
Foreword

Since its inception in 1963, the book series *Progress in Respiratory Research* aims at publishing cutting edge knowledge covering the widest possible area. Both clinical and basic science feature with equal prominence. Judging from sales figures and citations in the literature, the series is enjoying a rapidly increasing reputation. The last two volumes, vol 33 on 'Paediatric Pulmonary Function Testing', and vol 34 on 'Cystic Fibrosis in the 21st Century' have addressed important topics mainly relating to pediatric pulmonology. Both are outstanding books, the former just having received a 'highly commended' award by the British Medical Association!

The one area which has never been covered in the series, however, is sleep medicine. We were therefore very enthusiastic when Prof. W.J. Randerath approached us with his idea to bring out a volume entitled: Sleep Apnea: Current Diagnosis and Treatment. Together with his co-editors B.M. Sanner and V.K. Somers, he put together a comprehensive book containing all relevant topics relating to sleep apnea. True to the vision of the series *Progress in*

Respiratory Research, the authors of the different chapters were chosen among the leaders in the field and from all corners of the world, giving the book the usual global appeal. Also, authors were instructed to cite the most recent literature including 2005. Combined with the usual speed of Karger Publishers to produce a book in very few months after acceptance of the final article, this results in a book presenting up-to-date knowledge, a true reflection of the series' title.

The current volume, 35 of the series, offers something for everyone interested in sleep apnea or sleep-disordered breathing and presents yet another gem in *Progress in Respiratory Research*.

To the volume editors, the chapter authors, and the editorial staff at Karger Publishers, Basel, a hearty thank you and to you, potential readers, a warm welcome!

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Preface

It has been a fascinating experience to witness the development of a new discipline in science and clinical medicine. Although Charles Dickens excellently described the presentation of a patient with sleep apnea in his famous novel *The Pickwick Papers* in 1837, until 1980 there were only few scientific publications on the theme. The impressive recent evolution of sleep medicine started with the description of continuous positive airway pressure therapy by Colin Sullivan in the late 1970s. Professor Sullivan has more lately added a new and important aspect to our understanding of clinical sleep medicine by his observations on sleep-disordered breathing during pregnancy. It is therefore a great honor for us that he and some of the other most important sleep researchers enrich this book with their insights.

In the face of the rapid developments in sleep medicine, this book seeks to present the current knowledge in the pathophysiology, clinical presentation, diagnosis, and treatment of sleep apnea. As our primary focus is on breathing disturbances during sleep, it is important to differentiate these disorders from other sleep problems. Therefore, Professor Levy introduces the volume with an overview of the broad spectrum of sleep medicine.

New physiological approaches to modeling sleep are based on the observation of the fluctuations between wakefulness and sleep. Interestingly, the distribution of sleep and wakefulness follows similar laws as molecular movement. Recent research highlights respiratory instability during sleep, which also has implications for the upper airway dilator muscles.

By directly measuring the impedance of the upper airways, the mechanical changes that take place in the course

of an apnea can be described precisely. Aside from these, however, the importance of inflammatory processes and oxidative stress is increasingly recognized. These mechanisms, as well as genetic and anatomic factors and compensatory processes, critically influence the structure and function of the upper airway muscles. These concepts open up new avenues of investigation for better understanding and improved therapeutic options.

The diagnosis of sleep-disordered breathing is contingent upon the history and the measurement of ventilation during sleep. Standardized tests and questionnaires have become increasingly important as objective measures of daytime sleepiness. These tests aim at better characterization and evaluation of the complexity of clinical symptoms. Despite many attempts to simplify the diagnostic process, polysomnography remains the gold standard approach to clearly define sleep apnea, to differentiate it from other sleep disorders and to introduce and supervise optimal therapy.

CPAP is the current method of choice for the treatment of sleep apnea. However, based on new pathophysiologic findings, novel therapeutic approaches are under investigation. For example, stimulation of the upper airway muscles, cardiac pacing, and surgical and pharmacological interventions have been tested. As patients often seek treatment alternatives, it seemed important to us to include the opportunities and limitations of these new approaches, and to suggest recommendations for their use. Although automatic positive airway pressure devices have broadened the therapeutic repertoire of sleep physicians, questions still remain regarding how automatic CPAP should be best used in titration and treatment.



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The general medical community has become increasingly interested in sleep disorders, because of the important influence of breathing disturbances during sleep on the cardiovascular system. Therefore, reviews of central sleep apnea and of cardiovascular complications of sleep-disordered breathing play an important role in this edition. Sleep apnea is relevant to all ages. Hence, children, the elderly and pregnancy receive special attention in dedicated chapters.

Our overall goal is to summarize the state-of-the-art knowledge on sleep-disordered breathing. We are very

grateful to Prof. Bolliger and Karger Publishers for agreeing to incorporate this theme in the series *Progress in Respiratory Research*. We especially thank the expert contributors from throughout the world for sharing our mission and for excellent contributions to this volume. We do hope that this book will stimulate through discussion and research, and that it will also assist clinicians in the evaluation and management of their patients.

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