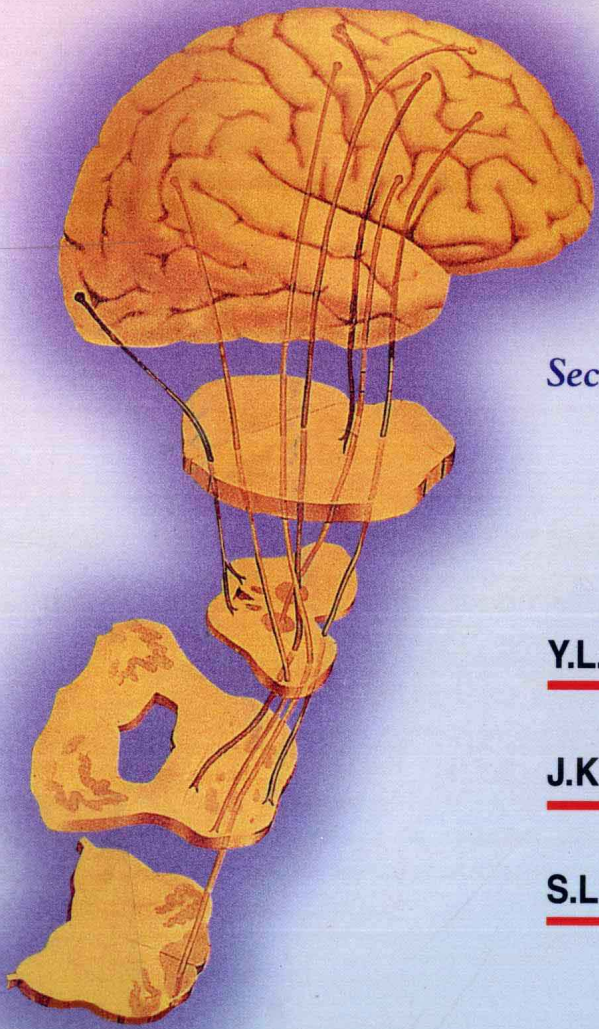
Neurology *in* Practice



Second Edition

Y.L. Yu

J.K.Y. Fong

S.L. Ho

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Y. L. Yu 余毓靈
MD(HK), FRCP, FRCPE, FRACP, FHKCP, FHKAM (Medicine)

J. K. Y. Fong 方嘉揚
MBBS(HK), MRCP(UK), FHKCP, FHKAM (Medicine)

S. L. Ho 何樹良
MD(Wales), MRCP(UK), FHKCP, FHKAM (Medicine)

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Foreword

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 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 provided meticulous and skilful secretarial assistance in the preparation of the manuscripts.

Y. L. Yu
Hong Kong
June 1994

Preface to the Second Edition

In this 'Decade of the Brain', there has been a rapid expansion of knowledge in basic neurosciences in parallel with encouraging advances in diagnosis and treatment of neurological diseases. Amidst such exciting times there continues to be a need for a short textbook which aims at enhancing the practice of neurology. This book was thus written with this objective in mind. It puts neurology in a clinical perspective, nurturing its art in a field of science. It gives an overview of neurological problems and reminds the reader of the basic questions in clinical neurology: Where is the lesion and what is the lesion?

The first edition of Neurology in Practice was written primarily for medical students, to complement standard textbooks in neurology. However, it soon became apparent that this book was very popular among medical students and trainees in internal medicine. In retrospect, it is not surprising because neurology provides the clinician with a challenge which is both fascinating and tangible.

While the objective and format in this second edition remain the same, most of the chapters have been revised, updated and expanded. Three new chapters have been added, namely Movement Disorders, Demyelinating Diseases of the Central Nervous System, and Head Injury and Brain Tumours. It is hoped that students and trainees alike will continue to find this book helpful in their practice of clinical neurology.

We are indebted to our colleagues in the Department of Medicine, the University of Hong Kong for their invaluable advice, and to Hong Kong University Press for their help in getting this second edition to print.

Y. L. Yu
J. K. Y. Fong
S. L. Ho
Hong Kong
June 1997

List of Abbreviations

ABG	=	arterial blood gases
ACh	=	acetylcholine
AChR	=	acetylcholine receptor
Anti-AChR	=	anti-acetylcholine receptor antibodies
AD, AR	=	autosomal dominant, autosomal recessive
ADEM	=	acute disseminated encephalomyelitis
ADP, ATP	=	adenosine diphosphate, adenosine triphosphate
AED(s)	=	antiepileptic drug(s)
AFB	=	acid-fast bacilli
AIDP	=	acute inflammatory demyelinating polyradiculoneuropathy
AIDS	=	acquired immunodeficiency syndrome
APTT	=	activated partial thromboplastin time
AVM	=	arteriovenous malformation
BAEP	=	brainstem auditory evoked potentials
BMT	=	bone marrow transplant
BSE	=	bovine spongiform encephalopathy
CBC	=	complete blood count
CIDP	=	chronic inflammatory demyelinating polyradiculoneuropathy
CJD	=	Creutzfeldt-Jakob disease
CMV	=	cytomegalovirus
CNS	=	central nervous system
CPK	=	creatine phosphokinase
CPS	=	complex partial seizures
CSF	=	cerebrospinal fluid
CSM/R	=	cervical spondylotic myelopathy/radiculopathy
CT	=	computed tomography
CVD	=	cerebrovascular disease
CXR	=	chest radiography
DIC	=	disseminated intravascular coagulation
DM	=	diabetes mellitus
DMD	=	Duchenne muscular dystrophy

EBV = Epstein-Barr virus
ECG = electrocardiogram
EEG = electroencephalography
EMG = electromyography
EP = evoked potentials
ESR = erythrocyte sedimentation rate
FTA-Abs = fluorescent treponemal antibody-absorbed test
FVC = forced vital capacity
GCS = Glasgow Coma Scale
HBV = hepatits-B virus
HIV = human immunodeficiency virus
HLA = human leucocyte antigens
HSV = herpes simplex virus
5-HT = 5-hydroxytryptamine
ICH = intracerebral haemorrhage
ICP = intracranial pressure
ICU = intensive care unit
IM(I) = intramuscular (injection)
INR = international normalized ratio
IV(I) = intravenous (injection)
LMN/UMN = lower/upper motor neuron
LP = lumbar puncture
MAP = motor action potentials
MG = myasthenia gravis
MND = motor neuron disease
MRI = magnetic resonance imaging
NCS/V = nerve conduction study/velocity
NPC = nasopharyngeal carcinoma
NSAID = non-steroidal anti-inflammatory drugs
PAN = polyarteritis nodosa
PCR = polymerase chain reaction
PT = prothrombin time
SAH = subarachnoid haemorrhage
SAP = sensory action potentials
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
TB = tuberculosis/tuberculous

TBM = tuberculous meningitis
TIA = transient ischaemic attacks
TPHA = treponemal haemagglutination test
VEP = visual evoked potentials
VDRL = Venereal Disease Research Laboratory Test
XR = X-linked recessive

Contents

CHAPTER 1

The 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 difficult. In fact, solving a neurological problem can be the most fascinating exercise in detection and logical deduction in the whole clinical field. This demands an organized line of thought, a clear plan to be followed, and a particular aim in each stage of the investigation. As long as there is a proper approach, neurological diagnosis can be a rewarding exercise.

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

1. Where does(do) the lesion(s) lie?
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, e.g. epilepsy, the history is crucial for the diagnosis as physical examination and investigation are negative in most cases.

Relatives or eyewitnesses should be interviewed as far as possible since many patients may not be aware of the incident or unable to give a full history because of impaired cognition and speech difficulties.

The history can be unnecessarily lengthy if there is no emphasis, but details should be obtained in relevant areas. The following items should be covered:

- Nature of presenting symptom and its character
- Mode of onset: acute, subacute, insidious
- Duration
- Course of illness: static, intermittent, progressive
- Associated symptoms
- Possible causes or risk factors of the disease
- Psychological aspects
- Functional status: how well does the patient cope with the disability?
- Family history
- Social (including occupational) history

Physical examination

After history taking, one should have a good idea as to which functional aspects of the nervous system are affected, and detailed examination must be directed to the relevant areas. The examination will serve to confirm the diagnosis suggested by the history.

It cannot be overemphasized that one must have a system in neurological examination, otherwise one will get lost or forget some important tests. A proposed scheme is as follows:

General examination

Nervous system

- Gait
- Higher mental function (relative's comments are very helpful)

- Orientation: place, time, person
- Memory: - immediate recall
  - short term
  - long term
- Serial 7: 100–7→93→86→79→72→65
- Current knowledge
- Mood
- Insight
- Speech: - Language: ascertain handedness first, then content of speech
  dysphasia may be expressive, receptive or global
  - Articulation

- Cranial nerves
- Upper limbs
- Lower Limbs

} Muscle bulk, tone, power, coordination

- Reflexes
- Sensations: temperature, pain, vibration, joint position

Cardiovascular system

- Pulse
- Blood pressure
- Heart
- Bruit

Respiratory system

Abdomen

Diagnosis

Upon completion of the examination, it should be possible to arrive at the diagnosis in most cases. There are two stages of the diagnosis.

Anatomical diagnosis

The lesion(s) may be:

- Single, e.g. tumour in the brainstem

- Two or more but discrete, e.g. optic nerve and spinal cord lesions as in multiple sclerosis
- Diffuse, e.g. neurodegenerative disease or viral encephalomyelitis

Anatomical localization applies to single or multiple discrete lesions. The sites of the central and peripheral nervous systems are:

Brain
- Cerebral hemispheres — Anterior and middle cranial fossae
  - dominant
  - non-dominant
- Brainstem — Posterior cranial fossa
  - midbrain
  - pons
  - medulla oblongata
- Cerebellum — Posterior cranial fossa

Spinal cord
Spinal root
Plexus - brachial, lumbosacral
Peripheral nerve
Neuromuscular junction
Muscle

The clinical features and relevant investigations for localization are tabulated (Tables 1.1 to 1.8).

Table 1.1 Hemisphere lesion

Clinical features	*Investigations*
Impaired mentation, dysphasia (dominant), dyspraxia (non-dominant)	CT
Homonymous visual field defects	MRI
Contralateral UMN facial weakness, dysarthria	EEG
Contralateral UMN limb weakness	
Contralateral sensory disturbance	
Focal ictus	