

Radiology at a Glance

Second Edition

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Radiology **at a Glance**

Second Edition

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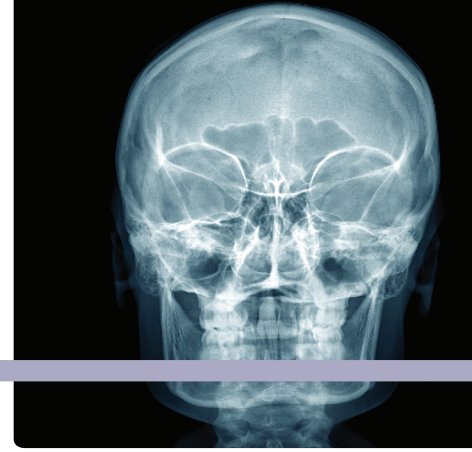
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Contents



Contributors vii
Foreword by Giles Maskell, President of the Royal College of Radiologists viii
Preface ix
Abbreviations x
Terminology xii
About the Companion website xiii

Part 1

Radiology physics 1

- 1 Plain X-ray imaging 2
- 2 Fluoroscopy 4
- 3 Ultrasound 6
- 4 Computed tomography 8
- 5 Magnetic resonance imaging 10

Part 2

Radiology principles 13

- 6 Radiation protection and contrast agent precautions 14
- 7 Making a radiology referral 16
- 8 Which investigation?: classic cases 18

Part 3

Plain X-ray imaging 21

- 9 Chest X-ray checklist and approach 22
- 10 Chest X-ray anatomy 24
- 11 Chest X-ray classic cases I 26
- 12 Chest X-ray classic cases II 28
- 13 Chest X-ray classic cases III 30
- 14 Chest X-ray classic cases IV 32
- 15 Abdominal X-ray checklist and approach 34
- 16 Abdominal X-ray anatomy 36
- 17 Abdominal X-ray classic cases I 38
- 18 Abdominal X-ray classic cases II 40
- 19 Extremity X-ray checklist and approach 42
- 20 Extremity X-ray anatomy I: upper limb 44
- 21 Extremity X-ray anatomy II: pelvis and lower limb 46
- 22 Upper limb X-ray classic cases I: shoulder and elbow 48
- 23 Upper limb X-ray classic cases II: forearm, wrist and hand 50
- 24 Hip and pelvis X-ray classic cases 52
- 25 Lower limb X-ray classic cases: knee, ankle and foot 54
- 26 Face X-ray anatomy and classic cases 56

Part 4

Fluoroscopic imaging 59

- 27 Fluoroscopy checklist and approach 60
- 28 Fluoroscopy classic cases 62

Part 5

Ultrasound imaging 65

- 29 Ultrasound checklist and approach 66
- 30 Ultrasound classic cases 68

Part 6

Computed tomography imaging 71

- 31 Computed tomography checklist and approach 72
- 32 Chest computed tomography anatomy 74
- 33 Chest computed tomography classic cases I 76
- 34 Chest computed tomography classic cases II 78
- 35 Abdominal computed tomography anatomy 80
- 36 Abdominal computed tomography classic cases I 82
- 37 Abdominal computed tomography classic cases II 84
- 38 Head computed tomography anatomy 86
- 39 Head computed tomography classic cases 88

Part 7

Specialised imaging and magnetic resonance imaging 91

- 40 Intravenous urography and computed tomography of kidneys, ureters and bladder 92
- 41 Computed tomography colonography 94
- 42 Computed tomography and magnetic resonance angiography 96
- 43 Magnetic resonance imaging checklist and approach 98
- 44 Head magnetic resonance imaging and classic cases 100
- 45 Cervical spine imaging anatomy and approach 102
- 46 Cervical spine imaging classic cases 104
- 47 Spine magnetic resonance imaging classic cases 106
- 48 Cardiac computed tomography and classic cases 108
- 49 Cardiac magnetic resonance imaging and classic cases 110
- 50 Breast imaging 112

Part 8

Interventional radiology 115

- 51 Principles of interventional radiology 116
- 52 Interventional radiology classic cases 118
- 53 Interventional oncology classic cases 120

Part 9

Nuclear medicine 123

- 54 Principles of nuclear medicine 124
- 55 Nuclear medicine classic cases 126

Index 128

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Foreword

Radiology at a Glance' – it won't take most readers very long to realise that radiological images, like those in this book, deserve more than just a glance – in the old adage, 'a picture is worth a thousand words'. Over the past 120 years since the discovery of X-rays, medical imaging has assumed an ever more central role in patient management. A familiarity with modern medical imaging techniques is an essential prerequisite for the practice of almost all branches of medicine. The past 40 years in particular have been dubbed the Golden Age of Radiology with the arrival on a regular basis of new techniques and modalities depicting human anatomy and disease processes in previously unthinkable detail. Ultrasound, computed tomography (CT), magnetic resonance imaging (MRI) and most recently positron emission tomography (PET) have all helped to shed light on structures and processes within the living human body which previously could only be imagined. The growth of interventional radiology has allowed the replacement of complex surgical procedures with minimally invasive techniques, often avoiding the need for anaesthesia and even hospital admission.

The authors of this excellent book, Rajat Chowdhury, Iain Wilson, Christopher Rofe and Graham Lloyd-Jones, have revised and expanded the bank of images displayed in this second

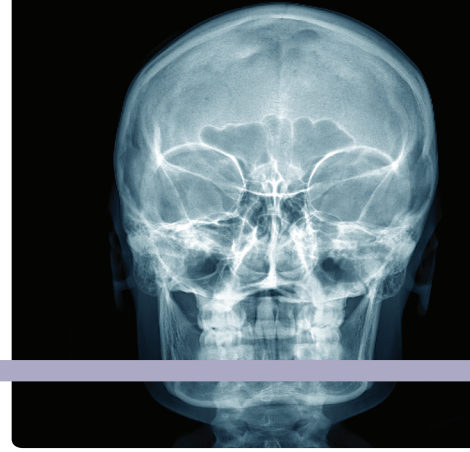
edition to provide an even more comprehensive overview whilst retaining the clarity of presentation which characterised the first edition. New sections have been included on breast imaging, cardiac MRI and CT, CT colonography, and interventional oncology, representing some of the new frontiers in radiological practice. Further chapters on interventional radiology have also been added as well as new opportunities for self-assessment in the form of OSCE.

Medical students, junior doctors and healthcare practitioners from a wide range of backgrounds will find material here relevant to their learning and their daily practice and my hope is that it will fire their enthusiasm for medical imaging. The story of radiology does not end with the exquisite images of the beating heart which you will find in this volume. Functional imaging is with us already and new modalities are coming along in the near future which will enable us to move from imaging of gross anatomy to imaging at the cellular and molecular level and will support the key role that radiology plays in the era of personalised medicine.

Dr Giles Maskell

President of The Royal College of Radiologists (2013–2016)

Preface



Following the success of the first edition of *Radiology at a Glance*, we have implemented the feedback, updated and expanded the book, and maintained the classic at a Glance style to help teach the basics of radiology in a simple and clear fashion. We develop the reader from radiological anatomy through to classic pathological conditions that regularly appear in medical school exams. 'Classic cases' are found in separate chapters allowing easy access for doctors on the wards. The companion website now includes practice material for exam preparation.

We have written this book not only with medical students and junior doctors in mind, but trust that it will be a useful aid to students of radiography, nursing and physiotherapy, as well as other health professionals. We therefore hope it will be a valuable tool in gaining an understanding of the essentials of clinical radiology.

We would like to express our gratitude to all our colleagues and teachers for their inspiration, meticulous teaching and expert guidance. We extend warm thanks to Dr Giles Maskell for giving the second edition his prestigious seal of approval. We would also like to thank our publishers for all their enthusiasm and support in developing the renewed concept for the second edition. We would like to dedicate this book to our families who continue to support us along the at a Glance journey, and finally, we thank all our readers for taking the time to read this book, and in return we hope you feel it was time well spent.

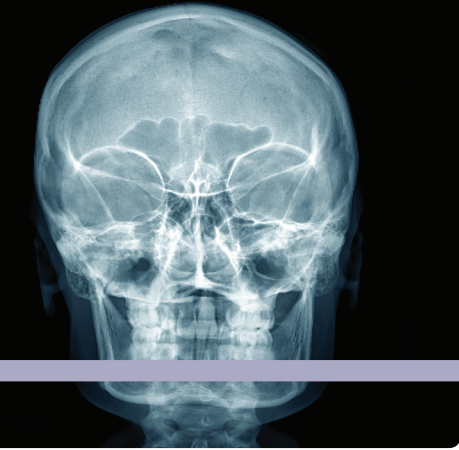
*Rajat Chowdhury
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Abbreviations

#	fracture	DRUJ	distal radioulnar joint
AAA	abdominal aortic aneurysm	DTPA	diethylene triamine pentaacetic acid
ACL	anterior cruciate ligament	DVT	deep vein thrombosis
ADC	apparent diffusion coefficient	DWI	diffusion-weighted (magnetic resonance) imaging
AIIS	anterior inferior iliac spine	Echo	echocardiography
ALARA	as low as reasonably achievable	EDH	extradural haemorrhage/haematoma
AP	anterior to posterior	EDV	end diastolic volume
APTT	activated partial thromboplastin time	EF	ejection fraction
ARDS	acute respiratory distress syndrome	eGFR	estimated glomerular filtration rate
ARSAC	Administration of Radioactive Substances Advisory Committee	EndoUS	endoultrasonography
ASD	atrial septal defect	ERCP	endoscopic retrograde cholangiopancreatography
ASIS	anterior superior iliac spine	ESV	end systolic volume
ATLS	Advanced Trauma Life Support	EVAR	endovascular aneurysm repair
AVN	avascular necrosis	FB	foreign body
AXR	abdominal X-ray	FDG	fluorodeoxyglucose
Ba	barium	FEV₁	forced expiratory volume in 1st second
CAD	coronary artery disease	FLAIR	fluid attenuated inversion recovery
CAMG	coronary artery bypass grafting	FNAC	fine-needle aspiration cytology
CBD	common bile duct	FOB	faecal occult blood
CC	craniocaudal	FVC	forced vital capacity
CIN	contrast-induced nephropathy	GI	gastrointestinal
COPD	chronic obstructive pulmonary disease	GORD	gastro-oesophageal reflux disease
CPPD	calcium pyrophosphate dehydrate	HIV	human immunodeficiency virus
CR	computed radiography	HOC	hypertrophic obstructive cardiomyopathy
CSF	cerebrospinal fluid	HRCT	high resolution computed tomography
C-spine	cervical spine	HSE	Health and Safety Executive
CT	computed tomography	IBD	inflammatory bowel disease
CTA	computed tomographic angiography	ICD	implantable cardioverter defibrillator
CTCA	computed tomographic coronary angiography	ICH	intracerebral haemorrhage
CTKUB	computed tomography of kidneys, ureters and bladder	ICP	intracranial pressure
CTPA	computed tomographic pulmonary angiography	ID	identification details
CTSI	computed tomography severity index	INR	international normalised ratio
CXR	chest X-ray	IR	interventional radiology
DCS	ductal carcinoma <i>in situ</i>	IR(ME)R 2000	Ionising Radiation (Medical Exposure) Regulations 2000
DDH	developmental dysplasia of the hip	IRR99	Ionising Radiation Regulations 1999
DEXA	dual energy X-ray absorptiometry	IV	intravenous
DIC	disseminated intravascular coagulation	IVC	inferior vena cava
DIPJ	distal interphalangeal joint	IVU	intravenous urography
DMSA	dimercaptosuccinic acid	KUB	kidneys, ureters, bladder
DOB	date of birth	LBO	large bowel obstruction
DP	dorsal to plantar	LLL	left lower lobe
DR	digital radiography	LOS	lower oesophageal sphincter
		LRTI	lower respiratory tract infection

LUL	left upper lobe	PET	positron emission tomography
LUQ	left upper quadrant	PET-CT	combined positron emission tomography with computed tomography
LV	left ventricle	PICC	peripherally inserted central catheter
LVF	left ventricular failure	PIPJ	proximal interphalangeal joint
MAA	macroaggregated albumin	PT	prothrombin time
MAG3	mercaptoacetyl triglycine	PTC	percutaneous transhepatic cholangiography
MARS	Medicines (Administration of Radioactive Substances) Regulations	PUD	peptic ulcer disease
MCPJ	metacarpophalangeal joint	RA	right atrium
MDP	methylene diphosphonate	RCR	Royal College of Radiologists
MEN	multiple endocrine neoplasia	RF	radiofrequency
MLO	mediolateral oblique	RFA	radiofrequency ablation
MR(I)	magnetic resonance (imaging)	RLL	right lower lobe
MRA	magnetic resonance angiography	(R)ML	(right) middle lobe
MRCP	magnetic resonance cholangiopancreatography	RUL	right upper lobe
MTPJ	metatarsophalangeal joint	RUQ	right upper quadrant
MUGA	multi-gated acquisition	RV	right ventricle
NBM	nil by mouth	RWMA	Regional myocardial wall motion
Neuro	neurological	SAH	subarachnoid haemorrhage
NGT	nasogastric tube	SBO	small bowel obstruction
NHS BSCP	NHS Bowel Cancer Screening Programme	SDH	subdural haemorrhage/haematoma
NHS BSP	NHS Breast Screening Programme	SIJ	sacroiliac joint
NM	nuclear medicine	SOL	space occupying lesion
NOFF	neck of femur fracture	SPECT	single photon emission computed tomography
NSAID	non-steroidal anti-inflammatory drug	STEMI	ST elevation myocardial infarction
NSF	nephrogenic systemic fibrosis	STIR	short tau inversion recovery
N-STEMI	non-ST elevation myocardial infarction	SUFE	slipped upper femoral epiphysis
OGD	oesophagogastroduodenoscopy	SV	stroke volume
OM	occipitontal view	SVC	superior vena cava
OPG	orthopantomogram	TACE	transcatheter arterial chemoembolisation
OSCE	Objective Structured Clinical Examination	TARE	transcatheter arterial radioembolisation
PA	posterior to anterior	TB	tuberculosis
PACS	picture archiving and communications system	Tc-99m	metastable technetium-99
PCA	percutaneous coronary angioplasty	TFCC	triangulofibrocartilage complex
PCI	percutaneous coronary intervention	TIA	transient ischaemic attack
PCL	posterior cruciate ligament	TIPS	transjugular intrahepatic portosystemic shunt
PCNL	percutaneous nephrolithotomy	TNM	tumour, nodes, metastases
PCS	pelvicalyceal system	UC	ulcerative colitis
PD	proton density	UGI	upper gastrointestinal
PE	pulmonary embolus	US	ultrasound
		V/Q	ventilation-perfusion



Terminology

Attenuation

Gradual loss in intensity of beams and waves including X-rays and ultrasound waves. May also be used synonymously with 'density' to describe appearances on CT imaging (areas of high attenuation are bright whereas areas of low attenuation are dark).

Density

Used synonymously with 'attenuation' to describe appearances on CT imaging (areas of high density are bright whereas areas of low density are dark).

Echogenicity

Used synonymously with 'reflectivity' to describe appearances on ultrasound imaging (hyperechoic areas are bright whereas hypoechoic areas are dark).

Hotspot/coldspot

Used to describe the uptake of radiopharmaceutical agents by tissues in nuclear medicine imaging (increased uptake results in a hotspot whereas reduced uptake results in a coldspot).

PACS

The 'picture archiving and communication systems' are computer networks that store, retrieve, distribute and present medical images electronically. This permits images to be viewed and manipulated digitally on screen with remote and instant access by multiple users simultaneously and has therefore almost replaced the use of hard-copy films in the UK.

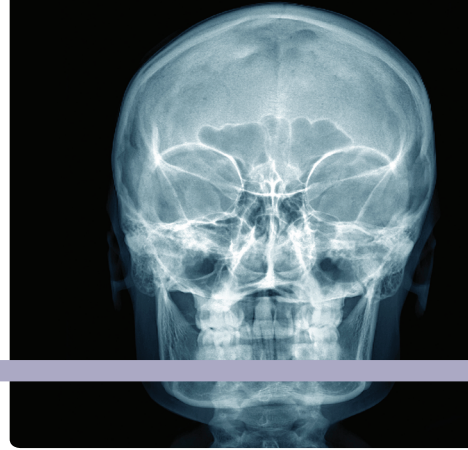
Reflectivity

Used synonymously with 'echogenicity' to describe appearances on ultrasound imaging (hyperreflective areas are bright whereas hyporeflexive areas are dark).

Signal

Used to describe appearances on MRI (areas of high signal are bright whereas areas of low signal are dark).

About the companion website



Don't forget to visit the companion website for this book:



**[http://www.ataglanceseries.com/
chowdhury/radiology/](http://www.ataglanceseries.com/chowdhury/radiology/)**

There you will find valuable material
designed to enhance your learning, including:

- Radiology OSCE, case studies and questions
- Flash cards
- Figures from the book in PowerPoint format, to download

