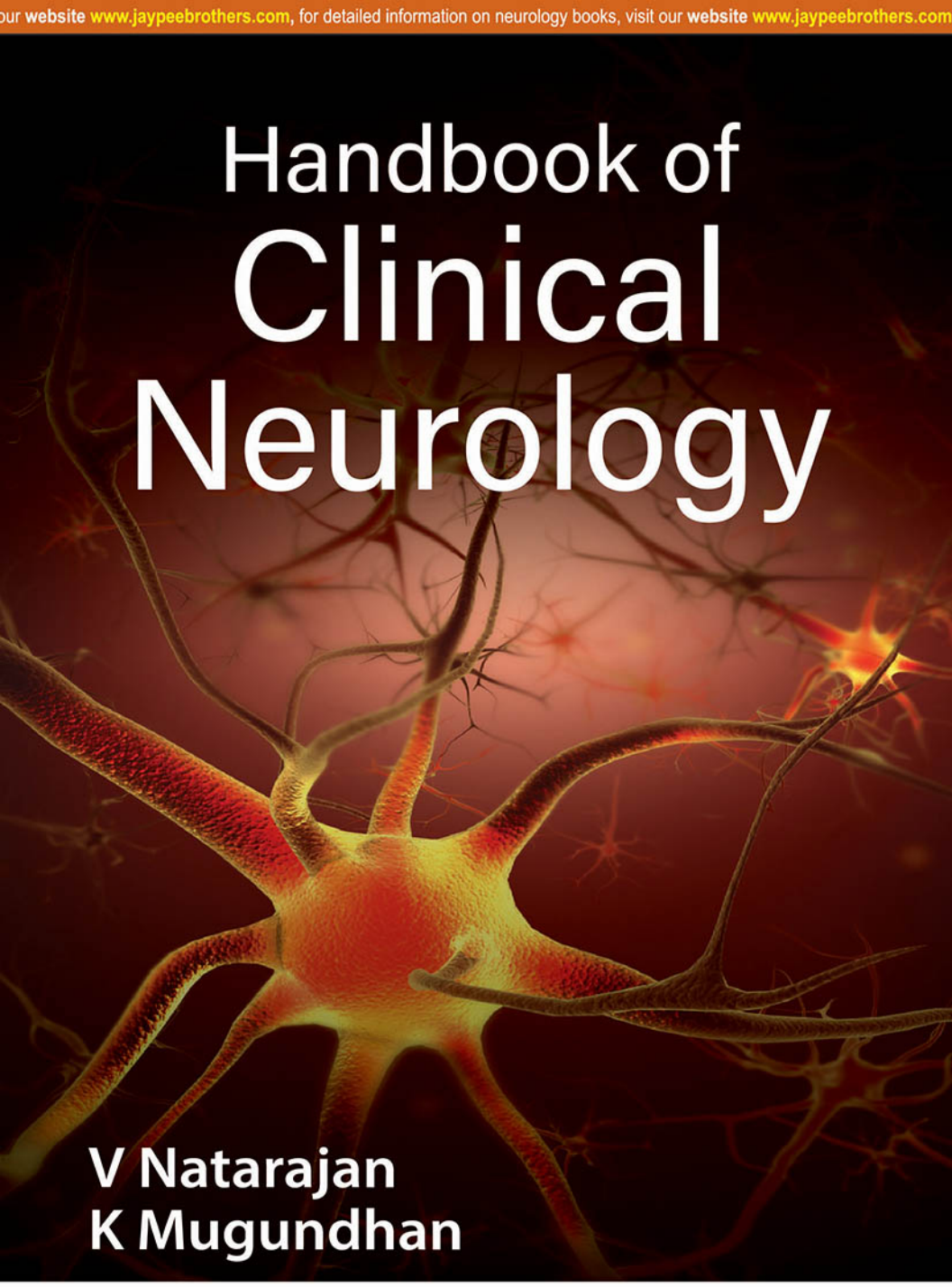
our website www.jaypeebrothers.com, for detailed information on neurology books, visit our website www.jaypeebrothers.com

Handbook of Clinical Neurology



V Natarajan
K Mugundhan

Forewords
A Muruganathan
R Rajasekar

JAYPEE

Contents

Section 1: Practical Approach to Neurological Symptoms

Chapter 1: **Headache** 3

Chapter 2: **Dizziness and Vertigo** 10

Chapter 3: **Seizures** 19

Chapter 4: **Limb Weakness** 25

Chapter 5: **Speech Abnormalities** 39

Chapter 6: **Visual Symptoms** 42

Chapter 7: **Assessment of Higher Functions** 48

Chapter 8: **Assessment of Sensorium** 62

Section 2: Overview of Common Neurologic Disorders

Chapter 9: **Stroke** 69

Chapter 10: **Autoimmune Neurologic Disorders** 82

Chapter 11: **Movement Disorders** 94

Chapter 12: **Infections of the Nervous System** 116

Chapter 13: **Dementia** 127

Index *143*

CHAPTER
2

Dizziness and Vertigo

JAYPEE BROTHERS

INTRODUCTION

Diagnosing dizziness can be difficult, and it can have serious consequences if dangerous causes, including stroke, are overlooked. Specific findings are frequently discernible with knowledge of the neuro-otological bedside examination.

DIZZINESS

Dizziness is a common symptom faced by all physicians in their clinical practice. The term dizziness includes a host of symptoms signifying vertigo, light headedness, mental confusion, generalized weakness, disorientation, presyncope, and postural instability.

Recognizing the dizziness pattern narrows down the differential diagnosis. The recurrent and troublesome type of dizziness is the vertigo. Vertigo is a sense of rotation of the head (subjective vertigo) or rotation of the environment (objective vertigo).

Vertigo can be brief, lasting a few seconds, a few minutes, or a few hours, and can be recurrent. Occasionally, vertigo can be prolonged lasting for a few days but such occurrences are usually infrequent. Most of the recurrent vertigo episodes are benign. Acute onset of protracted vertigo with nausea and vomiting indicates

vestibular neuritis and when associated with hearing loss, it is indicative of labyrinthitis. Vertigo associated with vegetative symptoms such as recurrent vomiting, sweating, and palpitations is usually indicative of a peripheral vestibular system involvement. Unilateral horizontal or upbeat torsional nystagmus confirms a peripheral vestibular disturbance.

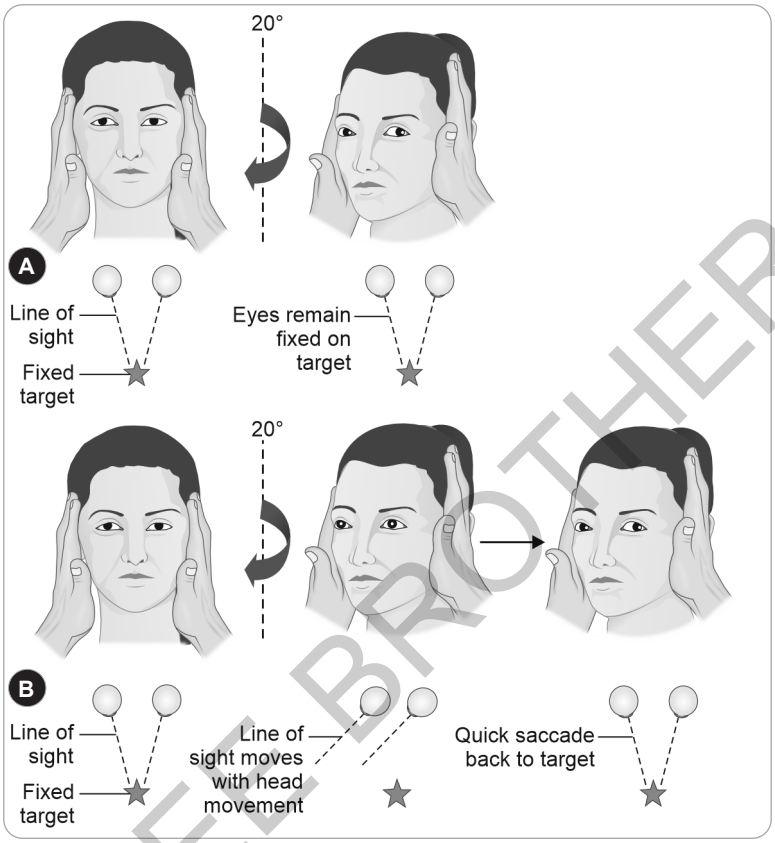
The head impulse test (HIT) is a useful test to assess the vestibular system. To do this test, the patient is asked to fix his vision steadfast on the examiner's nose, and the examiner turns the head of the subject 20° briskly to either side, taking care to avoid injury to the neck. The test is considered positive if the subject's eyes move passively in the direction of the head movement with a corrective saccade bringing it back to the fixation point. The side to which the eyes move with the head turn is considered to be the damaged side. In the rare event of a bilateral vestibulopathy, the test is positive on both sides. The VEMP (vestibular evoked myogenic potential) study if available, could further corroborate the involvement of the peripheral vestibular system. This test is also called the head-thrust test (HTT) **(Figs. 1A and B)**.

COMMON TYPES OF VERTIGO

Benign Paroxysmal Positional Vertigo

When the patient rolls over, lies down, or turns in bed, the semicircular canals are stimulated, causing calcium-containing otolith debris in the semicircular canals to shift. The Dix–Hallpike maneuver is a useful test which is sensitive and specific for benign paroxysmal positional vertigo (BPPV). The patient is brought to the edge of the bed with the head hanging down and the head is turned to right and left and observed for the occurrence of nystagmus. The nystagmus occurs according to the position of the head and is paroxysmal and this is important, as nonparoxysmal occurrence would indicate a central cause. The particular head position would need to be held for at least 10 seconds in order to elicit the nystagmus since the commencement of the nystagmus would be delayed. With repeated testing, this nystagmus's severity lessens and it is fatigable. When the posterior canal is affected, which is the most common variety, the nystagmus would be upbeat and torsional with the upper half of the eyes

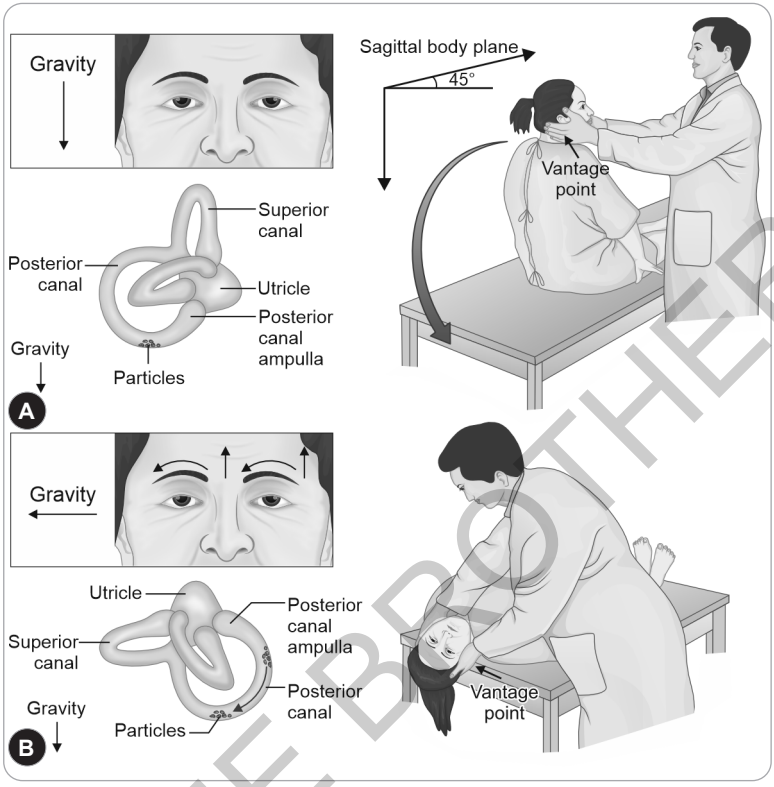
JAYPEE BROTHERS



FIGS. 1A AND B: Head-thrust test. A simple test for vestibular function that may be performed at the bedside is the head-thrust test. The vestibulo-ocular reflex (VOR) is put to the test in this maneuver. The patient is seated in front of the examiner, who maintains a steady midline grasp on the patient's head. The patient is told to keep looking at the examiner's nose. The examiner next abruptly tilts the patient's head 10–15° to one side and checks the patient's ability to maintain eye contact with his or her nose. The peripheral vestibular system is presumed to be in good working order if the patient's eyes remain fixed on the examiner's nose (i.e., there is no corrective saccade) (A). However, if the patient's eyes move with the head (B) and then the patient voluntarily moves their eyes back to the examiner's nose (i.e., a corrective saccade), this suggests a peripheral vestibular system lesion rather than a central nervous system (CNS) lesion.

beating toward the ground. The nystagmus is primarily horizontal when the horizontal canal is implicated, and it is downbeat when the anterior canal, which is the least common, is involved **(Figs. 2A and B)**.

JAYPEE BROTHERS



FIGS. 2A AND B: Dix–Hallpike maneuver: (A) To line the right posterior semicircular canal with the body's sagittal plane, the examiner adopts a 45° right angle while standing at the patient's head. (B) The examiner shifts the patient, whose eyes are open, from the seated to the supine position with the right ear down. Then, the examiner extends the patient's neck slightly to make the chin point upward. If nystagmus and vertigo are present, it is important to take note of their latency, duration, and direction.

The Epley maneuver which repositions the particles is usually effective in relief of BPPV **(Fig. 3)**.

Vestibular Migraine or Migrainous Vertigo

The other common cause of recurrent vertigo is vestibular migraine, which is being increasingly recognized now, though thought to be rare earlier.

Vestibular migraine could be an association of vertigo and headache occurring together or vertigo occurring with associated

JAYPEE BROTHERS

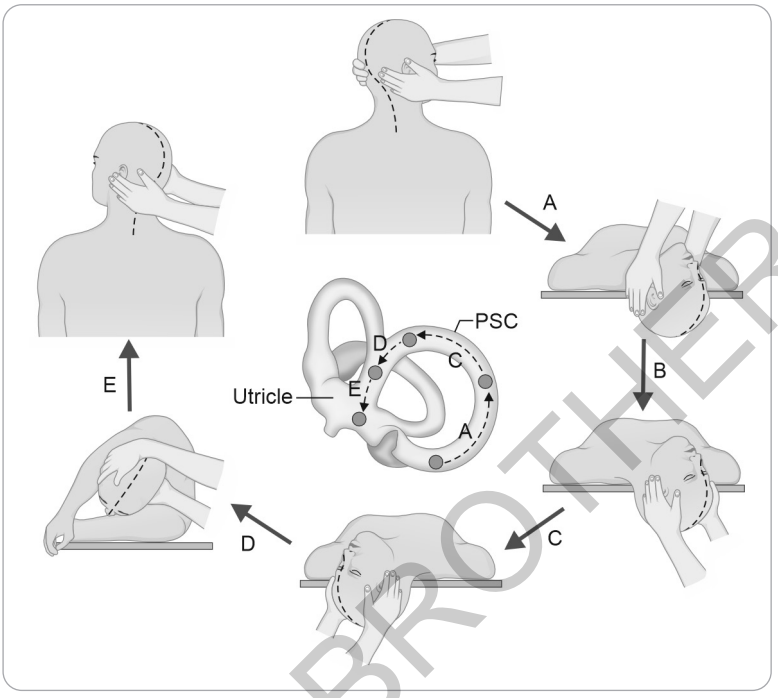


FIG. 3: The Epley's maneuver used to treat right ear benign paroxysmal positional vertigo. In order to treat the left ear, the procedure might be reversed. The position of the debris as it travels through the posterior semicircular canal (PSC) and into the utricle (UT) are depicted in the labyrinth drawing in the center. A—the patient is sat upright and is looking at the right-side-standing examiner. B—the patient is quickly transferred into the correct head-hanging position for the Dix–Hallpike test. The patient remains in this position until the nystagmus stops. Examiner positions hands as depicted before moving to the head of the table. C—the right ear is raised as the patient's head is quickly turned to the left. For 30 seconds, this position is held. D—the patient rolls over onto his left side as the examiner quickly turns his head to the left till the nose is pointed at the ground. The next 30 seconds are spent holding the head this position. E—the patient is then swiftly raised a sitting posture, the head facing left this time, the entire procedure should be repeated till there is no nystagmus. In order to prevent the debris from reentering the posterior canal after the maneuver, the patient should be advised to refrain from head-hanging positions.

features like photophobia and being triggered by the triggers of migraine headache which enhances the diagnosis. The vertigo lasts for minutes to an hour with fluctuating intensity and could be associated with a feel of generalized weakness.

JAYPEE BROTHERS

Vestibular Neuritis

Acute onset of vertigo which is severe, and is associated with recurrent nausea and vomiting from onset, and reduces thereafter and lasts for days, should prompt the diagnosis of acute vestibular neuritis. This occurs usually due to a viral infection or reactivation of latent viruses in the vestibular nerve ganglion.

Spontaneous, unidirectional nystagmus beating away from the involved ear and associated with an abnormal gait on the first day, with the patient, and tending to fall toward the side of the lesion are features, which confirm this diagnosis. If a new ipsilateral hearing loss is also associated with the above, the condition is called labyrinthitis. Early corticosteroid therapy would hasten the recovery, along with a short use of vestibular sedatives.

Transient Ischemic Attack

It is one of the important differential diagnosis of a brief episode of dizziness or vertigo but is never an isolated symptom and it is usually associated with visual disturbance, confusion, or altered sensorium albeit brief.

HINTS (*H*ead, *I*mpulse, *N*ystagmus, *T*est of *S*kew battery) helps to distinguish a central from a peripheral vertigo. Signs of long tracts (motor or sensory) and cranial nerves (neighborhood signs) involvement indicate a central cause.

The nonvestibular system dysfunction cause of dizziness would include:

- Global cerebral ischemia which causes lightheadedness which improves with the patient lying down. When dizziness is associated with blurred vision and tachycardia on standing, global cerebral ischemia should be suspected which leads to presyncope or syncope.
- Other differential diagnosis would be dysautonomia and cardiac arrhythmias. The causes of dysautonomia would include B12 deficiency, diabetes mellitus, peripheral neuropathy (PN), and neurodegenerative brain disorders.

Dizziness and Anxiety

Anxiety can manifest as dizziness and chronic vestibular dysfunction can also cause anxiety. Occasionally, anxiety is due to dizziness caused by an independent dysautonomia as an associated feature.

JAYPEE BROTHERS

Dysautonomia can cause dizziness and anxiety.

Sensitivity to movement of objects is a feature of dizziness shared with migraine and anxiety. Selective serotonin receptor inhibitors (SSRIs) might help in the treatment.

Cervicogenic Dizziness

There is a widely prevalent misconception that dizziness is cervicogenic and is related to cervical spine degeneration. Such a situation could arise only when there is significant altered proprioceptive input from the neck due to extensive facet arthropathy or cervical radiculopathy. The occurrence of compression of vertebral artery (VA) in the cervical spine is rare, and is not usually associated with the occurrence of isolated vertigo but manifests with other symptoms of brain stem involvement (neighborhood signs) as outlined earlier.

Drugs and Toxins

Aminoglycosides (streptomycin and gentamycin), diuretics, benzodiazepines, amiodarone, antipsychotics, zolpidem can cause dizziness.

Central causes of dizziness are causes related to the CNS and not the peripheral vestibular apparatus or the vestibular nerve. A normal neurological examination excludes a central process. 10% of the patients with involvement of the medial branch of posterior inferior cerebellar artery (PICA) may have isolated vertigo.

Head Impulse, Nystagmus and Test for Skew Examination

Head impulse test has been dealt with earlier.

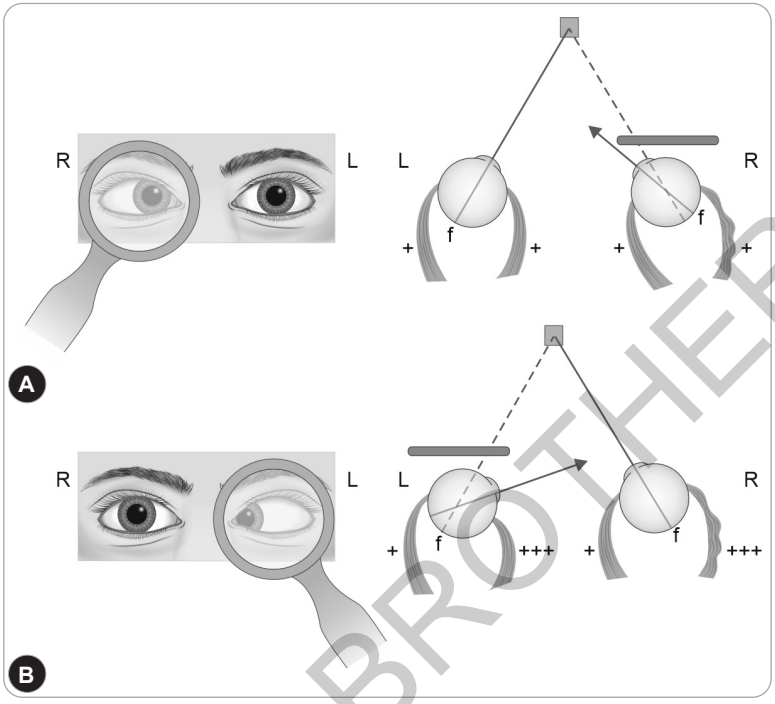
Test for Skew

Cover test: Patient maintains gaze on the examiner's nose and the examiner alternatively covers each of the patient's eye. Positive result is indicated by deviation of one eye while it is being covered followed by correction on uncovering it **(Figs. 4A and B)**.

An array of central nervous system disorders can cause dizziness:

- Stroke
- Multiple sclerosis

JAYPEE BROTHERS



FIGS. 4A AND B: Right lateral rectus muscle palsy and primary and secondary deviation. (A) Left eye fixes on the object while the right eye is obscured by an occluder. It is shown that there is a minor right esotropia (primary deviation) (in this illustration, the opaque occluder is partially translucent, so that the reader can see where the covered eye is located, but the patient is unable to see through it). (B) The right paretic eye is fixated on the object while the left eye is covered. Despite having a weak right lateral rectus muscle, the right eye can focus on the object because the central nervous system overdrives that muscle. Due to the Hering law of dual innervation, the normal left medial rectus muscle is also overworked, which causes a significant secondary deviation or esotropia.

(f: fovea)

JAYPEE BROTHERS

- Brain tumors
- Acoustic schwannomas
- Neurodegenerative disorders associated with dysautonomia
- Chiari malformations
- Head trauma (frequent cause)—postconcussion syndrome
- Migraine with associated dysautonomia

Central nervous system causes are to be considered, when dizziness is associated with other symptoms and neurologic signs,

of motor, sensory, or cerebellar long tracts involvement or with other cranial nerves involvement. MRI is essential in this setting, to identify the cause and treat accordingly. Long-standing dizziness also needs imaging to exclude a structural abnormality.

JAYPEE BROTHERS

for detailed information on neurology books, visit our website www.jaypeebrothers.com, for detailed information on neurology b

Handbook of Clinical Neurology

Salient Features

- The unique feature of this book is its symptom-based analysis. The focus is on the symptoms with which the patient presents to the physician as an outpatient.
- We discuss the various possibilities which could give rise to those symptoms, how to analyze those symptoms, what further history needs to be taken, and the clinical examination that needs to be done, pertinent to those symptoms, to formulate a provisional diagnosis. Arriving at a provisional diagnosis would help plan further relevant investigations and, or referral to a specialist, as needed.
- In the present times, every physician prefers to handle all types of cases and also follow-up patients after they have seen the specialist.
- This is very much needed and is to be appreciated, as the patients cannot, and also need not, visit the specialists often and could be followed up by the family doctor. However, this would mean that the family doctor should have the knowledge of the disorder and thereby be conversant in further continuing the treatment given by the specialist.
- Toward this goal, we have provided details regarding the common neurological disorders to enable the family doctor to manage patients with these disorders. These details are presented in a simple, easy-to-understand language in the second half of the book.
- We hope that this handbook would indeed be handy and at the same time provide the needed information to manage patients with common neurological symptoms.

V Natarajan MD DM (Neuro) FRCP (Edin) FAAN FIAN FIMSA is a renowned Neurologist, formerly Professor and Head, Madras Institute of Neurology at MMC, Chennai. Currently, he is Professor Emeritus at The Tamil Nadu Dr MGR Medical University, Chennai, Tamil Nadu, India. He is a recipient of several international fellowships. He has published several papers in peer-reviewed journals and presented papers in national and international conferences. He has a long experience in teaching clinical neurology to several generations of students at the institute.

K Mugundhan MD DM (Neuro) FRCP (Edin) FRCP (Glasg) FRCP (Lond) FRCP (Ire) FACP FICP FIMSA is working as Professor and Head, Department of Neurology, Stanley Medical College, Chennai, Tamil Nadu, India. He is the Faculty Council Member ICP (2020–2023), Past Secretary, ACP India Chapter, Executive Committee Member-TAN, South Zone Member, CCDSI, and Member Advisory Board, JAPI. His areas of interest are epilepsy, stroke, and neuromuscular disorders. He has published numerous articles in national and international journals. He has edited a monograph on epilepsy and immune-mediated neurological disorders.

Printed in India

Available at all medical bookstores
or buy online at www.jaypeebrothers.com



JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road,
Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
NEUROLOGY

