SEVERANCE

Case Presentation

세브란스 병원 호흡기내과
전임의 황지안

Case (54/F)

Chief complaint

- Dyspnea (Onset: 3 weeks ago)

Case (54/F)

Present illness

2014-9-16 Cough, sputum, fever-> A 병원 방문, CT, 폐렴 의증

2014-9-24 fever, dry cough 지속-> 입원, 2주 항생제 치료, 균 배양 음성

2014-10-7 PCNB 시행 – organizing pneumonia

2014-10-30 C병원 전원. BAL, TBLB 시행, COP 의증.

2014-11-11 호흡곤란 악화, 산소 요구량 증가 (mask 12L, SpO2 93%)

4일간 methylprednisolone 500mg

이후 3일간 methylprednisolone 1mg/kg + cyclosporin 1T bid

2014-11-18 산소요구량 증가, 폐 이식 고려하여 본원 전원.

- Occupation : 중학교 가정교사 (31년)
- DM/TB/HTN/Hepatitis (-/-/-/-)
- Smoking : never
- Drug history (-)/ Fume or toxin exposure history (-)

- Vital Sign : 137/91mmHg, PR:105/min, 37.1°C 97% (mask 12L)
- Review of System

  Fever/Chill (-/-), cough/sputum (-/-), dyspnea (+)

  Dry eye/ dry mouth/ arthralgia /Skin (-/-/-/-)
- Physical Examination

  Bibasilar crackle on both lower lung field

Other Examination

2014.10.31. (C병원) TTE : EF 63%, no RWMA

PFT : FEV1/FVC 92, FEV1 50, FVC 45, DLCO 29

2014.11.2. (C병원) BAL fluid: WBC 310, Lymphocyte 21%, neutrophil 3%

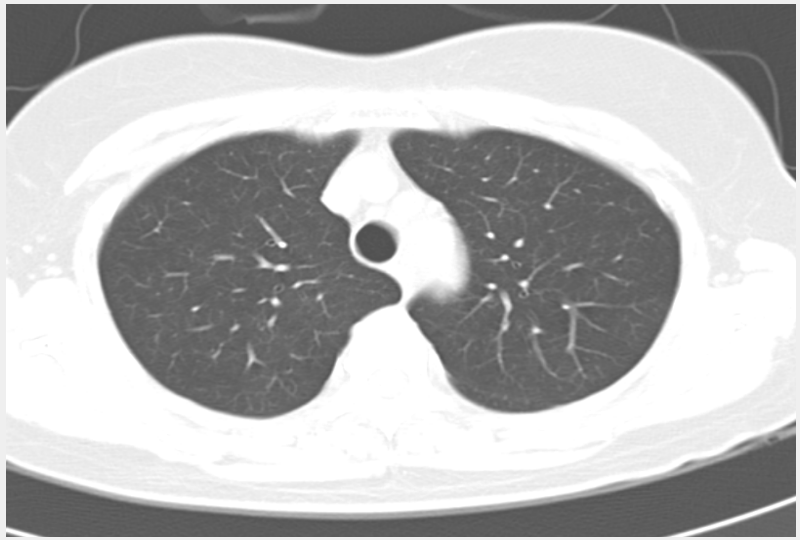
2014.11.6. (C병원) sputum Culture – MRSA

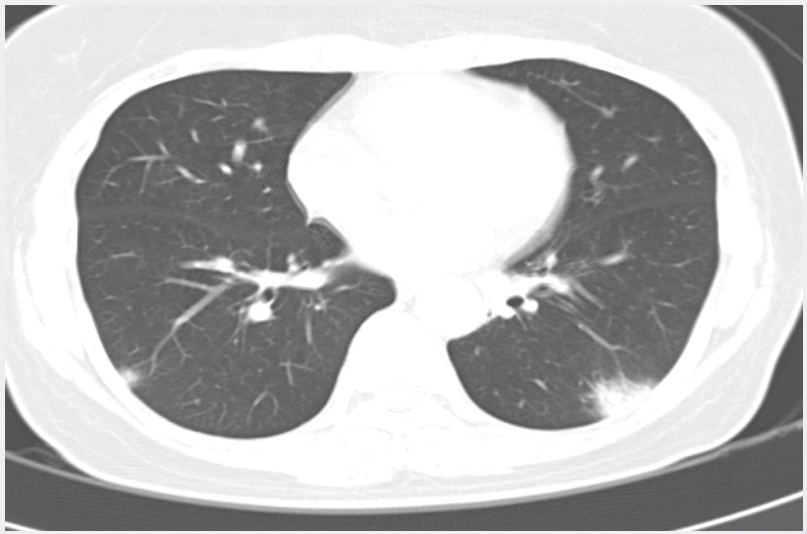
2014.11.18. (본원)

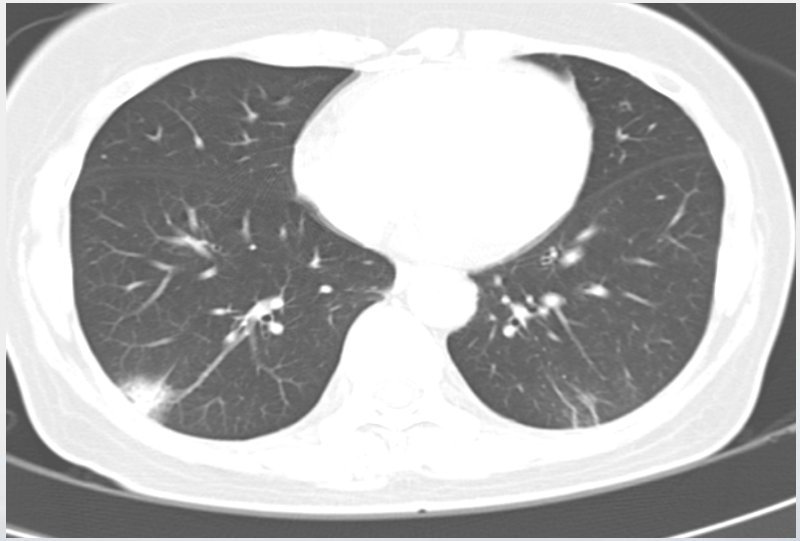
- WBC 7800/μL (neutrophil 92%, lymphocyte 4%)
- Hb 10.9 g/dL, PLT 212,000 /μL
- CRP 25.2 mg/L, Procalcitonin 0.06 mg/mL
- BUN/Cr 15/0.34 mg/dL
- E’ 136/4.2/132/25 mmol/L
- AST/ALT/bilirubin 96/132/1.0
- Autoimmune marker : all negative
- ABGA : PH 7.49/PaCO2 26/ PaO2 53 / SpO2% 89% (reservoir mask 12L)
- Sputum Virus PCR : all negative / PCP negative
- Bronchial washing CMV PCR : 1,160
- Sputum bacterial culture : *Pseudomonas putida* (Colistin S)

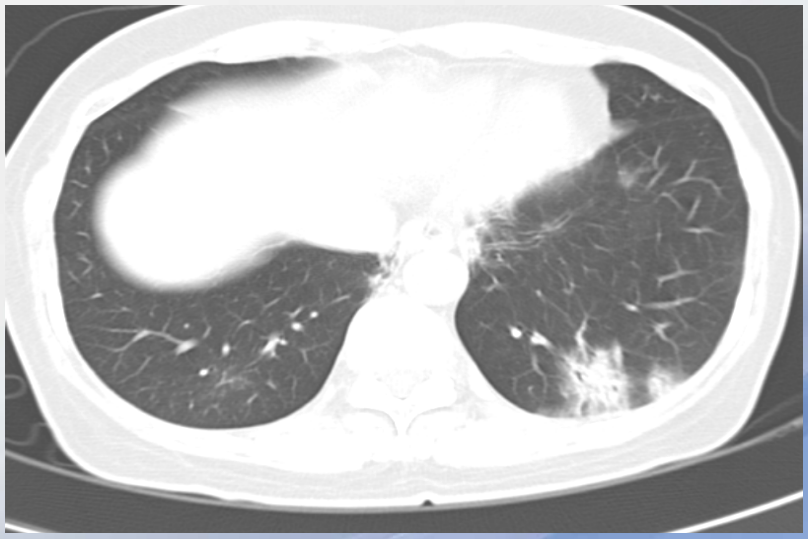
- **PCNA 외부 slide (2014.10.7) (A병원)**
  - Lung, right, CT-guided needle biopsy
    - Interstitial inflammation with fibroblastic proliferation, suggestive of organizing pneunomia
- **TBLB 외부 slide (2014.10.31) (C병원)**
  - Lung, left lower lobe, posterobasal, transbronchial lung biopsy
    - Chronic nonspecific inflammation

Chest CT (2014.9.24 A병원)









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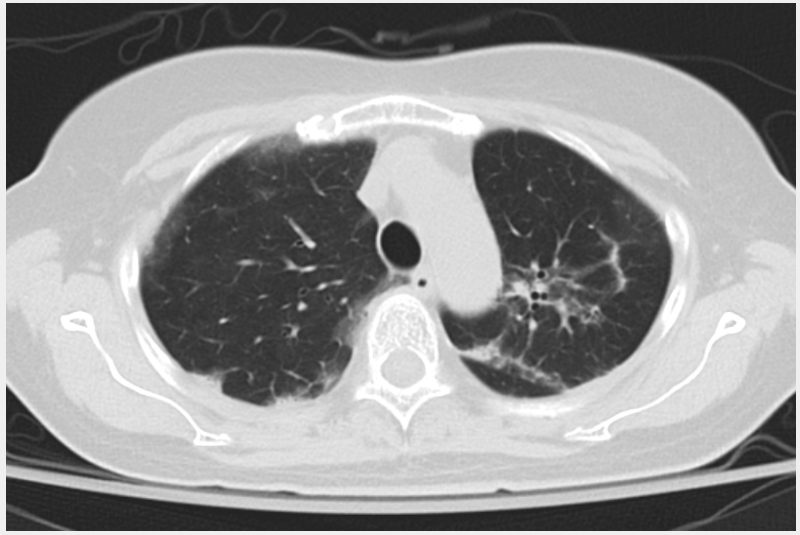
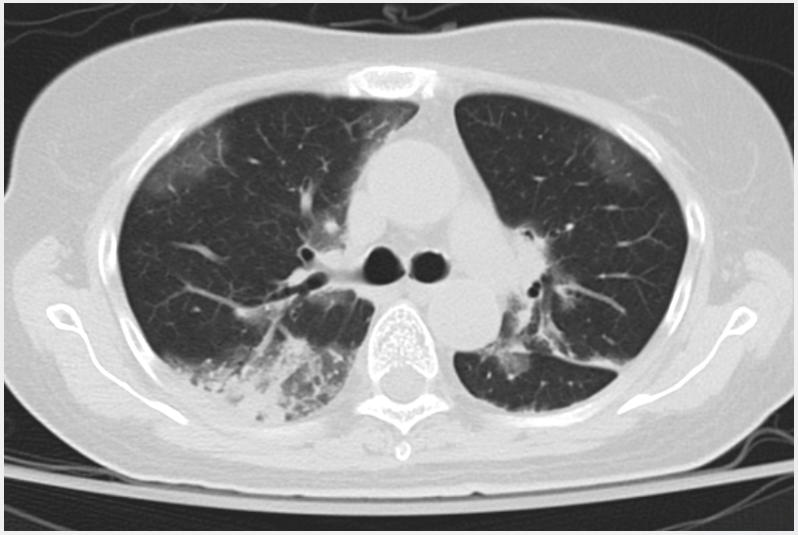
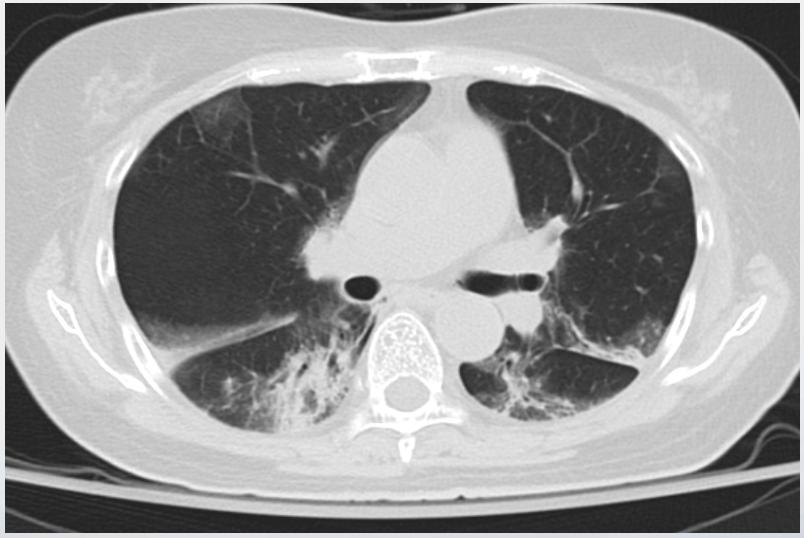
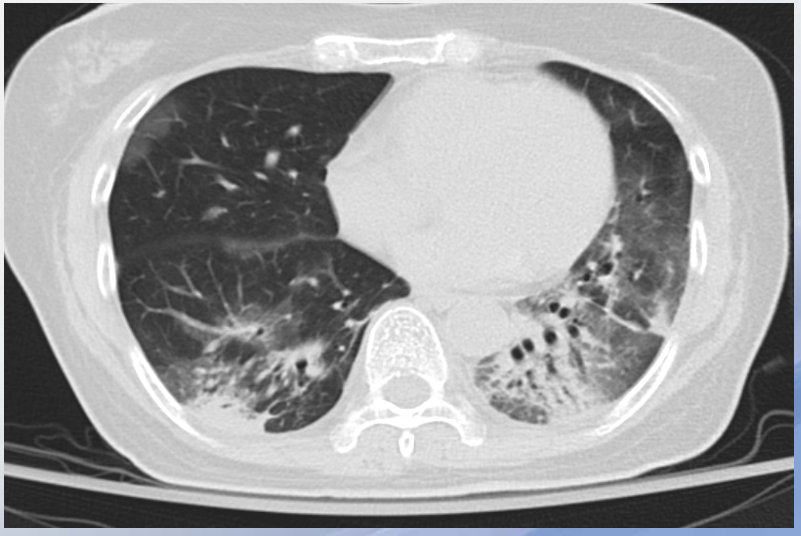
Chest CT (2014.11.17 C병원)









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Impression

- Organizing pneumonia with subsequent acute idiopathic pneumonia
- Acute fibrinous and organizing pneumonia (AFOP)
- Fibrosing variant of organizing pneumonia
- Organizing pneumonia combined with underlying chronic interstitial pneumonia

Progress

2014.11.18.~ 스테로이드, 항생제 치료에도 불구하고
지속적으로 산소 요구량 증가

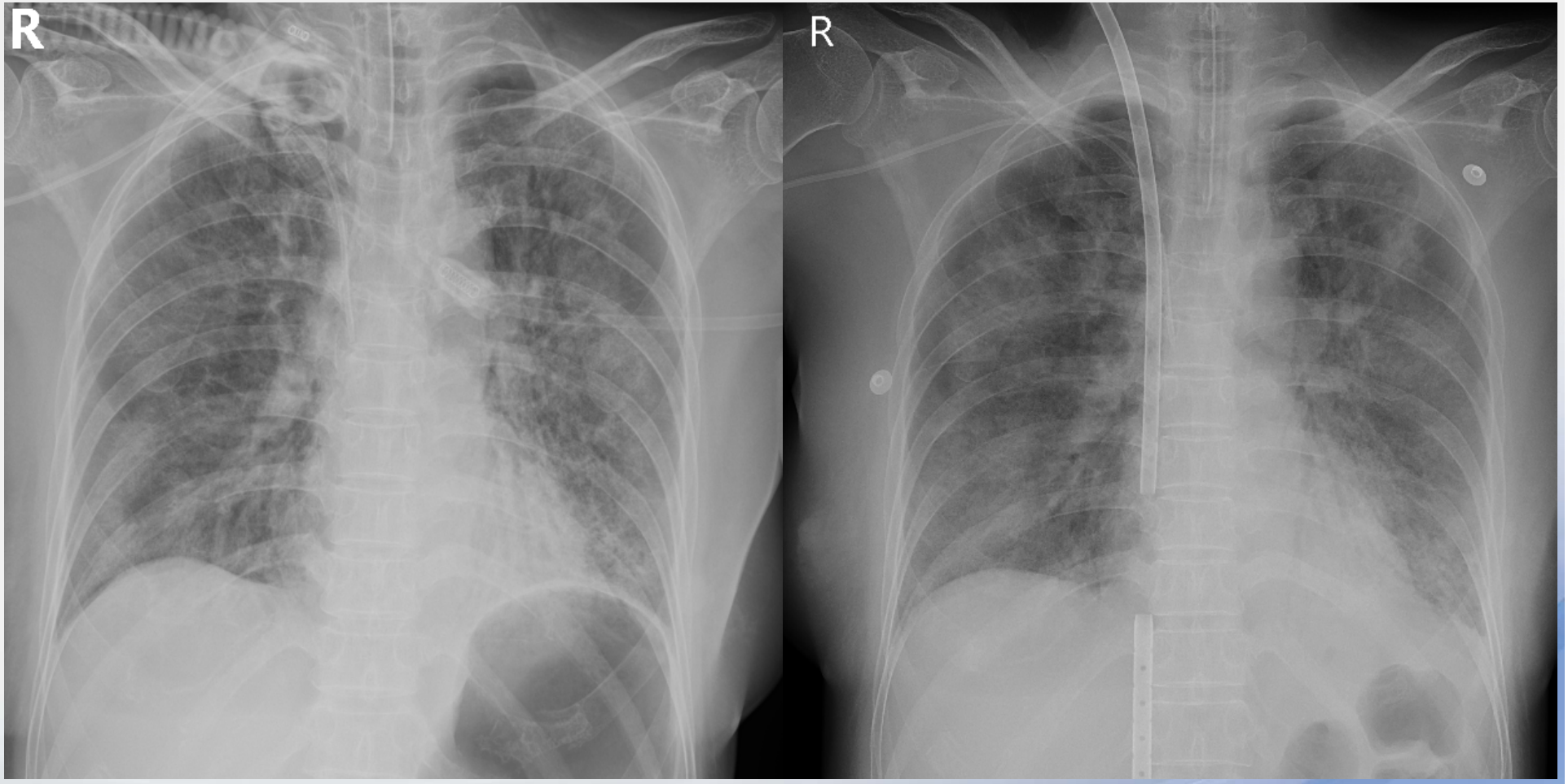
2014.11.22 intubation, ventilator apply

2014.11.24 ECMO apply

2014.12.17 bilateral lung transplantation 시행

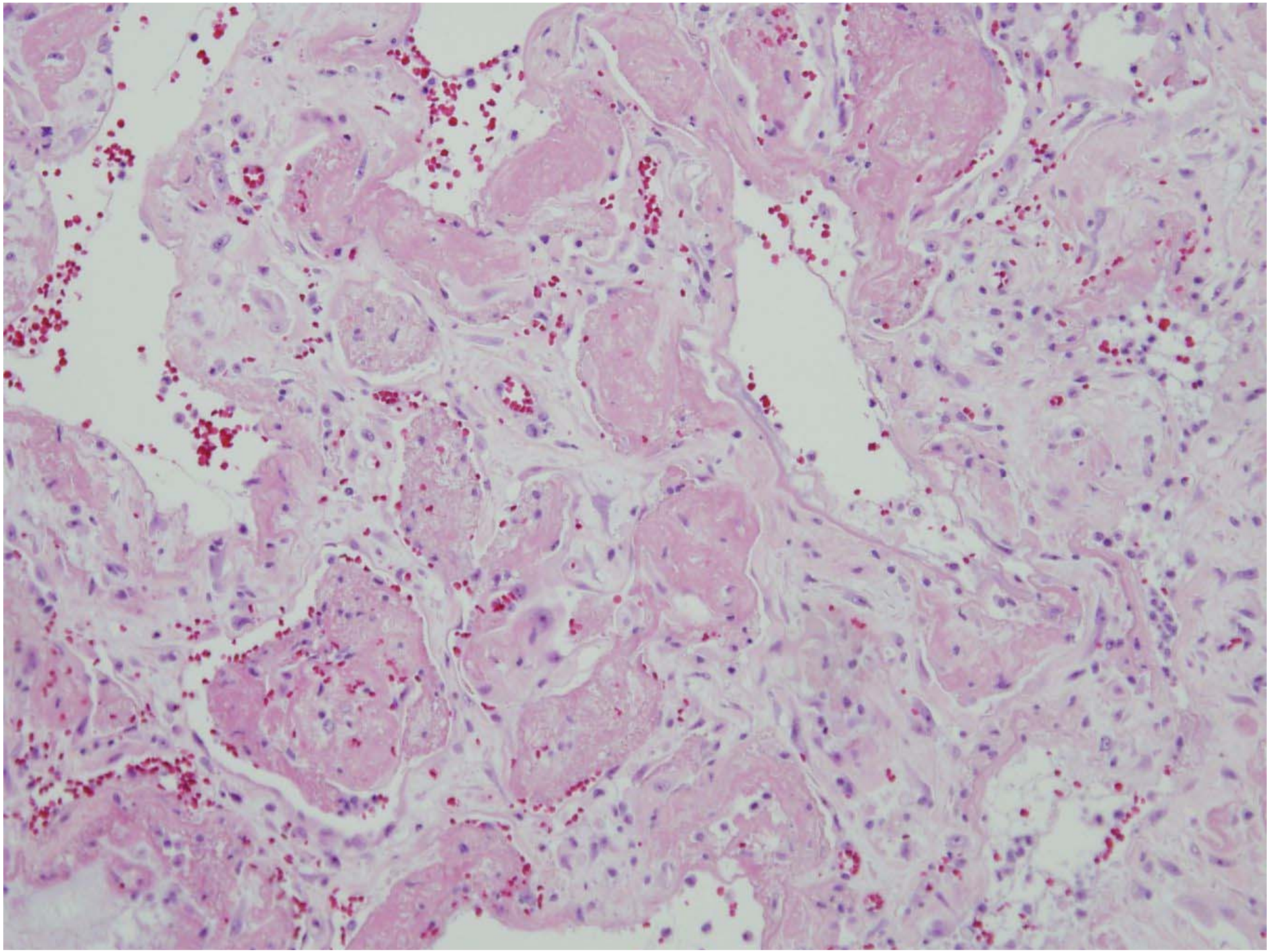
Chest x-ray

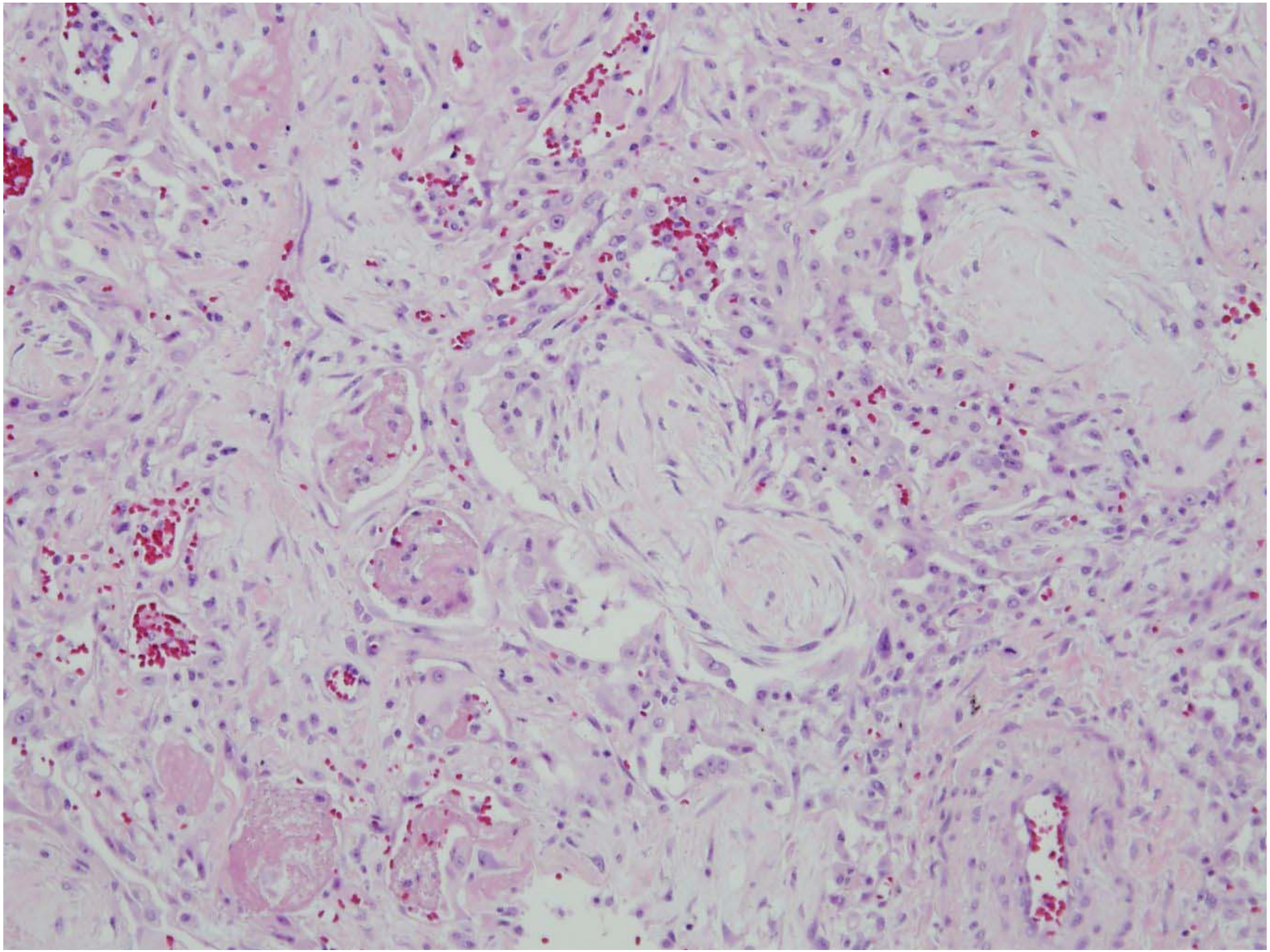
2014.11.22 **2014.11.24**



Pathology

- Lung transplantation (2014/12/18)
  - Lung, bilateral:
    - Invasive aspergillosis in RML and LUL
    - Diffuse hyaline membranes, type II pneumocyte hyperplasia with atypia, and focal squamous metaplasia with atypia, consistent with diffuse alveolar damage
    - Organizing pneumonia, multifocal
    - Areas of acute fibrinous organizing pneumonia
    - Focal alveolar hemorrhage and congestion
  - Lymph nodes : reactive hyperplasia





Topic Review

Refractory Organizing Pneumonia

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Poor outcome in OP

1. Lack of a lymphocytosis on the BAL fluid differential cell count / increased neutrophils or eosinophils
2. Predominant interstitial pattern
3. Histological examination of scarring and remodelling of the lung parenchyma in addition to OP
4. Association with other disorders (CTD)

J Clin Pathol 2013;66:875-881

Rapidly progressive OP

- Diffuse infiltrative forms of COP – fibrosing variant
- OP on preexisting interstitial fibrosis (IPF or fibrotic NSIP)
- Acute fibrinous organizing pneumonia (AFOP)
- Overlap with other organizing DAD pattern (ARDS or AIP)

Thorax 2000;55:318-328

Fibrosing Variant of OP

- Residual or progressive interstitial fibrosis associated with OP lesions
- May correspond to an overlap with interstitial fibrosis (UIP or fibrotic NSIP)
- Immunosuppressive agents added to corticosteroids result in variable outcome.

SEVERANCE

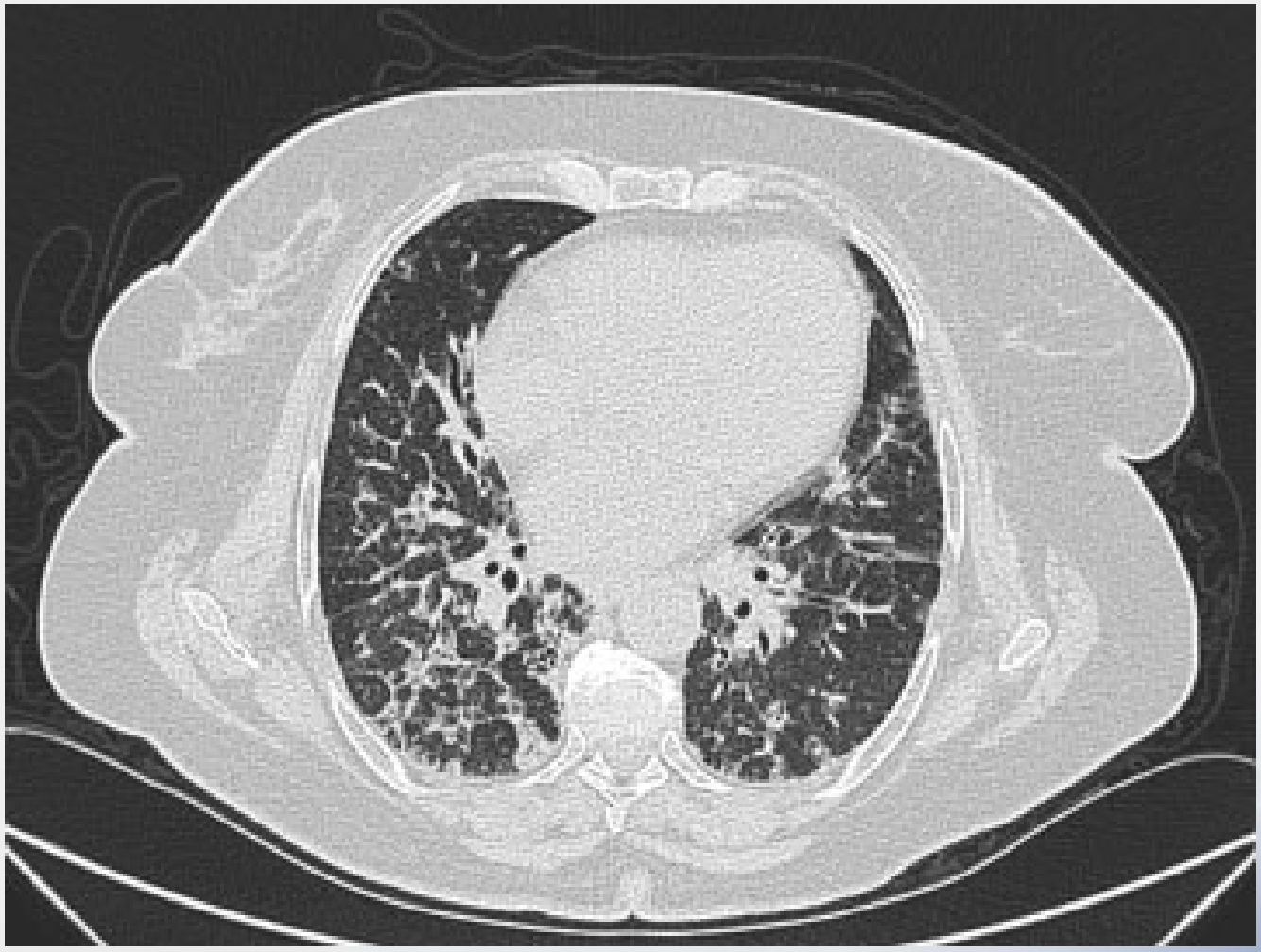
Semin Respir Crit Care Med 2012;33:462-475

J Clin Pathol 2013;66:875-881

Clinical aspects

- Tends to be associated with CTD, autoimmune disease, exposure to drugs
- Lower rates of complete recovery and a higher recurrence rates
- Recurrent injury to lung parenchyma is likely to be the driving force

J Clin Pathol 2013;66:875-881



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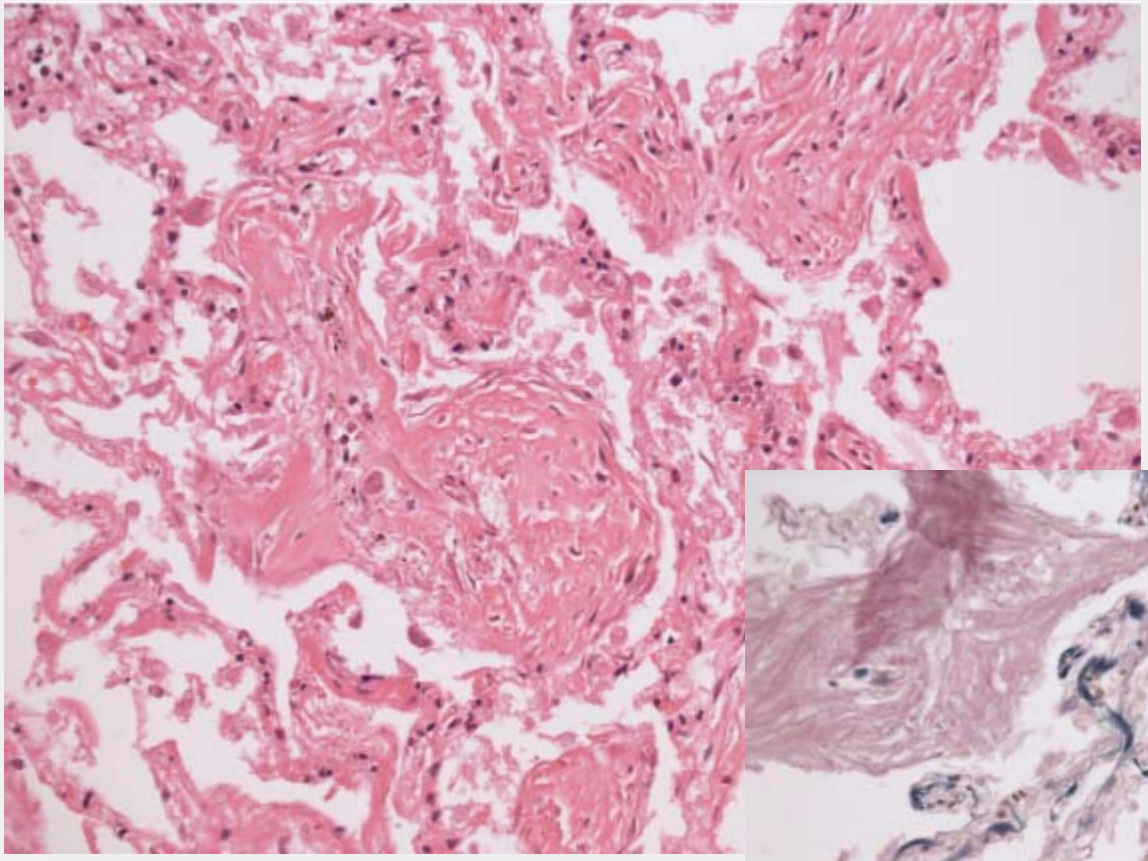
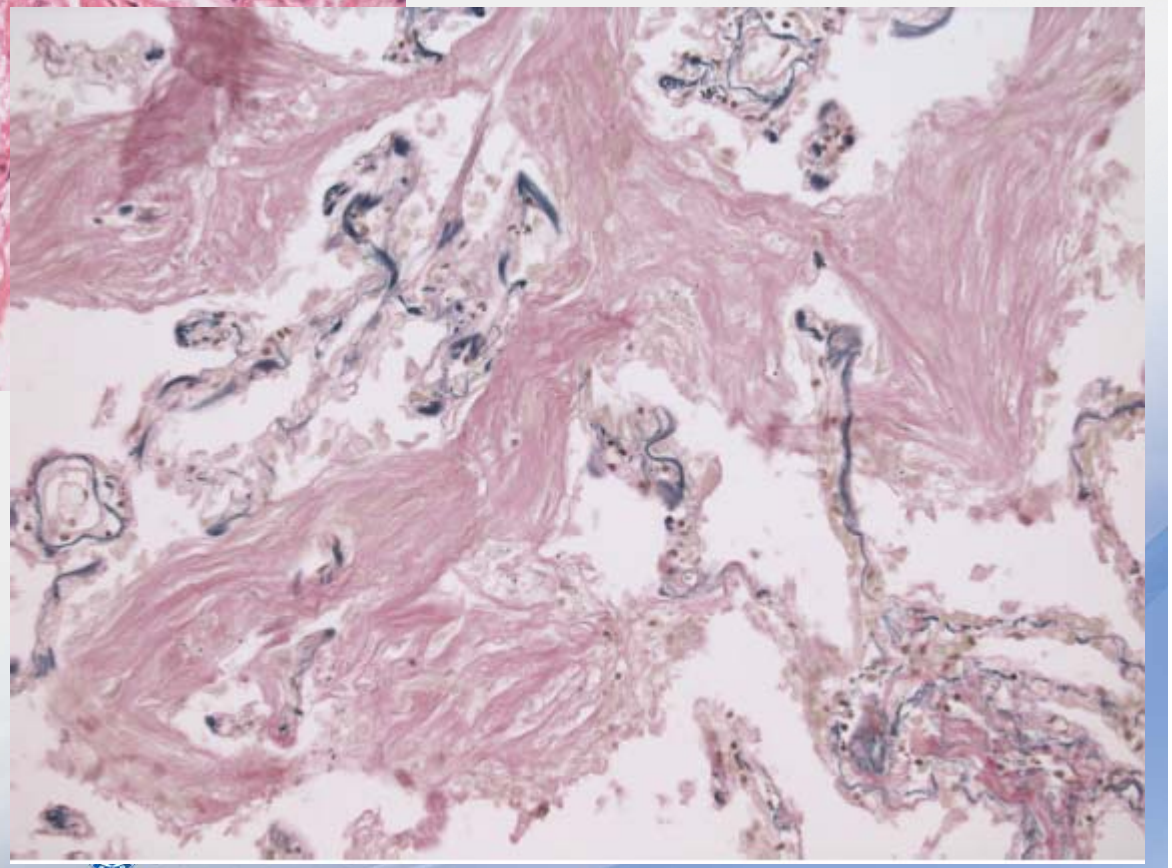




J Clin Pathol 2013;66:875-881

American Thoracic Society Documents

An Official American Thoracic Society/European Respiratory Society Statement: Update of the International Multidisciplinary Classification of the Idiopathic Interstitial Pneumonias

Rare Histologic Patterns

1. Acute Fibrinous and Organizing Pneumonia
2. Bronchiolocentric Patterns of Interstitial Pneumonia

AJRCCM VOL 188 2013

Acute Fibrinous Organizing Pneumonia

- Not included as new IIP entities
  - Because of questions concerning whether
  1) they are variants of existing IIPs or
  2) exist only in association with other conditions such as HP or CVD.

Acute Fibrinous and Organizing Pneumonia

A Histologic Pattern of Lung Injury and Possible Variant of Diffuse Alveolar Damage

- 2002, Beasley et al,
  - A histopathologic entity with the hallmark feature of intra-alveolar fibrin "balls" in the setting of organizing pneumonia in a patchy lung distribution.
- Acute or subacute clinical presentation,
- Does not meet the criteria for the patterns of DAD, OP, or EP, *"This pattern appears to represent an unusual pattern of acute lung injury"*

Arch Pathol Lab Med. 2002;126:1064-1070

Associated Conditions

- Collagen vascular disease – PM, AS, FM, UCTD, SLE, juvenile DM
- Exposure –animal-exposure, coal miner, wood or dust exposure
- Altered immune status
  - ✓ long-term steroid users
  - ✓ Poorly controlled DM, alcoholics
  - ✓ Underlying lymphoma
- Drug history - amiodarone, valium
- Hypersensitivity pneumonitis
- Infection – HIV, PCP, H1N1, and Chlamydia pneumoniae
- Chronic lung allograft dysfunction- post lung transplantation
- **Idiopathic**

Current Problems in Diagnostic Radiology 2015;44:469-471

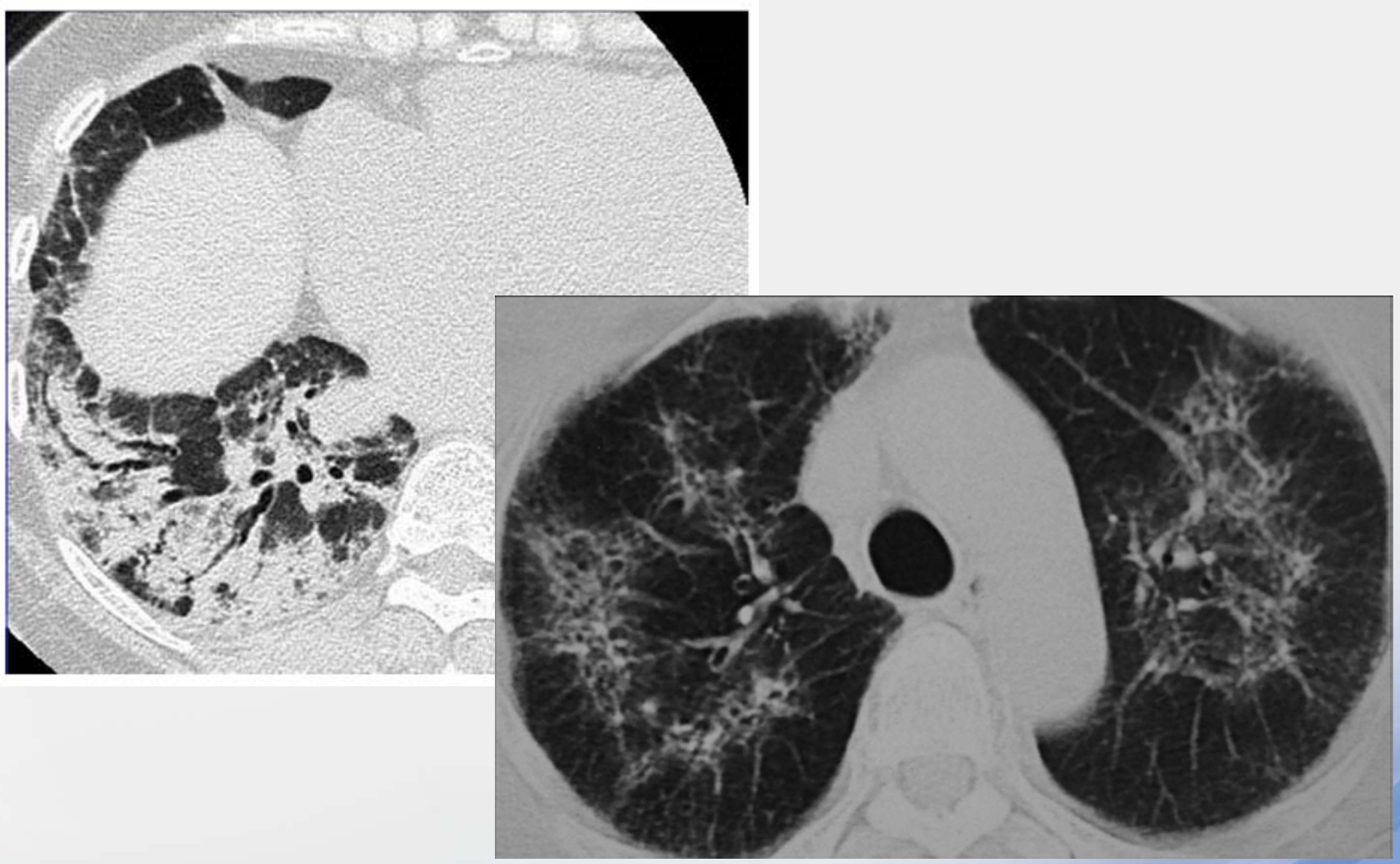
Arch Pathol Lab Med. 2002;126:1064-1070

Radiographic Findings

CT findings of acute fibrinous organizing pneumonia.

Bilateral basal opacitites and areas of consolidation
Diffuse areas of airspace consolidation along bronchovascular bundles (sometimes)
Traction bronchiectasis in areas of airspace consolidation (sometimes)

European Journal of Radiology 2015;84:542-546



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European Journal of Radiology 2015;84:542-546

Histologic Features

Table 2. Histologic Features of Acute Fibrinous and Organizing Pneumonia

Major features

- Dominant finding of organizing intra-alveolar fibrin
- Organizing pneumonia
- Patchy distribution

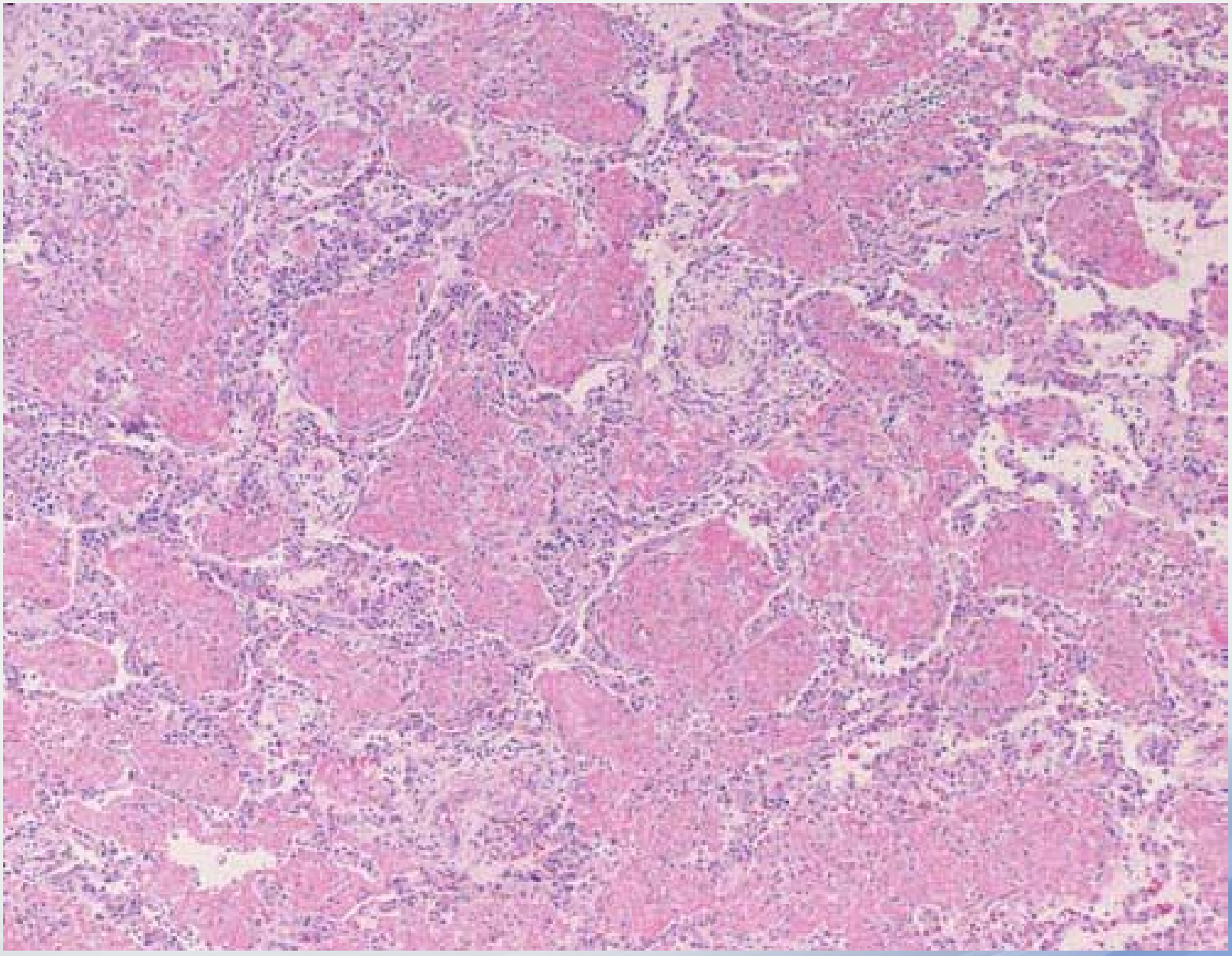
Minor features

- Associated interstitial changes
  - Acute and/or chronic inflammation
  - Type 2 pneumocyte hyperplasia
  - Alveolar septal expansion with myxoid connective tissue
- Interstitial inflammation and expansion typically mild to moderate
- Interstitial changes primarily confined to areas adjacent to intra-alveolar fibrin with the intervening lung showing only minimal changes

Pertinent negatives

- Hyaline membranes NOT observed
- Eosinophils inconspicuous or absent
- Extensive bronchopneumonia and/or abscess formation absent
- Granulomatous inflammation absent

Arch Pathol Lab Med. 2002;126:1064-1070



SEVERANCE

Arch Pathol Lab Med. 2010;134:719-727

Treatment

- No optimal therapy was identified !

  -> but can benefit from steroid therapy.

Clinical Outcome

- Beasley et al.
  - Mortality rates > 50%
  - Time from symptom to death ranged average 29 days
  - Only 30% patients required mechanical ventilation
    - the only parameter that correlated with prognosis.
  - 2 distinct patterns of disease progression
    - Fulminant course with rapid progression to death
    - Subacute, less fulminant course who recovered
- Similar clinical outcome to those with DAD

  -> may in fact represent a fibrinous variant of DAD !

Arch Pathol Lab Med. 2002;126:1064-1070


THANK YOU FOR YOUR ATTENTION