

Contents

1. Computed Tomography Techniques and Anatomy	1
• <i>Indications and Role of Radiologist</i> 2	
• <i>Scan Technique</i> 2	
• <i>Volume HRCT Modifications</i> 4	
• <i>Artifacts on HRCT</i> 4	
• <i>Scan Protocols—Technique Refinements</i> 5	
• <i>Scan Position</i> 5	
• <i>Lateral Decubitus CT</i> 6	
• <i>Low Dose HRCT</i> 7	
• <i>Postprocessing Techniques</i> 9	
• <i>Normal CT Lung Anatomy</i> 10	
• <i>Anatomic Basis of Disease</i> 13	
• <i>Lung Parenchyma</i> 13	
• <i>Secondary Pulmonary Lobule</i> 14	
• <i>Interstitialium</i> 16	
• <i>Concept of Cortical and Medullary Lung</i> 17	
2. Overview of Lung Disease	19
• <i>Linear and Reticular Pattern</i> 20	
• <i>Interlobular Thickening</i> 20	
• <i>Intralobular Interstitial—Reticular Abnormalities</i> 21	
• <i>Peribronchial Interstitial Thickening</i> 21	
• <i>Honeycombing</i> 23	
• <i>Irregular Linear Opacity</i> 24	
• <i>Nodules</i> 24	
• <i>Centrilobular</i> 25	
• <i>Random</i> 27	
• <i>Perilymphatic</i> 28	
• <i>Ground Glass Opacity</i> 29	
• <i>Consolidation</i> 29	
• <i>Lung Calcification and Increased Lung Opacity</i> 30	
• <i>Decreased Lung Attenuation</i> 32	
• <i>Bronchiectasis</i> 32	
• <i>Aging Lung Changes</i> 39	
3. Anatomic Patterns and Pathological Correlates in Parenchymatous Lung Disease: An Overview	40
• <i>Intra-alveolar Pattern</i> 40	
• <i>Interstitial Pattern</i> 41	
• <i>Combination of Intra-alveolar/Interstitial Pattern</i> 41	

4. Idiopathic Interstitial Pneumonia	45
• <i>Idiopathic Pulmonary Fibrosis</i> 50	
• <i>Nonspecific Interstitial Pneumonia</i> 50	
• <i>Cryptogenic Organizing Pneumonia</i> 51	
• <i>Respiratory Bronchiolitis-associated Interstitial Lung Disease</i> 52	
• <i>Desquamative Interstitial Pneumonia</i> 53	
• <i>Lymphoid Interstitial Pneumonia</i> 54	
• <i>Acute Interstitial Pneumonia</i> 54	
5. Connective Tissue Disease	56
• <i>Scleroderma</i> 57	
• <i>Rheumatoid Arthritis</i> 57	
• <i>Systemic Lupus Erythematosus</i> 58	
6. Inhalational Lung Disease	60
• <i>Hypersensitive Pneumonitis</i> 60	
• <i>Smoking Related Lung Disease</i> 61	
• <i>Respiratory Bronchiolitis—Interstitial Lung Disease</i> 62	
• <i>Desquamative Interstitial Pneumonitis</i> 62	
• <i>Pneumoconiosis</i> 64	
• <i>Silicosis</i> 64	
• <i>Coal Worker Pneumoconiosis</i> 65	
7. Eosinophilic Lung Disease	67
• <i>Classification of Eosinophilic Lung Diseases</i> 67	
• <i>Simple Pulmonary Eosinophilia</i> 67	
• <i>Acute Eosinophilic Pneumonia</i> 68	
• <i>Chronic Eosinophilic Pneumonia</i> 68	
• <i>Allergic Bronchopulmonary Aspergillosis</i> 68	
8. Small Airways Disease	72
• <i>Direct Signs</i> 72	
• <i>Air Trapping and Mosaic Attenuation</i> 73	
• <i>Bronchiolitis</i> 75	
• <i>High-resolution Computed Tomography of Various Bronchiolitis</i> 76	
9. Pulmonary Vasculitis	78
• <i>Wegener's Granulomatosis</i> 79	
• <i>Takayasu's Arteritis</i> 79	
• <i>Churg-Strauss Syndrome</i> 80	
• <i>Microscopic Polyangiitis</i> 80	
• <i>Behçet Disease</i> 81	
• <i>Vasculitis Associated with Collagen Vascular Disease</i> 81	
• <i>Goodpasture's Syndrome</i> 81	
10. Infection in Immunocompetent and Immunocompromised	82
• <i>Role of Imaging in Infectious Disease</i> 82	
• <i>Imaging Patterns in Infection</i> 82	

- *Community-acquired Pneumonia* 83
- *Hospital-acquired: Nosocomial Pneumonia* 84
- *Aspiration Pneumonia* 86
- *Atypical Pneumonia Syndrome* 87
- *Immunosuppressed Host Pneumonia* 87
- *Non-HIV Immunocompromised Patients* 87
- *Infections in Transplant Recipients* 87
- *Bone Marrow Transplantation* 88
- *AIDS* 89
- *Bacterial Infection* 89
- *Pneumocystis carinii Pneumonia* 89
- *Tuberculosis* 90
- *Aspergillosis* 92
- *CD4 Counts and Infections* 93

11. Malignancy 94

- *Solitary Pulmonary Nodule* 95
- *Margin* 97
- *Attenuation* 97

12. Congenital Disease 100

- *Pulmonary Agenesis* 100
- *Bronchial Atresia* 100
- *Congenital Lobar Emphysema* 101
- *Congenital Cystic Adenomatoid Malformation* 101
- *Bronchogenic Cyst* 103
- *Sequestration* 103
- *Tracheal Bronchus* 104
- *Interruption of a Main Pulmonary Artery* 105
- *Anomalous Pulmonary Venous Drainage* 105
- *Pulmonary Arteriovenous Malformation* 105
- *Pulmonary Artery Sling* 107
- *Hypogenetic Lung (Scimitar) Syndrome* 107

13. Pulmonary Vascular Disease 109

- *Pulmonary Hypertension* 109
- *Acute Pulmonary Thromboembolism* 112

14. Drug-induced Pulmonary Patterns 117**PRACTICE CASES****Self-Training Module for Approach and Reporting Training Module** 119
120

- *Case 1: Allergic Bronchopulmonary Aspergillosis (ABPA)* 120
- *Case 2: Pulmonary Abscess* 123
- *Case 3: Acute Interstitial Pneumonia* 125
- *Case 4: Air Trapping* 127

- Case 5: *Pulmonary Alveolar Microlithiasis* 129
- Case 6: *Pulmonary Alveolar Proteinosis* 131
- Case 7: *Architectural Distortion* 133
- Case 8: *Acute Lung Injury—ARDS* 135
- Case 9: *Aspergilloma* 137
- Case 10: *Aspiration Disease* 139
- Case 11: *Chronic Asthma* 141
- Case 12: *Azygos Lobe Marked by the Azygos Fissure* 143
- Case 13: *Bronchioloalveolar Carcinoma (BAC)* 145
- Case 14: *Basal Reticular Changes with Fibrosis* 147
- Case 15: *Bronchial Atresia* 149
- Case 16: *Bronchiectasis* 151
- Case 17: *Bronchiolectasis* 154
- Case 18: *Bronchiolitis* 156
- Case 19: *Bronchogenic Cyst* 159
- Case 20: *Broncholithiasis* 161
- Case 21: *Bullous Disease* 163
- Case 22: *Cavitory Parenchymal Lesions* 165
- Case 23: *Central Distribution with Peripheral Sparing* 167
- Case 24: *Churg-Strauss Syndrome* 169
- Case 25: *Compensatory Hyperinflation* 171
- Case 26: *Conglomerate Apical Masses* 173
- Case 27: *Consolidation* 175
- Case 28: *Pulmonary Cysts* 177
- Case 29: *Emphysema vs Cystic Lung Disease* 179
- Case 30: *Cystic Fibrosis* 181
- Case 31: *Dark Bronchus Sign* 183
- Case 32: *Desquamative Interstitial Pneumonia* 185
- Case 33: *Combined Pulmonary Fibrosis and Emphysema* 187
- Case 34: *Emphysematous Changes* 189
- Case 35: *End Stage Destroyed Lung* 191
- Case 36: *Endobronchial Lesions with Atelectasis* 193
- Case 37: *Tracheoesophageal and Bronchopleural Fistula* 195
- Case 38: *Pulmonary Hemorrhage* 197
- Case 39: *CT Halo Sign* 199
- Case 40: *Pulmonary Langerhan's Cell Disease* 201
- Case 41: *Honeycomb Pattern* 203
- Case 42: *Paired Inspiratory and Expiratory Images* 205
- Case 43: *Acute Hypersensitive Pneumonitis* 207
- Case 44: *Kartagener's Syndrome* 209
- Case 45: *Pulmonary Contusion—Laceration* 211
- Case 46: *Lymphangioleiomyomatosis* 213
- Case 47: *Loeffler's Syndrome or Simple Pulmonary Eosinophilia* 215
- Case 48: *Lymphangitis Carcinomatosis* 217
- Case 49: *Pulmonary Metastasis* 219
- Case 50: *Metastatic Pulmonary Calcification* 221
- Case 51: *Right Middle Lobe Syndrome* 223
- Case 52: *Miliary Nodules—Koch's* 225
- Case 53: *Mosaic Attenuation* 227
- Case 54: *Nonspecific Interstitial Pneumonia* 229
- Case 55: *Osteophyte Induced Atelectasis* 231
- Case 56: *Pneumocystis Pneumonia* 233

- Case 57: Peripheral Distribution 235
- Case 58: Pleural Calcification 237
- Case 59: Pneumothorax 239
- Case 60: Pseudotumor 241
- Case 61: Pulmonary Edema 243
- Case 62: Radiation Pneumonitis and Fibrosis 245
- Case 63: Ranke's Complex 247
- Case 64: Rasmussen's Aneurysm 249
- Case 65: Respiratory Bronchiolitis 251
- Case 66: Reticular Fibrotic Changes 253
- Case 67: Reverse Halo Sign 255
- Case 68: Rheumatoid-associated Interstitial Lung Disease 257
- Case 69: Round Atelectasis 259
- Case 70: Sarcoidosis 261
- Case 71: Scleroderma UIP and NSIP Patterns 263
- Case 72: Split Pleura Sign of Empyema 265
- Case 73: Subpleural Line 267
- Case 74: Tuberculous Osteomyelitis (Cold Abscess) 269
- Case 75: Tracheomalacia 271