Body MDCT in Small Animals

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Editor

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Basic Principles, Technology, and Clinical Applications

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Giovanna Bertolini
San Marco Veterinary Clinic
Padua, Italy

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You see a block, think about the image.
It's inside; you only have to undress it.
(*Michelangelo Buonarroti*)

This book is dedicated to Marco,
my love and a constant inspiration to me.

Preface

MDCT represents a tremendous technological evolution of CT technology, which is increasing in importance in the diagnostic standards for various conditions. Although MDCT is now widely accessible in veterinary medicine, there is scant informational literature for MDCT users, and no book on this topic has been published before now.

This book was developed based on my 14 years of experience with MDCT in dogs and cats. I started employing MDCT in my practice in 2003 with a 16-MDCT, the most advanced MDCT scanner technology available at that time. I realized that a revolution in medical imaging and in small animal medicine had begun, leading us to a new diagnostic world. I developed scan protocols and designed new CT approaches for various clinical scenarios. I decided to write this book in 2014, when my group started to work with a dual-source technology and thus realized that practices were evolving once again and that those changes would bring new challenges.

To date, my group has performed more than 13,000 MDCT examinations in dogs and cats at our center. My colleagues and I, all veterinarians, perform all examinations ourselves, day and night. This experience has made it possible to tailor scan protocols to a great variety of clinical situations, thereby maximizing the diagnostic value of the procedure. The cases presented in this book are supported by anamnestic, clinical, clinicopathological, surgical, endoscopic, and pathological results. The images were selected directly from our report database and reflect our daily work.

I hope this book will be useful for other MDCT users. Because of the general similarities between the human and veterinary medicine paradigms and the lack of veterinary literature on certain subjects, some observations in this book were based in part on the human radiology literature and personal experience. I expect that some information in this book will require revision in the future. I would be delighted if this book would serve as an inspiration to my critical and knowledgeable readers to contribute their own research findings on this topic.

The book has seven sections, divided into 21 chapters, and over 600 images. The first chapter introduces the MDCT technique and its technological evolution. This knowledge is essential for understanding the notable differences among various MDCT scanners in terms of their capabilities and possible applications. Nowadays, with the availability of rapid MDCT scanners, standard MDCT examinations have the potential to serve as CT angiographies. For this reason, the second chapter describes the general principles of MDCT angiography in dogs and cats. The rest of the book encompasses major pathological conditions seen within abdominal and thoracic structures in dogs and cats and includes the most recent MDCT applications, such as cardiac CT and the potential for dual-energy CT.

Padua, Italy Giovanna Bertolini

Acknowledgments

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I am grateful to all those who have contributed knowingly and unknowingly to my professional growth. In particular, I thank the "human" radiologist Dr. Stefano Cesari, my first mentor. I will be forever indebted to Prof. Mathias Prokop, my advisor during my rewarding PhD research fellowship in the Netherlands. My indebtedness extends to my colleagues in the CT and MRI division of the San Marco Veterinary Clinic. I would like to express my special thanks to Dr. Luca Angeloni, friend and colleague, for his continuous, enthusiastic, and competent work and also to Dr. Arianna Costa and Dr. Chiara Briola, talented colleagues and friends. I love working with all of them and I could not have completed this book without their support. The collegiality and expertise of internists, surgeons and other specialists of the San Marco Clinic contribute every day to the adoption and acceptance of MDCT in various clinical circumstances. In particular, I am grateful to Dr. Tommaso Furlanello for his constant faith in and professional support of our work. I thank the anesthesiologists, whose work is essential for patient safety and for the quality of images we obtain. In particular, I thank Dr. Cristiano Stefanello for our 10-year collaboration and friendship.

I extend a special thank you to my husband, Dr. Marco Caldin, founder of the San Marco Veterinary Clinic and Laboratory. He has my constant, enduring admiration and my gratitude for enlightening me with a greater curiosity and love for medicine. I thank him, my family, and my friends for their patience and forbearance during my time of neglect while preparing this book.

Contents

Editor and Contributors

Editor

Giovanna Bertolini Diagnostic and Interventional Radiology Division, San Marco Veterinary Clinic, Padova, Italy

Contributors

Randi Drees QMHA Diagnostic Imaging Section, Royal Veterinary College, University of London, London, UK

Sebastian Faby Siemens Healthcare GmbH, Diagnostic Imaging, Computed Tomography, Forchheim, Germany

Thomas Flohr Siemens Healthcare, Erlangen, Germany

Eberhard Karls Universität, Tübingen, Germany