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## **Stroke Revisited**

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This authoritative book series presents state of the art knowledge on the pathophysiology, prevention, diagnosis, and treatment of stroke, highlighting the many very important advances that have been achieved in recent years. Current issues in management are addressed in detail, equipping readers with an understanding of the rationale for particular approaches in different settings and with a sound knowledge of the role of modern imaging methods, surgical techniques, and medical treatments. The inclusion of numerous high-quality illustrations facilitates understanding of practical aspects and rapid retrieval of fundamental information. The series will be of value for stroke physicians, surgeons, other practitioners who care for patients with stroke, and students.

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Seung-Hoon Lee  
Editor

# Stroke Revisited: Pathophysiology of Stroke

From Bench to Bedside



Springer

*Editor*

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## Preface

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It has been 2 years since the publication of *Diagnosis and Treatment of Ischemic Stroke*, the first volume in the “Stroke Revisited” series. As promised, a new volume has now been published, entitled *Pathophysiology of Stroke: From Bench to Bedside*. This is the fourth publication in the series, preceded by *Hemorrhagic Stroke* and *Vascular Cognitive Impairment*. Originally predicted to be published at the end of 2018, this volume was delayed longer than expected due to editing issues. That said, I would like to apologize to readers who showed great interest in the previous volumes and eagerly awaited this volume. I will make every effort to publish the remaining two volumes at the beginning of 2021.

As its title suggests, the fourth volume is a textbook that covers the pathophysiology of stroke. In volume one, *Diagnosis and Treatment of Ischemic Stroke*, the focus was on the practical diagnosis and treatment of ischemic stroke, with minimal discussion of pathophysiology. With this new addition, along with the second volume, *Hemorrhagic Stroke*, I now cover nearly every aspect of stroke medicine. Improving our understanding of stroke pathophysiology, great strides were made in the 2000s, in which we saw significant progress in radiologic imaging technology. In terms of MRI advancements, we are now able to recognize stroke pathophysiology in near real-time and at high resolution via diffusion- and perfusion-weighted sequences, arterial spin labeling techniques, and 3 tesla high-resolution imaging. In addition, the introduction of 64-channel multi-detector CT technology made it easier to obtain perfusion imaging and cerebral angiography. These developments, discussed in this fourth volume, have helped us better understand the pathophysiology of stroke more than ever before. Furthermore, we discuss new disease concepts in depth, such as cerebral amyloid angiopathy or cerebral autosomal dominant arteriopathy with subcortical ischemic strokes and leukoencephalopathy (CADASIL). Finally, in an effort to help readers understand stroke pathophysiology from a cellular level, we address basic aspects of stroke pathophysiology, including cell death and repair mechanisms. As the editor of this volume, I recommend it be read cover to cover rather than as certain chapters only. This will enable the reader to comprehensively understand every aspect of stroke pathophysiology and learn the most cutting-edge research on stroke diagnosis and treatment.

Not many textbooks explore stroke in depth. I used two to three books during my residency and fellowship, and no book sufficiently discussed the significant improvements in stroke care that occurred between 1990 and 2000.

Owing to advancements in brain MRI and CT imaging, it has become possible to gain an immediate understanding of a patient's pathophysiology as it changes moment by moment. Despite these developments, most textbooks published previously still focused on outdated neurological examinations that are unable to support the advances made in the practice field. Moreover, most textbooks simply lacked explanation of core concepts and listed insignificant details about research findings that often conflicted. Before the development of smartphones and tablets, studying stroke required great perseverance. Nowadays, people around the globe are communicating via social media and are exposed to a previously unexperienced wealth of information. In tandem with recent technological advances, textbooks must change the way they deliver medical knowledge in order to provide information in a concise yet precise way. I decided to write a textbook reflecting such changes and contacted *Springer Nature*, who ultimately agreed to publish the "Stroke Revisited" series. Despite facing communication and language obstacles, I would like to thank the many staff members of *Springer Nature* who have nevertheless helped publish this book.

This latest volume targets residents and fellows, physicians and scholars in their early careers who specialize in stroke, and physicians and researchers in other fields who aim to study stroke. Most textbooks are organized according to the traditional academic format, in which it can be difficult to obtain information required in clinical settings. Instead, I strived to organize concise one-subject chapters in order for readers to be able to finish them quickly and efficiently. I have taken great care to compile the best academic expertise and latest findings, and I hope that that effort communicates to readers.

In order to publish this volume with the most extensive and up-to-date information, each chapter was written by the best medical scientists from around the world. I wholeheartedly thank all authors who have participated in this process. I hope that this textbook will be reviewed well and act as a strong example for future textbooks.

Seoul, Korea  
2019 . 12

Seung-Hoon Lee

## Acknowledgment

Although I had an ideal model for a textbook in my brain, I rarely had an active conversation with publishers about my idea. This textbook was conceived in an e-mail proposal of the textbook after an unplanned meeting with Ms. Lauren Kim, the editor of Springer Nature. The editorial team and I have obtained manuscripts from renowned medical experts in the world and have edited the manuscripts according to the principles we have set for this textbook. Therefore, the contents of this book were completed only after tremendous efforts from the editorial team. I would like to especially thank Dr. Min Kyoung Kang as associate editor and other colleagues for their enormous effort for the completion of this book. In addition, I would like to thank the executive members of edition of the publisher, Springer Nature Inc. who agreed with the philosophy behind this textbook and provided the title for this textbook series “Stroke Revisited.” Finally, I greatly appreciate the financial and technical support of the Korean Cerebrovascular Research Institute.

Throughout my research career, I focused on publishing papers as an author and becoming a famous, prosperous scientist. I rarely thought of writing a textbook. I would like to express my love toward my wife and my kids for changing my selfish thoughts and helping me understand my responsibilities, that is, to help others and provide education to future medical doctors.

Seung-Hoon Lee

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