tr>
<tr>
<td><strong>Chromatin/ Nucleoli</strong></td>
<td>Granular evenly distributed</td>
<td>Granular stippled “salt and pepper”</td>
</tr>
<tr>
<td></td>
<td>Distinct nucleoli</td>
<td>Distinct nucleoli</td>
</tr>
<tr>
<td><strong>Misc.</strong></td>
<td>Nuclei may be up to 3 times the size of a lymphocyte</td>
<td>Low Ki-67</td>
</tr>
</tbody>
</table>
ERROR CLASSIFICATION

Unsophisticated

Sophisticated
CLASSIFICATION OF ERROR

Unsophisticated

Sophisticated

Common

Uncommon
"I'll be referring you to a pathologist."
CASE 2
• 61 y.o. former female smoker presented in October 2012 with progressive dyspnea associated with cough and marked purulent sputum production.

• Carried the diagnosis of sarcoidosis since 2001 due to non-necrotizing granuloma found in the left lower lobe and lymph nodes.

• She was treated with high dose prednisone for almost 2 years with slow tapering.
3. LUNG, LEFT LOWER LOBE, WEDGE BIOPSY: PATCHY INTERSTITIAL INFLAMMATION WITH FOCAL ORGANIZING PNEUMONIA AND NON-NECROTIZING GRANULOMATA (SEE COMMENT).

4. LYMPH NODE, LEFT LOWER LOBE, BIOPSY: BENIGN LYMPH NODE WITH NON-NECROTIZING GRANULOMATA (SEE COMMENT).

PERMANENT SECTIONS COMMENT:
Part 3: The histologic features are consistent with sarcoidosis. This case has been reviewed by Dr. G who agrees with the diagnosis.

Part 4: The hyalinized nodules noted may represent hyalinized granulomas, which would be compatible with sarcoidosis.
• For an unknown reason, a liver biopsy performed in 2003 showed ill-formed non-necrotizing granulomas.

• Outside notes suggested that “sarcoid” involving the liver and the spleen.
• She had yearly exacerbations and would be placed on corticosteroids and intravenous antibiotics through the years never with full respiratory failure requiring mechanical ventilation.

• In 2010 when she presented, she was believed to have bronchiectasis with *Pseudomonas* colonization and recurrent episodes of *C. difficile* colitis.

• Additional laboratory testing showed hypogammaglobulinemia with low IgG, IgE, and IgA, low serum albumin, and normochromic normocytic anemia.

• What is her real diagnosis?
CASE 2

Non-necrotizing granulomas in common variable immunodeficiency disorder
Granulomatous Disease in CVID: Retrospective Analysis of Clinical Characteristics and Treatment Efficacy in a Cohort of 59 Patients

Jean-Nicolas Boursiquot · Laurence Gérard · Marion Malphettes · Claire Fieschi · Lionel Galicier · David Boutboul · Raphael Borie · Jean-François Viallard · Pauline Soulsas-Spraul · Alice Berezne · Arnaud Jaccard · Eric Hachulla · Julien Haroche · Nicolas Schleinitz · Laurent Têtu · Eric Oksenhendler · the DEFI study group

Granulomatosis-associated common variable immunodeficiency disorder: a case–control study versus sarcoidosis

Diane Bouvry, Luc Mouthon, Pierre-Yves Brillet, Marianne Kambouchner, Jean-Pierre Ducroix, Vincent Cottin, Julien Haroche, Jean-François Viallard, Romain Lazor, François Lebarge, Abdellatif Tazi, Benoît Wallaert, Amar Smail, Jean-Luc Pellegrin, Hilario Nunes, Zahir Amoura, Jean-François Cordier, Dominique Valery, Jean-Marc Naccache and the Groupe Sarcoïdose Francophone
DISCUSSION
WHICH IS SARCOIDOSIS?

- Tuberculosis
- Hypersensitivity Pneumonitis
- Berylliosis
- α-Interferon therapy
ROLE OF THE PATHOLOGIST

- Search for other causes of granulomatous disease
- Perform and evaluate special stains for micro-organisms
- Accurately communicate the histological findings
THE BIOPSY REPORT

• Lung biopsy, tbbx:
  – Non-necrotizing granulomas (indicate number of granulomas)
  – AFB and GMS stains are negative

• Lymph node, biopsy:
  – Numerous granulomas, some exhibiting minimal central necrosis
  – AFB and GMS stains are negative
THE BIOPSY REPORT

• Lung, open biopsy:
  – Numerous necrotizing granulomas
  – Few organisms present in AFB stain
  – GMS stain is negative

• Pleura, biopsy:
  - Solitary non-necrotizing granuloma
  - AFB and GMS stains inconclusive because of insufficient granulomas
NOT TO DO IN A PATHOLOGY REPORT

• Lung biopsy, tbbx:
  - Sarcoidosis

• Lung biopsy, tbbx:
  - Non-necrotizing granulomas, compatible with sarcoidosis.

Comment
SP PATHOLOGIST COMMENT
In the absence of any diagnosis that may lead to nodular proliferations in a lymph node, this histopathology is compatible with old sarcoidosis.
Atlas of Granulomatous Diseases

Yale Rosen, M.D.

Granuloma Basics
Sarcoidosis
Tuberculosis
Infectious Granulomas - Non-TB

http://granuloma.homestead.com
"The diagnosis of sarcoidosis is made by the patient’s physician based upon a synthesis of clinical, radiological, histological, and clinical laboratory information. Because the granulomas that are seen in sarcoidosis are nonspecific lesions, the pathologist is almost never able to suggest the diagnosis of sarcoidosis based solely upon examination of a biopsy specimen."

Rosen Y. Pathology of Sarcoidosis. Semin Respir Crit Care Med 2007;28:36–52
ERROR CLASSIFICATION

Unsophisticated

Sophisticated

Common

Uncommon
ERROR CLASSIFICATION

Unsophisticated

Sophisticated
"Quick, Henson - seal the exits, call the police and get a pathologist in here to determine the exact time he left the payroll!"
CASE 3
• 76 y.o. former male smoker (~40 years) was initially diagnosed with LLL pneumonia.

• Bronchoscopy revealed *Aspergillus flavus*, peripheral eosinophilia (1078), and an elevated IgE level (>2000).

• Presumptive diagnosis of ABPA: he was treated with itraconazole and prednisone with some initial improvement.

• He was referred to Emory for further management.
• However, there was a concern that imaging studies revealed new diffuse ground glass opacities and consolidation, not seen previously.

• Underwent bronchoscopy which revealed no visible endobronchial lesions: tbbx, cytologies, and cultures.

• The transbronchial biopsy was interpreted as being “normal” and the BAL did not show fungal pathogens, increased number of neutrophils and eosinophils.
• Subsequent 9 months, he had 3-month f/u visits.

• At his last visit, CT-scan showed increased consolidation and adjacent groundglass opacities in peripheral LLL.

• Referred to an Emory thoracic surgeon for open lung biopsy, but had LUL & LLL wedge biopsies performed elsewhere.
LUNG, LEFT LOWER LOBE, TRANSBRONCHIAL BIOPSY:
- RESPIRATORY MUCOSA AND ALVEOLATED LUNG PARENCHYMA WITH NO SIGNIFICANT HISTOPATHOLOGIC CHANGE.
- NO NEOPLASM, GRANULOMAS, VIRAL CYTOPATHIC EFFECT, OR FUNGAL ELEMENTS IDENTIFIED.
- SEE COMMENT.

Comment
A GMS-F stain for fungal elements is negative.

AMENDED REPORT (1 YEAR 11 DAYS LATER)

LUNG, LEFT LOWER LOBE, TRANSBRONCHIAL BIOPSY:
- ATYPICAL PNEUMOCYTE PROLIFERATION, FAVOR NEOPLASTIC PROLIFERATION.
- SEE COMMENT.
CASE 3

Adenocarcinoma misdiagnosed as normal lung
ERROR CLASSIFICATION

Unsophisticated

Sophisticated

Common: [red]
Uncommon: [yellow]

[Diagram with red and yellow sections]
ERROR CLASSIFICATION

Unsophisticated

Common

Sophisticated

Uncommon
CASE 4
• In 2011 68 y.o. former male smoker (7 years) had LUL 1.5cm adenocarcinoma with bronchiolo-alveolar features (Stage IA:T1, N0, M0).

• Lesion first noted in 2004, followed periodically by another thoracic surgeon, but was now removed due to increased density.

• 22 months after lung surgery, he presented to the ED with 2 month dyspnea and productive cough.

• CT scan showed a large right pleural effusion, RML and RLL atelectasis, and a moderate left pleural effusion. Right sided thoracentesis removed 1600ml of dark serous fluid and cytology specimens showed "adenocarcinoma".

• The following day he underwent right pleural biopsies and talc pleurodeisis.
• Immunostains on the 2011 tumor = pulmonary primary
  TTF-1 +  CK 7 +  CK 20 -

• Thoracic oncology was consulted for further evaluation and recommended EGFR, KRas and later additional GI tract oncological evaluation.

• At his first EGD there was a large periampullary mass in the 2nd portion of the duodenum from which small biopsies were taken.
Final Pathologic Diagnosis
A. SMALL BOWEL, MASS, BIOPSY:
   - SUPERFICIAL FRAGMENTS OF TUBULOVILLOUS ADENOMA WITH HIGH-GRADE DYSPLASIA.
   - SEE COMMENT.

Comment
Due to the superficial nature of this biopsy, invasion cannot be assessed. Clinical correlation is suggested.

PET-CT 3/18/2013 revealing a highly avid mass in the pancreas/duodenum with mesenteric adenopathy and likely malignant ascites and effusions, s/p EGD 3/26/13 showing a frond-like polypoid mass in periampullary duodenum s/p bx showing tubulovillous adenoma with high grade dysplasia who presents 4/3/2013 for further evaluation and management.

The pt is currently without a definitive diagnosis due to indeterminate tissue specimens obtained on biopsy. Pathology report and cytogenetics are more consistent with intestinal CA rather than pancreatic or lung adenocarcinoma. I had a long discussion with the patient and his wife.
Two weeks of turf fighting between GI and thoracic oncology and the patient wanting to leave Emory and go to MD Anderson eventually led to repeat EGD of the periampullary mass.

Final Pathologic Diagnosis
A. DUODENUM, SECOND PORTION, MASS/POLYP, BIOPSY:
- FOCI OF POORLY DIFFERENTIATED CARCINOMA IN LYMPHATIC SPACES.
- TUBULOVILLOUS ADENOMA.
- SEE COMMENT.
CASE 4

Metastatic GI-tract adenocarcinoma (almost) misdiagnosed as lung origin
**COSTS OF REDUNDANT WORK-UP**

Restaining 2011 left lung tumor:
- 3 antibodies: $100 x 3 = $ 300

EGFR Molecular/PCR right pleural bx: $2000

K-ras mutation right pleural bx: $ 500

EGD repeat: $3000

GI Pathology repeat:
- Biopsy + 6 antibodies: 75 + 100x6= $ 675

Total: $6475
ERROR CLASSIFICATION

Unsophisticated

Sophisticated
CLASSIFICATION OF (ALMOST) ERROR

Unsophisticated

Common

Sophisticated

Uncommon
"There are many questions, of course, that won't be answered till the autopsy."
53 y.o. former female smoker (7 years) referred to an outside pulmonologist for evaluation of cough and dyspnea for a couple of years. She felt that it started abruptly in 2010 after having flu-like symptoms.

+ “Raynaud’s features” with hand stiffness.

Aciphex and Symbicort without changes in symptoms.

No occupational exposure, “exotic pet exposure”, or other medications. No other significant past medical history.

A CT scan was performed.

FINDINGS: There are fibrotic interstitial lung changes predominantly at the lung bases. There is honeycomb and traction bronchiectasis. Primary considerations include chronic aspiration, idiopathic pulmonary fibrosis and interstitial lung disease related to collagen vascular disorders. There is a small 1 cm AP window lymph node, although limited by the lack of intravenous contrast there is otherwise no convincing evidence of significant mediastinal, axillary or hilar adenopathy. The noncontrasted bilateral adrenal glands are normal in appearance. No focal areas of airspace consolidation are identified. No pulmonary nodules are seen.

IMPRESSION: BASILAR INTERSTITIAL LUNG CHANGES, UNCHANGED GIVEN DIFFERENCES IN TECHNIQUE COMPARED TO THE STUDIES OF JANUARY 10, 2013, NOVEMBER 12, 2012. PRIMARY CONSIDERATIONS INCLUDE CHRONIC ASPIRATION, IDIOPATHIC PULMONARY FIBROSIS AND INTERSTITIAL LUNG DISEASE RELATED TO COLLAGEN VASCULAR DISEASE. NOTABLY, THE LUNG APICES ARE RELATIVELY SPARED.
<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVC</td>
<td>2.23L</td>
<td>53%</td>
</tr>
<tr>
<td>FEV1</td>
<td>2.06L</td>
<td>62%</td>
</tr>
<tr>
<td>FEV/FVC</td>
<td></td>
<td>92%</td>
</tr>
<tr>
<td>TLC</td>
<td>3.44L</td>
<td>58%</td>
</tr>
<tr>
<td>DLCO</td>
<td>12.22</td>
<td>38%</td>
</tr>
</tbody>
</table>
• In the pulmonologist’s note, he felt that a VATS lung biopsy would be needed, since the differential diagnosis would include UIP/IPF, chronic hypersensitivity pneumonitis, connective tissue disorders, drug toxicity.

• A VATS biopsy of the right lower lobe was performed by a “board-certified Thoracic Surgeon” in Northeast Georgia.....
Dear Contributing Pathologist

The sections of lung demonstrate extensive fibrosis involving parenchymal and subpleural lung. No normal appearing lung tissue is present. Foci of honeycombing fibrosis and rare lymphoid aggregates are noted. Granulomas, eosinophilia, or fibroblast foci are not seen.

As discussed in my telephone conversation with Dr. W, this biopsy shows extensive pulmonary fibrosis, but because of limited sampling, I cannot further delineate the pattern of interstitial lung disease. Additional correlation with the clinical and radiographical presentations is recommended.

The findings were discussed with Dr. W

Thank you for sending me this interesting case in consultation.

Final Pathologic Diagnosis
LUNG, RIGHT LOWER LOBE, WEDGE BIOPSY:
- EXTENSIVE PULMONARY FIBROSIS WITH HONEYCOMBING AND FOCAL LYMPHOID AGGREGATES.
<table>
<thead>
<tr>
<th>HRCT Pattern*</th>
<th>Surgical Lung Biopsy Pattern* (When Performed)</th>
<th>Diagnosis of IPF?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UIP</strong></td>
<td>{ UIP, Probable UIP, Possible UIP, Nonclassifiable fibrosis }</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Not UIP</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>{ UIP, Probable UIP }</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Possible UIP</td>
<td>Probable†</td>
</tr>
<tr>
<td></td>
<td>Nonclassifiable fibrosis</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Not UIP</td>
<td>Possible†</td>
</tr>
<tr>
<td></td>
<td>{ UIP, Probable UIP, Possible UIP, Nonclassifiable fibrosis, Not UIP }</td>
<td>No</td>
</tr>
<tr>
<td><strong>Possible UIP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inconsistent with UIP</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Requires multidisciplinary discussion.
CASE 5

Pulmonary fibrosis, NOS
DISCUSSION
ERROR CLASSIFICATION

Unsophisticated

Sophisticated

Common

Uncommon
CLASSIFICATION OF ERROR

Unsophisticated

Common

Uncommon

Sophisticated