

Contents

Part I Focal Lung Diseases

1	Nodule	3
	<i>Solitary Pulmonary Nodule (SPN), Solid</i>	3
	Lung Cancer (Solid Adenocarcinoma)	4
	Carcinoid or Atypical Carcinoid	8
	BALT Lymphoma	11
	Tuberculoma	13
	Hamartoma	13
	Sclerosing Hemangioma	14
	Inflammatory Myofibroblastic Tumor	14
	ANCA-Associated Granulomatous Vasculitis (Former Wegener's Granulomatosis) Manifesting as a Solitary Pulmonary Nodule	14
	<i>Ground-Glass Opacity Nodule</i>	15
	Atypical Adenomatous Hyperplasia (AAH)	19
	Adenocarcinoma in Situ (AIS)	19
	Minimally Invasive Adenocarcinoma (MIA)	19
	Loeffler's Syndrome	20
	References	22
2	Mass	25
	Definition	25
	Diseases Causing the Pattern	25
	Distribution	25
	Clinical Considerations	25
	Pulmonary Sarcoma	26
	Progressive Massive Fibrosis	29
	Pulmonary Actinomycosis	31
	References	31
3	Consolidation	33
	Lobar Consolidation	33
	Lobar Pneumonia	34
	Invasive Mucinous Adenocarcinoma	35
	Bronchus-Associated Lymphoid Tissue (BALT) Lymphoma	38
	Pulmonary Infarction	39
	Patchy and Nodular Consolidation	39
	Airway-Invasive Pulmonary Aspergillosis	43
	Pulmonary Cryptococcosis	45
	IgG4-Related Lung Disease	45
	Lymphomatoid Granulomatosis	46
	References	46

4 Beaded Septum Sign	49
Definition	49
Diseases Causing the Sign	49
Distribution	49
Clinical Considerations	49
References	50
5 Comet Tail Sign	51
Definition	51
Diseases Causing the Sign	51
Distribution	51
Clinical Considerations	51
Rounded Atelectasis	51
References	54
6 CT Halo Sign	55
Definition	55
Diseases Causing the Sign	55
Distribution	55
Clinical Considerations	55
Angioinvasive Pulmonary Aspergillosis	56
Metastatic Hemorrhagic Tumors	57
Pulmonary Endometriosis with Catamenial Hemorrhage	58
Eosinophilic Lung Disease (Parasitic Infestation)	60
References	60
7 Galaxy Sign	63
Definition	63
Diseases Causing the Sign	63
Distribution	63
Clinical Considerations	63
Galaxy Sign in Pulmonary Tuberculosis	65
References	65
8 Reversed Halo Sign	67
Definition	67
Diseases Causing the Sign	67
Distribution	67
Clinical Considerations	67
Cryptogenic Organizing Pneumonia and Reversed Halo Sign	68
Pulmonary Mucormycosis	69
Lymphomatoid Granulomatosis	71
References	71
9 Tree-in-Bud Sign	73
Definition	73
Diseases Causing the Sign	73
Distribution	73
Clinical Considerations	73
Aspiration Bronchiolitis	73
Foreign-Body-Induced Pulmonary Vasculitis (Cellulose and Talc Granulomatosis)	75
References	76

10	Gloved Finger Sign or Toothpaste Sign	77
	Definition	77
	Diseases Causing the Sign	77
	Distribution	77
	Clinical Considerations	77
	Bronchial Atresia	77
	Bronchial Tuberculosis and Muroid Impaction	82
	Foreign-Body Aspiration	82
	Allergic Bronchopulmonary Aspergillosis	83
	References	83
11	Lobar Atelectasis Sign	85
	Definition	85
	Disease Causing the Sign	85
	Distribution	85
	Clinical Considerations	85
	Right Upper Lobar Atelectasis	92
	Left Upper Lobar Atelectasis	92
	Right Middle Lobar Atelectasis	93
	Lower Lobar Atelectasis	93
	Combined Atelectasis of the Right Middle and Lower Lobes	93
	Combined Atelectasis of the Right Upper and Middle Lobes	93
	Combined Atelectasis of the Right Upper and Lower Lobes	93
	References	93
12	Decreased Opacity with Cystic Airspace	95
	<i>Cavity</i>	95
	Lung Squamous Cell Carcinoma as a Cavitory Lesion	102
	Langerhans Cell Histiocytosis	103
	Septic Pulmonary Embolism	104
	Cavitory Pulmonary Tuberculosis	104
	Paragonimiasis	105
	<i>Cyst</i>	105
	Blebs and Bullae	111
	Pulmonary Sequestration	112
	Congenital Cystic Adenomatoid Malformation	112
	Intrapulmonary Bronchogenic Cyst	113
	Pneumatocoles in Staphylococcal Pneumonia	113
	Cystic Lesions in <i>Pneumocystis jirovecii</i> Pneumonia	114
	Traumatic Lung Cysts	114
	References	115
13	Decreased Opacity without Cystic Airspace	117
	<i>Mosaic Attenuation</i>	117
	Cystic Fibrosis	121
	Constrictive Bronchiolitis	123
	Chronic Pulmonary Thromboembolism	123
	Idiopathic Pulmonary Arterial Hypertension	124
	<i>Airway Disease (Bronchiectasis and Bronchiolectasis)</i>	125
	Swyer–James–MacLeod Syndrome	127
	Dyskinetic Cilia Syndrome	129
	References	130

14	Air-Crescent Sign	133
	Definition	133
	Diseases Causing the Sign	133
	Distribution	133
	Clinical Considerations	133
	Aspergilloma	134
	Rasmussen's Aneurysm	134
	References	137
15	Signet Ring Sign	139
	Definition	139
	Diseases Causing the Sign	139
	Distribution	139
	Clinical Considerations	139
	Proximal Interruption of the Right Pulmonary Artery	139
	References	142
 Part II Diffuse Lung Diseases		
16	Interlobular Septal Thickening	145
	Smooth Septal Thickening	145
	Pulmonary Edema	146
	Niemann–Pick Disease	147
	Nodular Septal Thickening	148
	Pulmonary Lymphangitic Carcinomatosis	150
	References	152
17	Honeycombing	153
	<i>Honeycombing with Subpleural or Basal Predominance</i>	153
	Idiopathic Pulmonary Fibrosis/Usual Interstitial Pneumonia	156
	Nonspecific Interstitial Pneumonia	157
	Asbestosis	158
	<i>Honeycombing with Upper Lung Zone Predominance</i>	158
	Idiopathic Familial Pulmonary Fibrosis	160
	Chronic Hypersensitivity Pneumonia	160
	End-stage Fibrotic Pulmonary Sarcoidosis	161
	References	161
18	Small Nodules	163
	<i>Small Nodules with Centrilobular Distribution</i>	163
	<i>Mycoplasma Pneumoniae</i> Pneumonia	165
	Nontuberculous Mycobacterial Pulmonary Disease	168
	Diffuse Panbronchiolitis	170
	Follicular Bronchiolitis	171
	Pulmonary Tumor Embolism	172
	<i>Small Nodules with Perilymphatic Distribution</i>	172
	Pneumoconiosis	173
	Pulmonary Sarcoidosis	175
	Pulmonary Alveoloseptal Amyloidosis	176
	<i>Small Nodules with Random (Miliary) Distribution</i>	177
	Miliary Tuberculosis	178
	Miliary Metastasis	181
	References	181

19 Multiple Nodular or Mass(-like) Pattern 183

 Definition 183

 Diseases Causing the Pattern 183

 Distribution 183

 Clinical Considerations 183

 Pulmonary Metastasis 189

 Pulmonary Lymphoma 189

 Pulmonary Epithelioid Hemangioendothelioma 190

 Amyloidomas 190

 ANCA-Associated Granulomatous Vasculitis 191

 References 191

20 Ground-Glass Opacity with Reticulation 193

Ground-Glass Opacity with Reticulation and Fibrosis 193

Ground-Glass Opacity with Reticulation, but without Fibrosis
 (Crazy-Paving Appearance) 195

Pneumocystis jirovecii Pneumonia 198

 Lipoid Pneumonia 199

 Pulmonary Alveolar Proteinosis 201

 Mucinous Adenocarcinoma or Adenocarcinoma in Situ, Diffuse Form 203

 References 204

21 Ground-Glass Opacity without Reticulation 207

Ground-Glass Opacity without Reticulation, Subpleural
 and Patchy Distribution 207

 Cellular Nonspecific Interstitial Pneumonia 210

 Desquamative Interstitial Pneumonia 210

Ground-Glass Opacity without Reticulation, with Small Nodules 211

 Subacute Hypersensitivity Pneumonitis 213

 Cytomegalovirus Pneumonia 214

 Diffuse Alveolar Hemorrhage 214

Ground-Glass Opacity without Reticulation, Diffuse Distribution 215

 Acute Hypersensitivity Pneumonitis 217

 Acute Eosinophilic Pneumonia 218

 References 218

22 Consolidation 221

Consolidation with Subpleural or Patchy Distribution 221

 Cryptogenic Organizing Pneumonia 224

 Chronic Eosinophilic Pneumonia 225

 Churg–Strauss Syndrome 225

 Radiation Pneumonitis 226

 Consolidation with Diffuse Distribution 226

 Viral Pneumonias 230

 Acute Interstitial Pneumonia 231

 Diffuse Alveolar Hemorrhage 231

 References 232

23 Decreased Opacity with Cystic Walls 235

Cavities 235

 Rheumatoid Lung Nodules 237

 Cavitary Metastasis 238

Cysts 238

 Lymphangioliomyomatosis 241

Lymphocytic Interstitial Pneumonia	243
Cystic Pulmonary Metastasis, Particularly Angiosarcoma	243
Emphysema	244
Centrilobular Emphysema	245
Paraseptal Emphysema	245
Panacinar Emphysema Associated with α 1-Antitrypsin Deficiency	245
References	248
24 Decreased Opacity without Cystic Walls	251
<i>Mosaic Attenuation, Vascular</i>	251
<i>Mosaic Attenuation, Obstructive Airway Disease</i>	251
Asthma	252
References	253
25 Decreased Opacity without Cystic Airspace: Airway Disease	255
Definition	255
Diseases Causing Bronchiectasis and Bronchiolectasis	255
Distribution	255
Clinical Considerations	255
Cystic Fibrosis	256
References	257
 Part III Application of Disease Pattern and Distribution, and Radiologic Signs to the Differentiation of Various Lung Diseases	
26 Pneumonia	261
Lobar Pneumonia	261
Bronchopneumonia	262
Interstitial Pneumonia	265
References	268
27 Drug-Induced Lung Disease	269
Interstitial Pneumonitis and Fibrosis	269
Eosinophilic Pneumonia	269
Cryptogenic Organizing Pneumonia	270
Diffuse Alveolar Damage	271
Hypersensitivity Pneumonia	271
References	273
28 Interstitial Lung Disease in Collagen Vascular Disease	275
Systemic Lupus Erythematosus (SLE)	275
Rheumatoid Arthritis (RA)	276
Progressive Systemic Sclerosis (PSS)	278
Polymyositis (PM) and Dermatomyositis (DM)	278
Sjögren's Syndrome	278
Mixed Connective Tissue Disease	280
Ankylosing Spondylitis	282
References	282