

Contents

<i>List of contributors</i>	vii
<i>Preface</i>	ix
<i>Acknowledgments</i>	x
<hr/>	
1 Radiation and radiology – the basics	1
Ionizing radiation	1
Radiation hazards and protection	1
Radiation and the pregnant patient	3
The radiology department	5
Requesting radiology tests	6
2 Imaging modalities and contrast agents	8
Plain films	8
Tomography	9
Fluoroscopy	9
Computed tomography (CT)	9
Ultrasound (US)	12
Magnetic resonance imaging (MRI)	14
Angiography and interventional radiology	16
Mammography	18
Advantages and disadvantages of imaging modalities	18
Contrast media	18
3 Normal images	22
Head	22
Spine	29
Chest	41
Abdomen	48
Upper limb	55
Pelvis and lower limb	57
4 Approach to systems imaging	63
Chest X-ray	63
Chest CT	68
Plain abdominal X-ray	70
Contrast studies of the gastrointestinal tract	71
CT studies of abdomen and pelvis	73
Cholangiography and pancreatography	74
Intravenous urography	76
Head CT	77
Head MRI	78
5 Nuclear medicine	79
Low level radiation exposure and health	79
Nuclear medicine imaging hardware	80
Nuclear cardiology	81
Bone scintigraphy	86
Positron emission tomography (PET) imaging	87
Lung scans	88
Thyroid imaging	89
Parathyroid imaging	90
Renal scintigraphy	90
Hepatobiliary imaging – cholescintigraphy	91
Gastrointestinal imaging	92
Infection imaging	94
Brain SPECT – cerebral blood flow imaging	95
6 Cardiorespiratory system	97
Cardiac failure, pulmonary edema, and pulmonary hypertension	97
Acute chest pain and aortic dissection	101
Pulmonary embolism	102
Lobar pulmonary processes	103
Pulmonary infections	107
Asthma and chronic obstructive pulmonary disease	109
Interstitial lung disease	110
Pleural disease	112
Pneumothorax	113
Lung tumors	114
Interventional radiology in the chest	117
7 Trauma and musculoskeletal system	118
Fractures – general principles	118
Upper limb fracture and dislocations	119
Pelvis and lower limb fractures and dislocations	122
Head trauma	126
Facial fractures	129
Spinal trauma	130
Chest trauma	133
Abdominal trauma	137
Bone tumors	139
Paget's disease	143
Arthritis	144
Osteomyelitis and septic arthritis	148

Contents

8 Gastrointestinal tract	151	Radiology in staging of malignant disease	223
Dysphagia	151	Imaging for investigation of an unknown primary carcinoma	225
Acute abdominal pain	154	Interventional radiology in oncology	226
Pancreatitis and pancreatic tumors	157	Breast imaging	229
Bowel obstruction	159		
Inflammatory bowel disease	163		
Colorectal cancer	165		
Colonic diverticular disease	167		
Radiology in gastrointestinal bleeding	168		
Mesenteric ischemia	169		
Chronic liver disease	171		
Jaundice	173		
Liver tumors and other focal pathologies	176		
9 Genitourinary tract	180		
Renal failure and renal artery stenosis	180		
Urinary tract calculi	182		
Urinary tract infection (UTI)	185		
Hematuria and renal masses	186		
Prostate	187		
Scrotal masses and pain	189		
10 Neuroscience, head, and neck	190		
Acute headache	190		
Stroke and transient ischemic attacks	191		
Intracranial tumors	195		
Multiple sclerosis	199		
Seizures	200		
Dementia	202		
Myeloradiculopathies	203		
Head and neck – other	210		
11 Vascular system	213		
Lower limb arterial disease	213		
Abdominal aortic aneurysm	215		
Deep venous thrombosis and chronic venous insufficiency	216		
12 Oncology	219		
Lymphoma	219		
Multiple myeloma	222		
		<i>Index</i>	281