Preface

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Sleep affects every physiologic system, but it is primarily a function of the brain. Today, we know far more about the underlying neural mechanisms of sleep and wakefulness than ever before. Just as the pituitary gland was, many years ago, identified as the leader of the endocrine orchestra, so the hypothalamus can today be considered the prime player in sleep regulation [1,2]. The preoptic area drives non-REM sleep, the suprachiasmatic nuclei are the site of the biologic clock, and the posterolateral perifornical region controls wakefulness through the hypocretin (orexin) system. In addition to the hypothalamus, the subcoeruleus region of the pons has been identified as a major focus of REM sleep generation, and the outflow pathways underlying REM phenomena, such as skeletal muscle atonia, have been delineated [3]. Our knowledge of neurochemical regulation of sleep continues to advance with understanding of the interrelated roles of GABA, hypocretins, adenosine, and monoamines. In the light of these advances in knowledge, it is not surprising that sleep disturbances can be prominent manifestations of primary diseases of the nervous system and that sleep can affect the clinical presentation of

these disorders. This issue of *Sleep Medicine Clinics* is devoted to that topic.

Patients with neurodegenerative disorders may develop profound sleep disturbances. There is increasing interest in the wider presentations of Lewy body disease with the understanding that the motor features of Parkinson's disease reflect only one manifestation of a complex disorder. Dr. Comella discusses the spectrum of sleep disorders in Parkinson's disease. Drs. Santamaria and Iranzo present the manifestations of multiple system atrophy, a disorder with extensive brainstem degeneration, resulting in a range of breathing and motor disturbances during sleep. Patients with dementia exhibit major changes in sleep that may heavily contribute to the morbidity of the condition. Dr. Boeve dissects the different factors affecting sleep in patients with dementia and discusses practical treatment strategies.

Sleep disordered breathing may be closely tied to neurologic disease. Drs. Dyken and Im review the complex relationship between stroke and sleep apnea, discussing mechanisms and clinical approaches. Sleep specialists can expect to see increasing numbers of patients with progressive neuromuscular

disorders affecting diaphragmatic function as studies continue to show that noninvasive support of breathing at night improves quality of life and survival. Dr. Culebras discusses this topic in a number of disorders, including muscular dystrophy and amyotrophic lateral sclerosis. Is obstructive sleep apnea itself a neurologic disease? Drs. Ramar and Guilleminault examine the evidence in a well-reasoned paper.

A new area of interest is the role of immune dysfunction in disorders of sleep. Drs. Khatami, von Büdingen, and Bassetti review the mechanisms of sleep disturbances in a range of auto-immune neurologic disorders. Sleep dysfunction appears to be a fundamental feature of prion disorders. Drs. Montagna and Provini discuss the insights that these diseases can provide for understanding the genetics and physiology of sleep. Paroxysmal neurologic disorders are profoundly influenced by changes in states of consciousness. Drs. Poceta and Rains review the complex interrelationships between sleep, sleep disorders, and headache syndromes. The effects of seizures and their treatment on sleep, as well as the influences of sleep disorders on epilepsy, are described by Drs. Foldvary-Schaefer and Grigg-Damberger.

Neurologic disorders of childhood present a new area for understanding the relationships between sleep and the brain. Dr. Rosen explores the effects of brain tumors and their treatment on sleep and alertness in children. Sleep is clearly disrupted in

attention deficit hyperactivity disorder. Dr. Hoban discusses the different factors involved, including the potential roles of sleep-disordered breathing and restless legs syndrome. The mysteries of autism are slowly being unraveled, and Drs. Malow and McGrew help us understand the role sleep disturbances play in this disorder.

The inter-relationships between sleep and neurologic disorders are broad. Every category of sleep disorder is discussed in this issue in relation to varied diseases of the nervous system. Insomnias, hypersomnias, sleep-disordered breathing, circadian rhythm disorders, sleep-related movement disorders, and parasomnias all may be manifestations of neurologic dysfunction. We hope that this issue will enlighten sleep specialists about these common and important associations, as well as provide novel insights into the pathophysiology of sleep disorders.

References

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