Preface

This volume is a translation of the second revised and expanded edition of *Neuroradiologie*, a textbook first published in 1996 that has met with remarkable success in German-speaking countries. *Neuroradiologie* was conceived in the early nineties as a multi-author book to be written mainly by "young" neuroradiologists. By "young" I mean that, to understand the prospective reader better and to write accordingly, the typical author was to be on the level of instructor or assistant professor and not on the level of the seasoned professor, who is more likely to be out of touch with the needs of residents and fellows. Eventually, with the support of many colleagues in the field, I gathered together more experienced "young" neuroradiologists than would be required to form four soccer teams. It is clearly already an accomplishment to shape a team of 11 people, and I am quite proud of having shaped one of 48.

Judging by the reception of the two German editions, our team did a great job, and if winning the approval of residents and fellows was the goal, we scored nicely. We even received praise from "older" neuroradiologists and neuroclinicians who generally no longer consult introductory textbooks. The following features of the book were stressed by "younger" and "older" readers and critics alike: its homogeneity, despite the large number of authors; its lucid organization; its thoroughness; and its practical value in daily work. The quality of the team may be further judged by the fact that many of the authors of the first German edition have in the interim moved up the academic ladder, though without losing their youthfulness; several have since become division chiefs. Few of the original set of—mostly academic—authors have left the team.

Although the emphasis of the book lies on CT and MRI, a substantial part is devoted to the discussion of invasive techniques and therapeutic interventions. The book is divided into five parts. Part 1 deals with craniocerebral diseases: it covers the pertinent methods of radiologic diagnosis, including normal anatomy, as well as the various disease categories with their radiologic manifestations and differential diagnoses. Part 2 deals with spinal diseases in the same way. Part 3 is a short treatise of neuromuscular diseases. In Parts 4 and 5 craniocerebral and spinal neurointerventions, respectively, are described at length.

The staff at Thieme Verlag, myself, and particularly the translator, Terry Telger, worked hard to make this book as attractive as possible to readers outside the German-speaking realm. Although much of my own neuroradiologic experience was gained during the 8 years that I worked in the USA, especially during my tenure at the Mallinckrodt Institute of Radiology, Washington University School of Medicine in St. Louis, the book may still contain some features of neuroradiology considered "foreign." If this is a fault, it is clearly mine. Personally, however, I believe that some transcultural influence will do no harm; in fact, it may be beneficial.

It remains for me to express my sincere hope that this volume will be received equally well in the English-speaking realm. This would make our young team of authors very proud indeed.

Heidelberg, Spring 2002 *Klaus Sartor*

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List of Abbreviations

ACA	Anterior cerebral artery
ACTH	Adrenocorticotropic hormone
AD	Alzheimer dementia
ADC	Apparent diffusion coefficient
ADEM	Acute disseminated encephalomyelitis
ADH	Antidiuretic hormone
ADL	Adrenoleukodystrophy
AFP	Alpha-fetoprotein
AICA	Anterior inferior cerebellar artery
AIDS	Acquired immunodeficiency syndrome
ALS	Amyotrophic lateral sclerosis
AP	Anteroposterior
APLD	Automatic percutaneous lumbar discectomy
ARC	AIDS-related complex
ATP	Adenosine triphosphate
AV	Arteriovenous
BCNU	Bis-chlorethyl-nitrosourea
BBB	Blood-brain barrier
BGO	Bismuth germanate
^{11}C	Carbon-11
^{14}C	Carbon-14
C	Cervical vertebral (C1, etc.)
CADASIL	Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy
CAVATAS	Carotid and vertebral artery transluminal angioplasty study
CBV	Cerebral blood volume
CDS	Color duplex sonography
Cho	Choline
CISS	Constructive interference in the steady state
CIT	Carbomethoxy-iodophenyl-tropane
CNS	Central nervous system
CPM	Central pontine myelinolysis
CSF	Cerebrospinal fluid
CSI	Chemical shift imaging
CT	Computed tomography, computed tomogram
CTA	CT angiography
CW Doppler	Continuous-wave Doppler
D2	Dopamine (receptor subtype 2)
2-D	Two-dimensional
2-D FT	Two-dimensional fourier transformation
3-D	Three-dimensional
DAT	Dementia of Alzheimer type
DFOV	Display field of vision
DNT	Dysembryoplastic neuroepithelial tumor
DOTATOC	DOTA-*D* phe^{1}-tyr^{3}-octreotide
DSA	Digital subtraction angiography
DTPA	Diethylenetriaminepentaacetic acid
DVA	Developmental venous anomaly
DWI	Diffusion-weighted imaging
ECASS	European Cooperation of Acute Stroke Studies
ECD	Ethyl cysteinate dimer
ECST	European Carotid Surgery Trial
EEG	Electroencephalogram
EPI	Echo-planar imaging
^{18}F	Fluorine-18
F	French
FDG-PET	^{18}F-deoxyglucose positron emission tomography
FET	Fluoroethyl tyrosine
FID	Free induction decay
FLAIR	Fluid-attenuated inversion recovery
fMRI	Functional magnetic resonance imaging
FOV	Field of view
FTD	Frontotemporal dementia
FWHM	Full width at half maximum (measure of system resolution)
^{67}GA	Gallium-67
^{68}Ga	Gallium-68
G	Gauge
GABA	Gamma-aminobutyric acid
Gd	Gadolinium
G_{PH}	Phase encoding gradient
G_R	Readout gradient
GRE	Gradient echo
G_S	Slice selection gradient

Gy	Gray
β-HCG	Human chorionic gonadotropin
HIV	Human immunodeficiency virus
HL	Half-life
HLA	Human leukocyte antigen
HU	Hounsfield unit
HMPAO	Hexamethyl-propyleneamineoxime
HMSN	Hereditary motor and sensory neuropathy
HR CT	High-resolution computed tomography
HSV	Herpes simplex virus
HT	Hemorrhagic transformation
I	Iodine
^{123}I	Iodine-123
IBCA	Isobutyl cyanoacrylate
^{123}I-IBZM	^{123}Iodine iodobenzamide (dopamine D_2 receptor ligand for SPECT)
^{1}H-MRS	Proton MRS
IMT	Iodo-methyl-L-tyrosine
In-DTPA	Indium diethylenetriaminepenta-acetic acid
^{111}In	Indium-11
IU	International units
IR	Inversion recovery
i. v.	Intravenous
IVUS	Intravascular ultrasound
keV	Kiloelectron volts
L	Lumbar vertebra (L1, etc.)
LAS	Lymphadenopathy syndrome
LBD	Lewy-body dementia
LSD	lysergic acid diethylamide
MCA	Middle cerebral artery
MDD	Major depressive disorder
MDP	Methylene diphosphonate
MELAS	Mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episodes
MEP	Motor-evoked potentials
MET	Methionine
MeV	Megaelectron volts
MID	Multiinfarct dementia
MIP	Maximum intensity projection
MIU	Million units (10^6 units)
MLD	metachromatic leukodystrophy
MPS	Mononuclear phagocyte system
MR	Magnetic resonance
MRA	Magnetic resonance angiography
MRI	Magnetic resonance imaging
MRS	Magnetic resonance spectroscopy
MS	Multiple sclerosis
MSA	Multisystem atrophy
MTC	Magnetization transfer contrast (imaging)
MTR	Magnetization transfer ratio
MTT	Mean transit time
^{13}N	Nitrogen-13
NAA	N-acetyl aspartate
NASCET	North American Symptomatic Carotid Endarterectomy Trial
NF-1, NF-2	Neurofibromatosis type 1, type 2
NINCDS-ADRDA	National Institute of Neurological and Communicative Disorders and Stroke, and the Alzheimer's Disease and Related Disorders Association
NINDS-AIREN	National Institute for Neurological Disorders and Stroke with Support from the Association Internationale pour la Recherche et l'Enseignement en Neurosciences
NPH	Normal pressure hydrocephalus
^{15}O	Oxygen-15
OPCA	Oligopontocerebellar atrophy
PA	Posteroanterior
PC MRA	Phase-contrast MR angiography
PCr	Phosphocreatine
PD	Proton density
PDE	Phosphodiester
PDL	Progressive diffuse leukoencephalopathy
PET	Positron emission tomography
PFK	Phosphofructokinase
PICA	Posterior inferior cerebellar artery
PME	Phosphomonoester
PML	Progressive multifocal leukoencephalopathy
PNET	Primitive neuroectodermal tumor
PRIND	Prolonged reversible ischemic neurologic deficit
PROACT	Prolyse in Acute Cerebral Thromboembolism Trial
PSD	Poststroke depression
PSP	Progressive supranuclear paralysis
PTA	Percutaneous transluminal angioplasty
PTT	Partial thromboplastin time
PVA	Polyvinyl alcohol
PVL	Periventricular leukomalacia
PW Doppler	Pulsed-wave Doppler
PWI	Perfusion-weighted imaging

RARE Rapid acquisition with relaxation enhancement
rCBF Regional cerebral blood flow
rrCBF Relative regional cerebral blood flow
RF pulse Radiofrequency pulse
rMTT Relative mean transit time
r-PA Recombinant plasminogen activator
SAE Subcortical atherosclerotic encephalopathy
scu-PA Single-chain urokinase plasminogen activator
SD Standard deviation
SE Spin echo
SK Streptokinase
SLE Systemic lupus erythematosus
SND Striatonigral degeneration
SPECT Single photon emission computed tomography
SSPE Subacute sclerosing panencephalitis
STIR Short-T1 inversion recovery
SUCA Superior cerebellar artery
SUV Standard uptake value
Sv Sievert
T Tesla; Thoracic vertebra (T12, etc.)
^{99m}Tc Technetium-99m
^{99m}Tc-DTPA ^{99m}Tc diethylenetriaminepenta-acetic acid
^{99m}Tc-HMPAO ^{99m}Tc hexamethyl-propylene-amineoxime
^{99m}Tc-MDP ^{99m}Tc methylene diphosphonate
TCD Transcranial Doppler ultrasound
TE Echo time
TI Inversion time
TIA Transient ischemic attack
TOF Time of flight
t-PA Tissue plasminogen activator
TR Repetition time
TSE Turbo spin echo
TTP Time to peak
WHO World Health Organization