

Case Studies in Stroke

Neurologists learn from their patients, and this selection of 60 stroke cases will inform and challenge clinicians at all stages in their careers. Including both common and unusual cases, the aim is to reinforce diagnostic skills through careful analysis of individual presenting patterns, and to guide treatment decisions. Each case consists of a clinical history, examination findings and special investigations, usually involving imaging before a diagnosis is given. There then follows for each case a discussion of the clinical issues raised by the case, in which the main teaching points are emphasized. Selected references, frequently including the first description, are provided at the conclusion of each case.

Drawing on the expertise of leading teachers and practitioners, and liberally illustrated, these case studies and the discussions that accompany them are an essential guide to learning the complexity of stroke diagnosis.

Michael G. Hennerici is Professor of Neurology at the University of Heidelberg, and Chairman at the Department of Neurology, University Hospital in Mannheim, and the editor, with Stephen Meairs, of *Cerebrovascular Ultrasound; Theory, Practice and Future Developments*, published by Cambridge University Press. He is Chairman of the European Stroke Conference.

Michael Daffertshofer is Professor of Neurology at the University of Heidelberg, and former

Louis Caplan is Professor of Neurology at Harvard Medical School and Senior Neurologist at Beth Israel Deaconess Medical Center, Boston. He is the editor, with Julien Bogousslavsky, of *Stroke Syndromes* and *Uncommon Causes of Stroke*, both published by Cambridge University Press.

Kristina Szabo is Senior Lecturer at the University of Heidelberg, University Hospital in Mannheim and the MR-Neurology Research Unit, and is an expert in neuroimaging.

Cambridge University Press
978-0-521-67367-9 - Case Studies in Stroke: Common and Uncommon Presentations
Michael G. Hennerici, Michael Daffertshofer, Louis R. Caplan and Kristina Szabo
Frontmatter
[More information](#)

Case Studies in Stroke

Common and Uncommon Presentations

Michael G. Hennerici, M.D.

Department of Neurology
Universitätsklinikum Mannheim
University of Heidelberg
Germany

Michael Daffertshofer, M.D.

Department of Neurology
Universitätsklinikum Mannheim
University of Heidelberg
Germany

Louis R. Caplan, M.D.

Cerebrovascular Division
Beth Israel Deaconess Medical Center
Harvard Medical School, USA

Kristina Szabo, M.D.

Department of Neurology
Universitätsklinikum Mannheim
University of Heidelberg
Germany

Cambridge University Press
978-0-521-67367-9 - Case Studies in Stroke: Common and Uncommon Presentations
Michael G. Hennerici, Michael Daffertshofer, Louis R. Caplan and Kristina Szabo
Frontmatter
[More information](#)

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521673679

© Cambridge University Press 2007

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without
the written permission of Cambridge University Press.

First published 2007

Printed in the United Kingdom at the University Press, Cambridge

A catalog record for this publication is available from the British Library

ISBN-13 978-0-521-67367-9 paperback
ISBN-10 0-521-67367-4 paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or
third-party internet websites referred to in this publication, and does not guarantee that any content on
such websites is, or will remain, accurate or appropriate.

Every effort has been made in preparing this publication to provide accurate and up-to-date information
which is in accord with accepted standards and practice at the time of publication. Although case histories
are drawn from actual cases, every effort has been made to disguise the identities of the individuals
involved. Nevertheless, the authors, editors and publishers can make no warranties that the information
contained herein is totally free from error, not least because clinical standards are constantly changing
through research and regulation. The authors, editors and publishers therefore disclaim all liability for
direct or consequential damages resulting from the use of material contained in this publication. Readers
are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or
equipment that they plan to use.

Cambridge University Press
978-0-521-67367-9 - Case Studies in Stroke: Common and Uncommon Presentations
Michael G. Hennerici, Michael Daffertshofer, Louis R. Caplan and Kristina Szabo
Frontmatter
[More information](#)

To our friends and colleagues in the Department of Neurology, University Hospital, Mannheim, Ruprecht-Karls-University of Heidelberg, who contributed to this book. We gratefully acknowledge their daily enthusiasm and dedication to treat stroke patients, who teach us how to better meet their needs.

Contents

	<i>List of contributors</i>	<i>page</i> xi
	<i>List of abbreviations</i>	xii
	<i>Preface</i>	xv
	Introduction	1
Part I	Common cases of stroke	13
Case 1	Dysarthria and clumsy hand syndrome	15
Case 2	Sudden numbness of the right extremities	19
Case 3	A 52-year-old woman with sudden hemiparesis	23
Case 4	Sudden difficulty reading the left side of the morning paper	27
Case 5	An 85-year-old man with difficulty expressing himself on the telephone	31
Case 6	Transient loss of vision	35
Case 7	Massive intracerebral hemorrhage	39
Case 8	Tinnitus during cycling in an orthopedic surgeon	44
Case 9	Headache after an exhausting tennis match	47
Case 10	Anticoagulation-associated hemorrhage	52
Case 11	Worst headache of his life	56
Case 12	Drooping eyelid and gait problems	60
Part II	Uncommon cases of stroke	65
Case 13	Similar infarction – different outcome: the importance of the brain network	67

viii	Contents	
Case 14	An 80-year-old woman with sudden paresis and normal motor latencies	71
Case 15	Lower limb weakness after surgery	75
Case 16	A young engineer with suspected MS	79
Case 17	Vertigo after lifting a heavy suitcase	82
Case 18	A 79-year-old man with a typical MCA-stroke?	86
Case 19	A man with slowly progressive weakness of the left hand	90
Case 20	Sudden weakness after holidays in Kenya	94
Case 21	Recurrent spells of right-sided weakness	98
Case 22	An uncommon cause of CVT	102
Case 23	“My arm no longer belongs to me. . .”	106
Case 24	Coma of unknown onset in an old lady	111
Case 25	Spreading sensation of the left arm and face	116
Case 26	From dysarthria to locked-in syndrome	120
Case 27	The woman who could not smile on command	123
Case 28	Severe headache and facial palsy	127
Case 29	Isolated difficulty, writing and grasping	130
Case 30	Young mother found comatose on the bathroom floor	133
Case 31	Progressive mental decline and fever	137
Case 32	Aphasia after laparoscopic cholecystectomy	141
Case 33	Risks of carotid surgery in longstanding asymptomatic disease	146
Case 34	Recurrent weakness after major car accident	151
Case 35	Stroke at awakening	155
Case 36	Cognitive impairment and seizures	158
Case 37	Progressive headache, tinnitus, and nausea	162
Case 38	Small problem with severe consequences	166

ix	Contents	
Case 39	Dizzy spells and double vision	171
Case 40	Bad disease with good outcome	174
Case 41	Livid skin and stroke	178
Case 42	Stroke mimicking vestibular neuronitis	182
Case 43	Scuba diver with decompression sickness	186
Case 44	Memory loss after gastrointestinal endoscopy	189
Case 45	Aphasia and severe headache	193
Case 46	Progressive neurological decline and fever	197
Case 47	Lady who did not want to get up in the morning	203
Case 48	Vermont farmer with many spells of rotating and whirling objects	207
Case 49	Woman with right arm discomfort and sudden blindness	210
Case 50	A 22-year-old woman with sudden right limb weakness and a mixed aphasia	214
Case 51	10-year follow-up of a woman with bilateral MCA disease	219
Case 52	Dysarthria reoccurring after 2 years	224
Case 53	54-year-old man with AVM	227
Case 54	Alternating transient numbness	230
Case 55	Typical intracerebral hemorrhage – or not?	235
Case 56	The butcher and his wife	239
Case 57	Malignant MCA infarction	244
Case 58	Stroke in Recklinghausen’s disease	247
Case 59	Painful double vision and a “hissing” sound	252
Case 60	Spontaneous resolution of PWI/DWI mismatch	255
	<i>Index</i>	259

x Contents

The following cases described herein have been published previously

- Case 8 Lanczik, O., Szabo, K., Gass, A., & Hennerici, M. G. Tinnitus after cycling. *Lancet* 2003; **362**:292.
- Case 13 Amoiridis, G., Wöhrle, J. C., Langkafel, M., Maiwurm, D., & Przuntek, H. Spinal cord infarction after surgery in a patient in the hyperlordotic position. *Anesthesiology* 1996; **84**:228–230.
- Case 14 Lie, C., Schwenk, S., Szabo, K., Lanczik, O., Hennerici, M. G., & Gass, A. Bilateral internal carotid artery dissection mimicking inflammatory demyelinating disease. *J. Neuroimaging* 2003; **13**:359–361.
- Case 17 Sedlacek, O., Grips, E., Bätzner, H., Claus, A., Wöhrle, J., & Hennerici, M. Infarction of the central cerebellar arbor vitae and transient loss of spatial orientation. *Neurology* 2005; **65**:168.
- Case 18 Binder, J., Pflieger, S., & Schwarz, S. Images in cardiovascular medicine. Right atrial primary cardiac lymphoma presenting with stroke. *Circulation* 2004; **110**:e451–452.
- Case 25 Szabo, K., Gass, A., Rossmanith, C., Hirsch, J. G., & Hennerici, M. G. Diffusion- and perfusion-weighted MRI demonstrates synergistic lesions in acute ischemic Foix–Chavany–Marie syndrome. *J. Neurol.* 2002; **249**:1735–1737.
- Case 32 Sommer, A., Meairs, S., Gueckel, F., Cornelius, A., & Schwartz, A. Traumatic brachiocephalic pseudoaneurysm presenting with delayed stroke: case report. *Neuroradiology* 2000; **42**:742–745.
- Case 36 Kern, R., Kreisel, S., Zoubaa, S., Szabo, K., Gass, A., & Hennerici, M. Cognitive impairment, aphasia, and seizures in a 51-year-old man. *Lancet Neurol.* 2005; **4**:445–450.
- Case 52 Gass, A. & Hennerici, M. G. MRI of basilar-artery-aneurysm growth. *Lancet Neurol.* 2003; **2**:128.

Contributors

- Hansjörg Bänzner, M.D.
Rolf Kern, M.D.
Johannes Binder, M.D.
Achim Gass, M.D.
Oliver Sedlacek, M.D.
Stefan Schwarz, M.D.
Christian Blahak, M.D.
Martin Griebe, M.D.
Christian Sick, M.D.
Johannes Wöhrle, M.D.
Tobias Back, M.D.
Simone Bukow, M.D.
Anastasios Chatzikonstantinou, M.D.
- Yaroslav Epifanov, M.D.
Marc Fatar, M.D.
Alex Förster, M.D.
Bianca Götz, M.D.
Eva Grips, M.D.
Micha Kablau, M.D.
Anne-Christine Karow, M.D.
Stefan Kreisel, M.D.
Oliver Lanczik, M.D.
Stephen Meairs, M.D.
Christian Peters, M.D.
Yogesh Shah, M.D.

Abbreviations

ACA	anterior cerebral artery
ADC	apparent diffusion coefficient (MRI)
aCH	acetylcholine
ADEM	acute disseminated encephalomyelitis
AO	aorta
APL	antiphospholipid antibodies
aPTT	activated partial thromboplastin time
ASD	atrial septal defect
AVM	arteriovenous malformation
CAA	cerebral amyloid angioplasty
CBF	cerebral blood flow
CBS	cystathionine beta synthetase
CCF	carotid cavernous fistula
CRP	C-reactive protein
CSF	cerebrospinal fluid
CCT	cranial computed tomography
CT	computed tomography
CTA	computed tomography angiography
CVT	cerebral venous thrombosis
CWS	capsular warning syndrome (Donnan syndrome)
DCS	decompression sickness
DVT	deep vein thrombosis
DWI	diffusion-weighted imaging (MRI)
ECASS	European Cooperative Acute Stroke Study
ECD	extracranial Doppler
ECG	electrocardiogram
EEG	electroencephalography
EP	evoked potential
FCMS	Foix–Chavany–Marie syndrome
FLAIR	fluid attenuated inversion recovery (MRI)
fMRI	functional MRI
GCS	Glasgow Coma Score

xiii Abbreviations

HITS	high intensity transient signals (Doppler sonography)
ICA	internal carotid artery
ICH	intracerebral hemorrhage
ICU	intensive care unit
INR	international normalized ratio
MCA	middle cerebral artery
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
NIHSS	National Institute of Health Stroke Scale
NVAF	non-valvular atrial fibrillation
PCA	posterior cerebral artery
PE	pulmonary embolism
PET	positron emission tomography
PFO	patent foramen ovale
PICA	posterior inferior cerebellar artery
PWI	perfusion-weighted imaging (MRI)
RCTs	randomized clinical trials
rt-PA	recombinant tissue plasminogen activator
SAH	subarachnoid hemorrhage
SVE	subcortical vascular encephalopathy
TCD	transcranial Doppler sonography
TEE	transesophageal echocardiography
TGA	transient global amnesia
TIA	transient ischemic attack
VA	vertebral artery
WML	white matter lesions

Cambridge University Press

978-0-521-67367-9 - Case Studies in Stroke: Common and Uncommon Presentations

Michael G. Hennerici, Michael Daffertshofer, Louis R. Caplan and Kristina Szabo

Frontmatter

[More information](#)

Preface

Despite increasing research interest in basic neurosciences, and through randomised clinical trials, case reports remain the daily experience of academic physicians. Stroke is an important and rapidly growing field in neurology and beyond, placing a large burden on patients, relatives and the economy in industrialized societies. Widely disregarded a quarter of a century ago, the diagnostics of brain tissue and vascular structures and classification of stroke subtypes, prognosis and outcome have improved considerably. This has led to better management through very early, specific treatment on stroke units, as well as primary and secondary prevention strategies in subjects at risk. Interdisciplinary work amongst neurologists, who generally lead the stroke team, cardiologists, neurosurgeons, interventional radiologists and physiotherapists, speech therapists, rehabilitation and preventive medicine physicians has created a widespread stroke network around the world. Supported by academic grants, a large scientific community is now involved in international research, and major stroke conferences attract thousands of attendees to exchange their ideas, from bench-to-bedside and vice versa.

Despite these worldwide, interdisciplinary activities, physicians, and neurologists in particular, still enjoy the challenge of evaluating patients who present with diagnostic and therapeutic difficulties. This is reflected by the continued popularity of *Case Histories* and *Case Reports* during the *European Stroke Conference* as well as their presentation in major leading world journals. This is line with earlier authors in stroke history, from the seventeenth century (e.g. J.J. Wepfer and T. Willis) to the present day (e.g. C. Miller-Fisher and J. Marshall), who have contributed to our current understanding based on meticulous history taking and tireless commitment to their patients. Following in their footsteps, members of the Department of Neurology, Mannheim, collected 60 cases, some of which have already been published previously, offering a range of informative presentations with an emphasis of critical aspects in history, examination, investigations, therapeutic decisions, secondary prevention or rehabilitation. Just enough information has been presented in the title of each case (see Contents) to attract the reader's attention without providing give-away clues or a definite diagnosis or management advice if possible. Once the reader has made up his own mind, he

xvi Preface

may turn the page and read a brief commentary or summary of the case, accompanied by a short list of references including early descriptions and recent reviews or controversies of the condition discussed as far as they are available. For an outside opinion, Louis Caplan from Harvard Medical School, one of the pioneers of clinical stroke research, kindly agreed to read all the cases carefully, discuss specific aspects in detail as he has been used to throughout his career and suggest occasional re-writing.

These cases are aimed at improving the knowledge of all our medical colleagues interested in stroke. Students and residents will find the exercises in topical and functional diagnosis in common cases of stroke stimulating. The cases are designed to check their individual expertise and knowledge. Physicians with greater neurological expertise will hopefully appreciate the presentation of uncommon cases and may recall similar cases that have challenged them in the past. This book will have achieved its goal if readers at any stage of their career enjoy reading, discussing and following up some of our ideas and thoughts to the benefit of treating their own patients.

Stroke neurology probably represents a unique medical speciality, where systematic thinking based on highly sophisticated neuroanatomy and neurophysiology, and expressed through clinical examination and investigative findings, finds its way into more general medical disciplines. Neurologists are traditionally experts in addressing pathophysiology and differential diagnosis, and are still fascinated by extremely rare illnesses despite serving regularly in emergency and intensive care teams.

We follow the specific techniques of neurology in crystallizing all elements of a complex case into a few informative sentences to help students and residents to increase their skills of analytic listening to the history and the clinical findings. We attempt to quickly localize the site of the lesion, deduce the probable pathophysiological process, formulate a differential diagnosis and estimate the prognosis and outcome once treatment decisions have been established. This approach has been used for all the cases of this book, as it reflects daily practice and is considered to be effective in other disciplines as well.

We gratefully acknowledge the cooperation of the internal medicine physicians, neuroradiologists, neurosurgeons, psychologists and radiologists as well as our emergency and intensive care colleagues in the Universitätsklinikum Mannheim, University of Heidelberg for their continuous support in the care of stroke patients. Some of the cases presented clearly carry their signature, enthusiasm and input in providing and interpreting data and figures collected. Furthermore, we appreciate the careful and continuous support of our secretaries, Birgit Fleig, Maria Garcia-Knapp, and Erika Schneider, in preparing the manuscript and necessary preparation of the book. We offer special thanks to the staff of

Cambridge University Press
978-0-521-67367-9 - Case Studies in Stroke: Common and Uncommon Presentations
Michael G. Hennerici, Michael Daffertshofer, Louis R. Caplan and Kristina Szabo
Frontmatter
[More information](#)

xvii Preface

Cambridge University Press for their general support and their meticulous editorial work. Last but not least, we are most grateful to our families and partners – without their love and support this book would not have been possible.

We hope that readers will enjoy these cases and that the lessons learned will assist them in providing better care for their patients.

Michael Hennerici
Michael Daffertshofer
Louis Caplan
Kristina Szabo