

# CONTENTS

Preface, ix  
List of Contributors, xi  
Video Table of Contents, xxi

## VOLUME 1: PRINCIPLES OF DIAGNOSIS

### PART I Common Neurological Problems

- 1 Diagnosis of Neurological Disease, 1**  
*Joseph Jankovic, John C. Mazziotta, Nancy J. Newman, Scott L. Pomeroy*
- 2 Episodic Impairment of Consciousness, 8**  
*Daniel Winkel, Dimitri Cassimatis*
- 3 Falls and Drop Attacks, 17**  
*Bernd F. Remler, Hatim Attar*
- 4 Delirium, 23**  
*Mario F. Mendez, Oleg Yerstein*
- 5 Stupor and Coma, 34**  
*Joseph R. Berger, Raymond Price*
- 6 Prolonged Comatose States and Brain Death, 52**  
*Eelco F.M. Wijdicks*
- 7 Intellectual and Memory Impairments, 58**  
*Howard S. Kirshner, Katherine A. Gifford*
- 8 Global Developmental Delay and Regression, 67**  
*Rachel Goode, Alice Lawrence, Tyler Reimschisel*
- 9 Behavior and Personality Disturbances, 75**  
*Carissa Gehl, Jane S. Paulsen*
- 10 Depression and Psychosis in Neurological Practice, 97**  
*David L. Perez, Evan D. Murray, Brent P. Forester, Bruce H. Price*
- 11 Limb Apraxias and Related Disorders, 120**  
*Mario F. Mendez, Leila Parand*
- 12 Agnosias, 127**  
*Howard S. Kirshner*
- 13 Aphasia and Aphasic Syndromes, 133**  
*Howard S. Kirshner, Stephen M. Wilson*
- 14 Dysarthria and Apraxia of Speech, 149**  
*Howard S. Kirshner*
- 15 Neurogenic Dysphagia, 152**  
*Delaram Safarpour, Kaveh Sharzehi, Ronald F. Pfeiffer*
- 16 Neuro-Ophthalmology: Afferent Visual System, 164**  
*Matthew J. Thurtell, Sashank Prasad, Robert L. Tomsak*
- 17 Pupillary and Eyelid Abnormalities, 191**  
*Matthew J. Thurtell, Janet C. Rucker*
- 18 Neuro-Ophthalmology: Ocular Motor System, 201**  
*Janet C. Rucker, Patrick J.M. Lavin*
- 19 Disturbances of Smell and Taste, 241**  
*Richard L. Doty, Steven M. Bromley*
- 20 Cranial and Facial Pain, 248**  
*Jerry W. Swanson, J.D. Bartleson*
- 21 Brainstem Syndromes, 255**  
*Devin D. Mackay, Michael Wall*
- 22 Neuro-Otology: Diagnosis and Management of Neuro-Otological Disorders, 267**  
*Kevin A. Kerber, Robert W. Baloh*
- 23 Cerebellar Ataxia, 288**  
*Sheng-Han Kuo, Chih-Chun Lin, Tetsuo Ashizawa*

- 24 Diagnosis and Assessment of Parkinson Disease and Other Movement Disorders, 310**  
*Joseph Jankovic, Anthony E. Lang*
- 25 Gait Disorders, 334**  
*Philip D. Thompson, John G. Nutt*
- 26 Hemiplegia and Monoplegia, 345**  
*E. Lee Murray, Karl E. Misulis*
- 27 Paraplegia and Spinal Cord Syndromes, 356**  
*Bruce H. Dobkin*
- 28 Proximal, Distal, and Generalized Weakness, 362**  
*Komal T. Sawlani, Christopher D. Geiger*
- 29 Muscle Pain and Cramps, 379**  
*Leo H. Wang, Glenn Lopate*
- 30 Hypotonic (Floppy) Infant, 388**  
*W. Bryan Burnette*
- 31 Sensory Abnormalities of the Limbs, Trunk, and Face, 397**  
*E. Lee Murray, Karl E. Misulis*
- 32 Arm and Neck Pain, 407**  
*Michael Ronthal*
- 33 Lower Back and Lower Limb Pain, 417**  
*E. Lee Murray, Karl E. Misulis*

### PART II Neurological Investigations and Interventions

#### SECTION A General Principles

- 34 Investigations in the Diagnosis and Management of Neurological Disease, 427**  
*Joseph Jankovic, John C. Mazziotta, Nancy J. Newman, Scott L. Pomeroy*

#### SECTION B Clinical Neurophysiology

- 35 Electroencephalography and Evoked Potentials, 430**  
*Cecil D. Hahn, Ronald G. Emerson*
- 36 Clinical Electromyography, 447**  
*Bashar Katirji*
- 37 Extracranial Neuromodulation, 472**  
*David H. Benninger, Zhen Ni, Mark Hallett*
- 38 Intracranial Neuromodulation, 483**  
*Ryan Barmore, Zhongxing Peng-Chen, Abhay Kumar, Michael S. Okun*
- 39 Intraoperative Monitoring, 492**  
*Marc R. Nuwer*

#### SECTION C Neuroimaging

- 40 Structural Imaging Using Magnetic Resonance Imaging and Computed Tomography, 496**  
*Joseph C. Masdeu, Bela Ajtai, Alireza Faridar*
- 41 Vascular Imaging: Computed Tomographic Angiography, Magnetic Resonance Angiography, and Ultrasound, 547**  
*Peter Adamczyk, David S. Liebeskind*

- 42 Functional and Molecular Neuroimaging, 576**  
*Karl Herholz, Stefan Teipel, Sabine Hellwig, Sönke Langner, Michel Rijntjes, Stefan Klöppel, Cornelius Weiller, Philipp T. Meyer*
- 43 Ocular Functional and Structural Investigations, 601**  
*Robert Mallery, Devin Mackay, Sashank Prasad*

**SECTION D Clinical Neurosciences**

- 44 Neuropsychology, 614**  
*Jane S. Paulsen, Carissa Gehl*
- 45 Neurourology, 633**  
*Jalesh N. Panicker, Ranan DasGupta, Amit Batla*
- 46 Sexual Dysfunction in Neurological Disorders, 652**  
*Frédérique Courtois, Dany Cordeau*
- 47 Neuroepidemiology, 666**  
*Mitchell T. Wallin, Kathryn C. Fitzgerald*
- 48 Clinical Neurogenetics, 681**  
*Brent L. Fogel, Daniel H. Geschwind*
- 49 Neuroimmunology, 709**  
*Tanuja Chitnis, Samia J. Khoury*
- 50 Neuroendocrinology, 730**  
*Paul E. Cooper, Stan H.M. Van Uum*

**VOLUME 2: NEUROLOGICAL DISORDERS AND THEIR MANAGEMENT**

**PART III Neurological Diseases and Their Treatment**

- 51 Management of Neurological Disease, 748**  
*Joseph Jankovic, John C. Mazziotta, Nancy J. Newman, Scott L. Pomeroy*
- 52 Pain Management, 753**  
*Pradeep Dinakar*
- 53 Neurointensive Care, 776**  
*Alejandro A. Rabinstein, Sherri A. Braksick*
- 54 Principles of Neuroendovascular Therapy, 793**  
*Thanh N. Nguyen, Tudor G. Jovin, Raul G. Nogueira, Osama O. Zaidat*

**SECTION B Neurological Complications of Systemic Disease**

- 55 Neurological Rehabilitation, 819**  
*Bruce H. Dobkin*
- 56 Transition to Adult Care for Youth with Chronic Neurological Disorders, 850**  
*Peter Camfield, Carol Camfield*
- 57 Palliative and End-of-Life Care in Neurological Disease, 856**  
*Maisha T. Robinson, Claire J. Creutzfeldt*
- 58 Neurological Complications of Systemic Disease: Adults, 862**  
*S. Andrew Josephson, Michael J. Aminoff*
- 59 Neurological Complications of Systemic Disease: Children, 882**  
*Aline I. Hamati, Marcia V. Felker*

**SECTION C Trauma of the Nervous System**

- 60 Basic Neuroscience of Neurotrauma, 897**  
*W. Dalton Dietrich, Helen M. Bramlett*
- 61 Concussion in Sports and Performance, 907**  
*Jeffrey S. Kutcher*

- 62 Craniocerebral Trauma, 914**  
*Martina Stippler, Anil Mahavadi*
- 63 Spinal Cord Trauma, 929**  
*Ryan Khanna, Richard D. Fessler, Laura Snyder, Richard G. Fessler*
- 64 Trauma of the Nervous System: Peripheral Nerve Trauma, 950**  
*Bryan Tsao, Kevin Cronin, Brian Murray*

**SECTION D Vascular Diseases of the Nervous System**

- 65 Ischemic Cerebrovascular Disease, 964**  
*José Biller, Michael J. Schneck, Sean Ruland*
- 66 Intracerebral Hemorrhage, 1014**  
*Ashkan Shoamanesh, Carlos S. Kase*
- 67 Intracranial Aneurysms and Subarachnoid Hemorrhage, 1031**  
*Viktor Szeder, Satoshi Tateshima, Reza Jahan, Jeffrey L. Saver, Gary R. Duckwiler*
- 68 Stroke in Children, 1044**  
*Meredith R. Golomb, José Biller*
- 69 Spinal Cord Vascular Disease, 1058**  
*Michael J. Lyerly, Asim K. Bag, David S. Geldmacher*
- 70 Central Nervous System Vasculitis, 1066**  
*Olivia Groover, Fadi Nahab*

**SECTION E Cancer and the Nervous System**

- 71 Epidemiology of Brain Tumors, 1068**  
*Dominique S. Michaud*
- 72 Pathology and Molecular Genetics, 1076**  
*Leomar Y. Ballester, Jason T. Huse*
- 73 Clinical Features of Brain Tumors and Complications of Their Treatment, 1099**  
*Reena P. Thomas, Michael Iv*
- 74 Primary Nervous System Tumors in Adults, 1105**  
*Ashley Roque, Fred H. Hochberg, Joachim M. Baehring*
- 75 Primary Nervous System Tumors in Infants and Children, 1122**  
*Vijay Ramaswamy, Sharon L. Gardner, Matthias A. Karajannis*
- 76 Nervous System Metastases, 1145**  
*Ugonma Chukwueke, Robert Cavaliere, David Schiff, Patrick Wen, Kristin Huntoon*

**SECTION F Infections of the Nervous System**

- 77 Neurological Manifestations of Human Immunodeficiency Virus Infection in Adults, 1165**  
*Ashok Verma, Joseph R. Berger*
- 78 Viral Encephalitis and Meningitis, 1184**  
*John David Beckham, Marylou V. Solbrig, Kenneth L. Tyler*
- 79 Bacterial, Fungal, and Parasitic Diseases of the Nervous System, 1214**  
*Nicolaas C. Anderson, Anita A. Koshy, Karen L. Roos*

**SECTION G Neurological Disorders**

- 80 Multiple Sclerosis and Other Inflammatory Demyelinating Diseases of the Central Nervous System, 1226**  
*Michelle T. Fabian, Stephen C. Krieger, Fred D. Lublin*
- 81 Paraneoplastic Disorders of the Nervous System, 1255**  
*Myrna R. Rosenfeld, Josep Dalmau*
- 82 Autoimmune Encephalitis with Antibodies to Cell Surface Antigens, 1263**  
*Myrna R. Rosenfeld, Josep Dalmau*

- 83 Anoxic-Ischemic Encephalopathy, 1269**  
*Jennifer E. Fugate, Eelco F.M. Wijdicks*
- 84 Toxic and Metabolic Encephalopathies, 1276**  
*Karin Weissenborn, Alan H. Lockwood*
- 85 Deficiency Diseases of the Nervous System, 1291**  
*Yuen T. So*
- 86 Effects of Toxins and Physical Agents on the Nervous System, 1302**  
*Michael J. Aminoff, Yuen T. So*
- 87 Effects of Drug Abuse on the Nervous System, 1319**  
*John C.M. Brust*
- 88 Brain Edema and Disorders of Cerebrospinal Fluid Circulation, 1327**  
*Gary A. Rosenberg*
- 89 Developmental Disorders of the Nervous System, 1345**  
*Harvey B. Sarnat, Laura Flores-Sarnat*
- 90 Autism and Other Neurodevelopmental Disabilities, 1366**  
*Reet Sidhu, D. David O'Banion, Christine Hall*
- 91 Inborn Errors of Metabolism and the Nervous System, 1386**  
*Phillip L. Pearl, Melissa L. DiBacco, K. Michael Gibson*
- 92 Neurodegenerative Disease Processes, 1407**  
*Roger A. Barker, Kirsten M. Scott*
- 93 Mitochondrial Disorders, 1415**  
*Chris Turner, Robert D.S. Pitceathly, Anthony H.V. Schapira*
- 94 Prion Diseases, 1430**  
*Boon Lead Tee MD, Michael D. Geschwind MD PhD FAAN*
- 95 Alzheimer Disease and Other Dementias, 1452**  
*Ronald C. Peterson, Jonathan Graff-Radford*
- 96 Parkinson Disease and Other Movement Disorders, 1498**  
*Joseph Jankovic*
- 97 Disorders of Upper and Lower Motor Neurons, 1535**  
*Conor Fearon, Brian Murray, Hiroshi Mitsumoto*
- 98 Channelopathies: Episodic and Electrical Disorders of the Nervous System, 1568**  
*Min K. Kang, Geoffrey A. Kerchner, Louis J. Ptáček*
- 99 Neurocutaneous Syndromes, 1589**  
*Monica P. Islam, E. Steve Roach*
- 100 Epilepsies, 1614**  
*Bassel W. Abou-Khalil, Martin J. Gallagher, Robert L. Macdonald*
- 101 Sleep and Its Disorders, 1664**  
*Alon Y. Avidan*
- 102 Headache and Other Craniofacial Pain, 1745**  
*Ivan Garza, Carrie E. Robertson, Jonathan H. Smith, Mark A. Whealy*
- 103 Cranial Neuropathies, 1783**  
*Janet C. Rucker, Meagan D. Seay*
- 104 Disorders of Bones, Joints, Ligaments, and Meninges, 1798**  
*Christopher D. Geiger, Michael W. Devereaux, David Hart*
- 105 Disorders of Nerve Roots and Plexuses, 1829**  
*David A. Chad, Michael P. Bowley*
- 106 Disorders of Peripheral Nerves, 1853**  
*Bashar Katirji*
- 107 Disorders of the Autonomic Nervous System, 1930**  
*Thomas Chelimsky, Gisela Chelimsky*
- 108 Disorders of Neuromuscular Transmission, 1958**  
*Jeffrey T. Guptill, Donald B. Sanders*
- 109 Disorders of Skeletal Muscle, 1978**  
*Christopher T. Doughty, Anthony A. Amato*
- 110 Neurological Problems in the Newborn, 2022**  
*Jarred Garfinkle, Steven P. Miller*
- 111 Cerebral Palsy, 2040**  
*Elizabeth Barkoudah, Siddarth Srivastava, Claudio Melo de Gusmao, David Coulter*
- 112 Neurological Problems of Pregnancy, 2049**  
*D. Malcolm Shaner*
- 113 Functional and Dissociative Neurological Symptoms and Disorders, 2076**  
*Jon Stone, Alan Carson*
- Index, 11