

Neurology *in* Practice

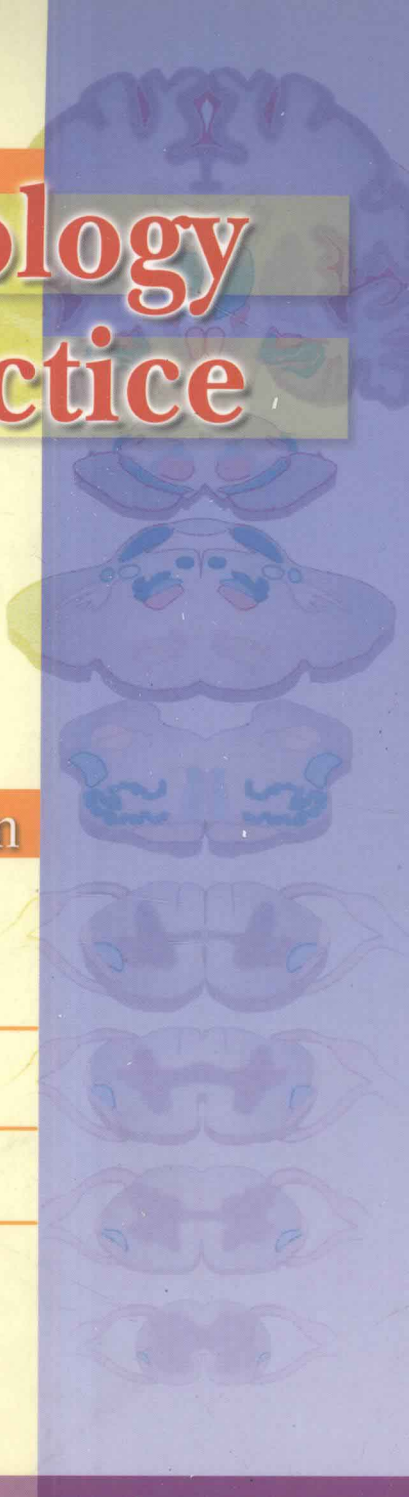
Fourth Edition

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Neurology in Practice

Fourth Edition

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Foreword to the Fourth Edition

It is easy to make an easy subject difficult, but difficult to make a difficult subject easy. No one would claim that neurology is easy, but the practical aspects can be grasped, if taught by masters of the subject who know how to put it across. *Neurology in Practice* is written with the conciseness that comes from knowledge and experience. The text is arranged in manageable sections. Tables and illustrations complement the succinct prose.

The book covers all major areas of neurology and in addition has chapters on neurorehabilitation and common medicolegal issues. Neurorehabilitation is gaining greater recognition and medicolegal issues are becoming part of daily life.

The authors have not only written together, but have worked together. This may explain in part the remarkable cohesion and uniformity of style and approach, which is unusual in multi-authored books. While neurological problems are common in practice, practical textbooks of neurology are rare. May this book enjoy the wide readership that it deserves.

Vladimir Hachinski
Distinguished University Professor
University of Western Ontario
London, Canada
February 2008



Foreword to the Second Edition

In the Preface to the first edition of this textbook, Dr Y. L. Yu mentioned that most medical students, and indeed trainees, consider neurology a difficult subject. This is partly due to the intricacies of neuroanatomy and also because apart from a few disorders such as the cerebrovascular diseases, patients with neurological problems are not that commonly seen in a general medical ward. Furthermore, sections on neurology in standard textbooks are either too brief or too all-encompassing for the medical student. This textbook is neither. The chapters are clearly written and presented, and there are many helpful tables and diagrams. The information is also very up-to-date.

This book covers the majority of common neurological disorders, in particular those seen in this area of the world. It emphasizes aetiology, clinical features and approach to diagnosis, and outlines management.

The chapter on the cranial nerves with examples of their common disorders is logical and useful. The authors' personal views and practical advice based on experience are a valuable aspect of this textbook. For example, it is emphasized that only a small proportion of patients with headache need investigations. The chapter on infections is appropriately more detailed, useful for this area of the world and important in view of the increasing number of patients with compromised immunity. Topical and newer entities, such as Alzheimer's disease, prion and mitochondrial disorders are also discussed.

This textbook assumes basic knowledge of neuroanatomy, and certain details of more sophisticated investigations and treatment must be sought elsewhere. Accordingly, at the end of the book there are recommendations for further reading. This is an eminently readable and succinct modern short textbook of neurology, covering the common and important topics interspersed with

sound, practical advice and guidelines to diagnosis and management. It can be highly recommended to both undergraduate and postgraduate students and medical practitioners, and the authors deserve our compliments and thanks.

Professor Sir David Todd
Hong Kong
June 1997



Preface to the Fourth Edition

Neurology in Practice is now in its fourteenth year. We are encouraged that it has stood the test of time. Over the years, its readership has extended from medical students to trainees in internal medicine and neurology, physicians, nurses and allied health workers.

The aim of this book, as stated in the first edition, is to enhance the practice of neurology. We continue to emphasize that a sound clinical approach is the key to the diagnosis and management of neurological disorders. In Chapter 1, relevant neuroanatomical principles and simulated neurological manifestations are incorporated. There are two new chapters. Chapter 2 outlines the *Neurodiagnostic tests*, in particular neuroimaging and electrophysiology, which form an essential component of neurological practice. Chapter 16, entitled *Neurological manifestations of systemic disorders and neurotoxicology*, illustrates the diverse ways in which the nervous system is affected by disorders in other parts of the body. All existing chapters have been updated with knowledge gained from major advances in neuroscience.

We are indebted to our patients and colleagues who have provided invaluable ideas and generous assistance in the preparation of the book in its present and previous editions.

Y.L. Yu

J.K.Y. Fong

S.L. Ho

R.T.F. Cheung

Hong Kong

March 2008



Preface to the First Edition

This handbook was conceived because of popular demand and is the collaborative effort of members of the Department of Medicine, the University of Hong Kong.

Whilst there are plenty of good neurology textbooks on the market, students often find neurology a subject hard to master and neurological diagnosis difficult. There are perhaps a number of reasons. Textbooks do not usually adopt a practical approach as required in clinical practice, and the emphasis on certain diseases applies more to Caucasian than Chinese patients. More important, students do not seem to appreciate that neurology, more so than other disciplines, is best learnt by applying book knowledge in clinical situations.

Thus, the objective of this handbook is to enhance the practice of neurology. To this end, common neurological disorders have been selected, and the focus is on key concepts, local disease pattern and characteristics, as well as accurate diagnosis and effective management. Moreover, for important topics, recent advances are included. The references section provides a source of in-depth information for interested readers. Thus, this handbook aims at medical education in the broader sense rather than rote learning of facts. It must also be emphasized that it is intended to complement rather than replace standard textbooks.

It is hoped that this handbook will not only promote students' interest in the intellectual challenge presented by neurology, but will also stimulate the enquiring mind to prepare for a life-time of continuous medical education.

There is certainly room for improvement in this first edition, and comments and suggestions from colleagues and students are welcome. The authors and editors are grateful to Miss Miranda Ho who has provided meticulous and skilful secretarial assistance in the preparation of the manuscripts.

Y. L. Yu
Hong Kong
June 1994



About the Authors

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List of Abbreviations

ABG	= arterial blood gases
Ach	= acetylcholine
AChR	= acetylcholine receptor
anti-AChR	= anti-acetylcholine receptor antibodies
ADL	= activities of daily living
AD, AR	= autosomal dominant, autosomal recessive
ADEM	= acute disseminated encephalomyelitis
ADP, ATP	= adenosine diphosphate, adenosine triphosphate
AED(s)	= antiepileptic drug(s)
AF	= atrial fibrillation
AFB	= acid-fast bacilli
AIDP	= acute inflammatory demyelinating polyradiculoneuropathy
AIDS	= acquired immunodeficiency syndrome
ALS	= amyotrophic lateral sclerosis
APTT	= activated partial thromboplastin time
ATT	= anti-tetanus toxoid
AVM	= arteriovenous malformation
BAEP	= brainstem auditory evoked potentials
BMT	= bone marrow transplantation
BP	= blood pressure
BSE	= bovine spongiform encephalopathy
CBC	= complete blood count
CIDP	= chronic inflammatory demyelinating polyradiculoneuropathy
CJD	= Creutzfeldt-Jakob disease
vCJD	= variant Creutzfeldt-Jakob disease
CK(-MB)	= creatine kinase(-myocardial band)
CMV	= cytomegalovirus
CNS	= central nervous system
COMT	= catechol-O-methyltransferase
CPS	= complex partial seizures

CSF	= cerebrospinal fluid
CSM/R	= cervical spondylotic myelopathy/ radiculopathy
CT	= computed tomography
CTS	= carpal tunnel syndrome
CVD	= cerebrovascular disease
CXR	= chest radiography
DIC	= disseminated intravascular coagulopathy
DM	= diabetes mellitus
DMD	= Duchenne muscular dystrophy
DVT	= deep vein thrombosis
EBV	= Epstein-Barr virus
EC-IC	= extracranial-intracranial
ECG	= electrocardiogram
EDSS	= Expanded Disability Status Scale
EEG	= electroencephalography
ELISA	= enzyme-linked immunosorbent assay
EMG	= electromyography
ENT	= ear, nose and throat
EP	= evoked potentials
ESR	= erythrocyte sedimentation rate
FTA-Abs	= fluorescent treponemal antibody-absorbed test
FVC	= forced vital capacity
GBS	= Guillain-Barré syndrome
GCS	= Glasgow Coma Scale
GI	= gastrointestinal
GPI	= general paralysis of the insane
HBV	= hepatitis-B virus
HIV	= human immunodeficiency virus
HLA	= human leucocyte antigens
HMSN	= hereditary motor sensory neuropathy
HSAN	= hereditary sensory autonomic neuropathy
HSV	= herpes simplex virus
5-HT	= 5-hydroxytryptamine (serotonin)
HTLV	= human T-lymphotrophic virus
ICA	= internal carotid artery
ICH	= intracerebral haemorrhage
ICP	= intracranial pressure
ICU	= intensive care unit
IgG/M	= immunoglobulin G/M

IM(I)	= intramuscular (injection)
INR	= international normalized ratio
ISS	= ischaemic stroke
IV(I)	= intravenous (injection)
IVIG	= intravenous immunoglobulins
KF	= Kayser-Fleischer
KSS	= Kearne-Sayre syndrome
LFT	= liver function tests
LMN/UMN	= lower/upper motor neurone
LMWH	= low-molecular-weight heparin
LOC	= loss of consciousness
LP	= lumbar puncture
MAP	= muscle action potentials
cMAP	= compound muscle action potentials
MELAS	= mitochondrial encephalomyopathy, lactic acidosis and stroke-like episodes
MERRF	= myoclonus epilepsy with ragged red fibres
MG	= myasthenia gravis
MMSE	= Mini-Mental State Examination
MND	= motor neurone disease
MRC	= Medical Research Council
MRI/A/S	= magnetic resonance imaging/angiography spectroscopy
MS	= multiple sclerosis
MSA	= multisystem atrophy
NCS/V	= nerve conduction study/velocity
NMDA	= N-methyl-D-aspartic acid
NMJ	= neuromuscular junction
NPC	= nasopharyngeal carcinoma
NSAID(s)	= non-steroidal anti-inflammatory drug(s)
OA	= osteoarthritis
OB	= oligoclonal bands
PAN	= polyarteritis nodosa
PCR	= polymerase chain reaction
PET	= positron emission tomography
PML	= progressive multifocal leucoencephalopathy
PNS	= peripheral nervous system
PPMS	= primary progressive multiple sclerosis
PRMS	= progressive relapsing multiple sclerosis
PT	= prothrombin time

PTA	= post-traumatic amnesia
RFT	= renal function tests
REM	= rapid eye movements
RNS	= repetitive nerve stimulation
RRMS	= relapsing-remitting multiple sclerosis
SAH	= subarachnoid haemorrhage
SAP	= sensory action potentials
SC(I)	= subcutaneous (injection)
SEP	= somatosensory evoked potentials
SIADH	= syndrome of inappropriate anti-diuretic hormone
SLE	= systemic lupus erythematosus
SMA	= spinal muscular atrophy
SPECT	= single photon emission computed tomography
SPMS	= secondary progressive multiple sclerosis
SSPE	= subacute sclerosing panencephalitis
SUDEP	= sudden unexpected death in epilepsy
TB	= tuberculosis/tuberculous
TBM	= tuberculous meningitis
TIA	= transient ischaemic attack(s)
tPA	= tissue plasminogen activator
TPHA	= treponemal haemagglutination test
TSH	= thyroid stimulating hormone
VEP	= visual evoked potentials
VDRL	= Venereal Disease Research Laboratory test
VNS	= vagus nerve stimulation
WBC	= white blood cells
XL	= X-linked
XR	= X-ray



Contents

Foreword to the Fourth Edition	vii
Foreword to the Second Edition	ix
Preface to the Fourth Edition	xi
Preface to the First Edition	xiii
About the Authors	xv
List of Abbreviations	xvii
CHAPTER 1	1
Approach to Neurological Diagnosis	
CHAPTER 2	17
Neurodiagnostic Tests	
CHAPTER 3	29
Cranial Nerve Disorders	
CHAPTER 4	49
Headache	
CHAPTER 5	61
Cerebrovascular Disease	
CHAPTER 6	81
Epilepsy	
CHAPTER 7	101
Movement Disorders	
CHAPTER 8	125
Demyelinating Diseases of the Central Nervous System	

CHAPTER 9	135
Dementia	
CHAPTER 10	147
Impaired Consciousness and Brain Death	
CHAPTER 11	157
Infections of the Central Nervous System	
CHAPTER 12	185
Spinal Cord Disorders	
CHAPTER 13	199
Peripheral Neuropathy	
CHAPTER 14	221
Myasthenia Gravis	
CHAPTER 15	231
Myopathy	
CHAPTER 16	245
Neurological Manifestations of Systemic Disorders and Neurotoxicology	
CHAPTER 17	265
Brain Tumours	
CHAPTER 18	273
Neuorehabilitation	
CHAPTER 19	281
Common Medicolegal Issues in Neurology	
Further Reading	291
Index	293

Approach to Neurological Diagnosis

Neurology is the branch of medical science which deals with the nervous system in both its normal and diseased states. Clinical neurology can be viewed as the application of the basic neurosciences, in particular neuroanatomy, neurophysiology and neurochemistry.

Most students and practitioners tend to shy away from neurology allegedly because it is perceived to be difficult. In fact, solving a neurological problem can be the most fascinating exercise in detection and logical deduction in clinical medicine. This demands an organized line of thought, a clear plan to be followed, and a specific aim at each stage of the investigation. As long as there is a proper approach, neurological diagnosis can be a straightforward yet rewarding exercise.

When one approaches a patient with a neurological problem, three vital questions ought to be asked:

1. Where is(are) the lesion(s)?
2. What is/are the probable underlying pathological condition(s)?
3. Is the disorder neurological or functional?

History

History taking should revolve around these questions and should not be a haphazard activity. With care, the diagnosis can be made from the history alone in many cases. In others, the history will direct one to focus on certain aspects of neurological examination. This is important, since the patient may not be able to cooperate if one pursues every fine detail of a full neurological examination. In certain diseases, such as epilepsy and headache, the history is crucial for the diagnosis because physical examination and investigation are often negative.