



Essential Radiology for
**Medical Students,
Interns and
Residents**



The Book Contains
1100 QR Code Videos



Edited By

Ahuja, Antonio
Nung, Sitt, Wong, Yu
Dai, Law, Tang, Yuen

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UDC 616-073.912(075)=111
O-75

**A. T. Ahuja, G. E. Antonio, R. C. Nung, J. C. Sitt, J. W. Yu, S. S. Wong, E. Y. Dai,
E. K. Law, E.W. Tang, B.T. Yuen.**

O-75 Essential radiology for medical students, interns and residents / A. T. Ahuja,
G. E. Antonio, R. C. Nung, J. C. Sitt, J. W. Yu, S. S. Wong, E. Y. Dai, E. K. Law,
E. W. Tang, B. T. Yuen. – Kyiv: OMF Publishing, 2017. – 518 p.: 1066 images +
1100 videos
ISBN 978-966-97590-3-0

This is a comprehensive system-based review in clinical radiology, covering major diseases encountered in everyday clinical practice. A case-orientated approach is used, with high quality images from the latest available imaging modalities including MRI of the breast and cardiovascular system, CT colonography, amongst others. Each chapter is dedicated to a specific functional system and begins by outlining different clinical cases, each with a concise clinical history and initial imaging, followed by explanation of the pertinent imaging findings. The second part of each case contains a discussion on the list of important differential diagnoses to consider and the role of different imaging modalities in the presenting problem. The latter shows how information derived from different imaging modalities (including x-rays, fluoroscopy, CT, MRI, nuclear medicine / PET-CT, angiograms, etc.) can help refine and prioritize imaging differentials. For each clinical case, the novel incorporation of cine images (accessible via QR codes) provides a new type of learning experience – one that simulates the reality of how medical imaging are interpreted using serial images with spatial reformatting rather than static planar images.

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Please note that additional 1100 cine images for this book can be downloaded via QR codes using programs similar to these:

QR Code Reader & Barcode Scanner (for iOS users)

QR Code Reader (for Android users)

Printed in Ukraine

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ISBN 978-966-97590-3-0

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This is a comprehensive system-based review in clinical radiology, covering major diseases encountered in everyday clinical practice. A case-orientated approach is used, with high quality images from the latest available imaging modalities including MRI of the breast and cardiovascular system, CT colonography, amongst others. Each chapter is dedicated to a specific functional system and begins by outlining different clinical cases, each with a concise clinical history and initial imaging, followed by explanation of the pertinent imaging findings. The second part of each case contains a discussion on the list of important differential diagnoses to consider and the role of different imaging modalities in the presenting problem. The latter shows how information derived from different imaging modalities (including x-rays, fluoroscopy, CT, MRI, nuclear medicine / PET-CT, angiograms, etc.) can help refine and prioritise imaging differentials. For each clinical case, the novel incorporation of cine images (accessible via QR codes) provides a new type of learning experience – one that simulates the reality of how medical imaging are interpreted using serial images with spatial reformatting rather than static planar images. This textbook is written by experienced radiologists working in undergraduate and postgraduate medical education and highlights the relevant clinical pearls gathered from years of clinical practice. It will serve as an ideal text for medical students, clinical residents & young physicians interested in imaging.



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Affiliation / Acknowledgment

Anil T. Ahuja

MBBS (Bom), MD (Bom), FRCR, FHKCR,
FHKAM (Radiology)
Professor of Diagnostic Radiology & Organ Imaging
Department of Imaging & Interventional Radiology
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Gregory E. Antonio

MD (CUHK), MBBS (UNSW), BSc(Med), DRANZCR,
FHKCR, FHKAM (Radiology)
Clinical Professor (Honorary)
Department of Imaging & Interventional Radiology
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Jacqueline C.M. Sitt

MBBS, FRCR, FHKCR, FHKAM (Radiology)
Clinical Assistant Professor (Honorary)
Department of Imaging & Interventional Radiology
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Janice W.L. Yu

MBBS, FRCR, FHKCR, FHKAM (Radiology)
Associate Consultant
Department of Radiology and Imaging
Queen Elizabeth Hospital
Hong Kong (SAR), China
Clinical Assistant Professor (Honorary)
Department of Imaging and Interventional Radiology
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Simon S.M. Wong

MBBS, FRCR, FHKCR, FHKAM (Radiology)
Associate Consultant &
Clinical Assistant Professor (Honorary)
Department of Imaging & Interventional Radiology
Prince of Wales Hospital
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Ryan C.H. Nung

MBChB, FRCR, FHKCR, FHKAM (Radiology)
Associate Consultant
Department of Diagnostic Radiology
Alice Ho Miu Ling Nethersole Hospital
Hong Kong (SAR), China
Clinical Assistant Professor (Honorary)
Department of Imaging and Interventional Radiology
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Eunice Y.L. Dai

MBBS, MRes(Med), FRCR
Resident & Clinical Tutor (Honorary)
Department of Imaging and Interventional Radiology
Prince of Wales Hospital
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Eric K.C. Law

Hons BSc, MBChB, FRCR
Resident & Clinical Tutor (Honorary)
Department of Imaging & Interventional Radiology
Prince of Wales Hospital
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Brian T.Y. Yuen

MBChB, FRCR
Resident & Clinical Tutor (honorary)
Department of Imaging & Interventional Radiology
Prince of Wales Hospital
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Evelyn W.K. Tang

MBBS, MRes (Med)
Resident & Clinical Tutor (honorary)
Department of Imaging & Interventional Radiology
Prince of Wales Hospital
Faculty of Medicine
The Chinese University of Hong Kong
Hong Kong (SAR), China

Image Editing

Kevin H.N. Lo

Kevin K.W. Leung

Abby Y.T. Tong



Preface

Advances in information and technology have seen medical education using conventional print medium evolve into web-based and cloud-centered knowledge transfer and sharing. Communication between medical professionals in clinical practice has changed accordingly, using electronic transfer of patient information, images, cine loops, and treatment regimes.

At the same time, advances in medical imaging equipment have resulted in the production of unprecedented, high resolution images of structures and pathology. This comes with the cost of overloading the viewer with data and information. The ability to review, and quickly sieve through the myriad of images in an imaging examination have become an essential survival skill in daily clinical practice.

It is with these challenges in mind that we wrote this book: an attempt to bridge the transition between and conventional print based learning and a web-based, interactive experience; and to familiarize the reader with assessing pathology by reviewing a complete set of cross-section medical images. Aside from the dissemination of knowledge with the selected key images in the book, we hope that the readers (medical students and junior doctors, paramedical personnel) will develop expertise in efficiently reviewing complete examinations with large stacks of digital images, something they would be required to do in routine clinical practice

There are new and specific challenges in implementing this interactive approach of teaching and learning. Firstly, in addition to key images, this project required the establishment of an archive of cine loops for different organs and pathologies, using current state-of-the-art Medical Imaging modalities. Secondly, to make the cine loops accessible to the reader, we have made the entire cine archive available online, ready to be viewed and reviewed with a mobile device by scanning the QR code printed in the relevant sections in each book chapter.

A problem orientated approach is used in this book, and each chapter begins with an illustrative case. A short clinical description and initial imaging are provided, followed by pertinent questions regarding the imaging findings to help the reader come to a diagnosis and list of differential diagnosis. The second part of each chapter contains the case diagnosis, a discussion of the pathology and related imaging signs, and information on differential diagnosis, complications, treatment, and follow up, all of which are accompanied by images and cine loops from other illustrative cases.

How to use this book and it's imaging archive

This book comes in two components:

The first component consists of the traditional print based, clinical case diagnosis and discussion in each chapter. The opening clinical history and imaging should help the reader to answer the relevant questions and come to a list of differential diagnosis



Preface

The second component consists of a library of cine loops which can be accessed via a mobile device scanning the QR code printed at the bottom of each relevant page. The reader can review these cine loops while reading through the text, or use them at a later date to test or practice their interpretation skills.

These cine loops are from a complete Medical Imaging study for the illustrative cases. Each cine loop contains consecutive images covering the area scanned during the examination. In many cases, the cine loops are of scans in different planes (sagittal, coronal or oblique), in different phases of contrast enhancement (pre-contrast, post-contrast arterial/ venous/ equilibrium/ delayed), and for MRI in different sequences (T1W/ T2/ PD/ DWI etc.)

By presenting such sets of cine loops for each case, we hope to present to the readers a realistic experience of reviewing medical images, something they will encounter in their daily clinical practice. Developing the expertise to quickly and efficiently review a large amount of images and data is a valuable skill in modern medicine, & best learnt during medical school & early clinical practice.

This book is written by experienced radiologists who have acquired their skills & knowledge in a tertiary referral centre & University Hospital. The cases are a collection of teaching material acquired during their daily clinical practice. On behalf of all the authors involved with this book, we would sincerely like to thank our colleagues in the Department of Imaging & Interventional Radiology, Prince of Wales Hospital, The Chinese University of Hong Kong & Hospital Authority. The department has generously provided each of us the opportunity & resources to train & enhance our professional careers. We all started our careers here & wish the department & all our colleagues every success in their professional & personal lives. This book is but a small reflection of the excellent academic & clinical work of the department & it's commitment to medical education & state of the art clinical service to the community it serves.

On a personal note;

Greg would like to dedicate this work to his mother, Esther, and to his late father, Gabriel, whose unconditional love and unwavering support helped me ride through the ups and downs of life.

Anil would like to thank his late mum and dad, Laj & Tejbhan who taught me the value of hard work & perseverance (& my dad's futile attempt to teach me Anatomy!). Reann my wife who has patiently tolerated & supported me for over twenty years (& for her many attempts to keep me sane), my daughters Sanjali & Tiana who bring warmth and a huge smile to my heart & finally my sister Anita for the sacrifices she made to help me get to where I am.

Greg Antonio

Anil Ahuja



Dedication

Greg

I would like to thank and dedicate my work to my family who have provided unwavering support for my academic pursuits over the years. I would also like to thank the staff of the Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, and the St Teresa's Hospital Scanning department, for their valuable assistance with my work.

Janice

To Ching Yuen – my husband, best friend, soul mate; and our son Jeffrey, for your unconditional love and support.

To Prof. Ahuja – my respectful teacher, for your guidance during my radiology journey.

Jacqueline

To my inspiring teachers, Prof Anil Ahuja and Dr KT Wong, who introduced me to the fascinating world of Clinical Radiology.

To my loving husband Alex and boys Oliver and Oscar, for their endless support and trust – who always drive me to become a better person, a better mother, and a better doctor.

Ryan

To my family for their endless support and never-failing love.

To my teachers in PWH for showing me excellence and professionalism in Radiology.

Simon

To Joyce, for your unconditional love and support.

To Prof Ahuja, Prof Simon Yu and Dr KT Wong, for being my role models and inspiring mentors.

Eric

To Sam, Joyce, Gloria, and Andrea, for your belief, love, and joy.

To Anil, for your encouragement and mentoring.

Eunice

To my husband and family for their unconditional love and unwavering support throughout the years and to my teacher Professor Ahuja for being a truly inspirational mentor.

Brian

To my parents, for their love and care.

Evelyn

To all the co-authors, editors, and Kevin, for all their help and dedication, and to my family, Ken and Teddy, for their patience and understanding.
