Patterns of Lung Disease on CT
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Objectives
1. Describe 7 patterns of disease seen on CT
2. State the differential diagnosis associated with each pattern
3. Recognize each pattern

Honeycomb pattern
• Cystic airspaces
• Thick, clearly definable walls
• Layered along pleural surface
• Pulmonary fibrosis

Honeycomb pattern
• IPF
• Collagen vascular diseases
• Asbestosis
*Upper lung – sarcoidosis, HP

CT “Pattern”
“Nonspecific finding or collection of findings on CT suggesting one or more specific disease processes”
62 year-old-woman with Sjogren disease

Cystic Pattern
- Thin-walled
- Circumscribed
- Air-filled

Cystic Pattern
- Langerhan cell histiocytosis
- Lymphangioleiomyomatosis
- LIP
- Collagen vascular diseases
- PCP
- Emphysema (look-alike)
50-year-old-woman with progressive SOB and history of spontaneous PTX

40 year-old-man with history of cigarette smoking and an abnormal CXR
Nodule
Cyst

LIP

Pneumocystis Pneumonia

Nodules
- Perilymphatic
- Random
- Centrilobular
- Bronchovascular

Sarcoidosis

Nodular Pattern - Perilymphatic
- Sarcoidosis
Nodular Pattern - Random
- Silicosis/Coal worker’s pneumoconiosis
- TB/fungal
- Metastases

Nodular Pattern - Centrilobular
- Subacute hypersensitivity pneumonitis
- Respiratory bronchiolitis

Miliary Tuberculosis

Colon cancer metastases
Hypersensitivity Pneumonitis

43 year-old-man with SOB and history of cigarette smoking

Respiratory Bronchiolitis

Nodular Pattern - Bronchovascular
- Lymphoproliferative disorders
- Lymphangitic carcinomatosis
- Kaposi sarcoma
- Sarcoidosis
- COP
- Infectious pneumonia

Post-transplant Lymphoproliferative Disease

LIP and Sjogren Disease
Ground Glass Pattern
• Hazy opacity
• Preserved bronchi/vessels
• Nonspecific

Ground Glass Pattern
• Infectious pneumonia
• Pulmonary hemorrhage
• COP
• Pulmonary alveolar proteinosis
• BAC
• DIP/NSIP
• EDEMA!
Cryptogenic Organizing Pneumonia
Pulmonary Alveolar Proteinosis
Bronchoalveolar cell carcinoma
DIP
NSIP
Edema
Mosaic Pattern
- Infiltrative disease
- Small airways disease
- Pulmonary vascular disease

Obliterative Bronchiolitis
Inspiration
Expiration

Tree-in-Bud Pattern
- Centrilobular dots and linear branching opacities
- Bronchiolar dilatation
- Bronchiolar impaction

Tree-in-Bud Pattern
- Infection

Bacterial bronchiolitis
Tree-in-Bud Pattern

- ABPA
- Cystic fibrosis
- Aspiration
- Diffuse panbronchiolitis
Interlobular septal thickening
- Marginates secondary pulmonary lobule
- Contains pulmonary veins and lymphatics
- “Kerley” lines

Smooth ILS thickening
- Pulmonary edema
- Infectious pneumonia

Nodular ILS thickening
- Lymphangitic carcinomatosis
- Sarcoidosis