Respiratory Medicine
Series Editor: Sharon I.S. Rounds

Ran D. Anbar *Editor*

Functional Respiratory Disorders

When Respiratory Symptoms Do Not Respond to Pulmonary Treatment

Humana Press

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Respiratory Medicine

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This book is dedicated to my beloved parents: To my father, Michael Anbar, Ph.D., who encouraged me throughout my life to make major contributions to the human endeavor, and to my mother, Ada Anbar, Ph.D., who taught me about the importance of compassion and altruism.

Preface

Many patients with pulmonary complaints fail to improve despite physicians' best efforts. Sometimes, we ascribe this failure to lack of adherence to therapy or to the severity of the condition. What we often fail to appreciate, however, is that sometimes the lack of improvement can be explained by the patients' psychological states. For example, some patients with asthma can experience shortness of breath as a result of anxiety rather than a physical exacerbation of their asthma. Treating the symptom by ratcheting up pharmacological asthma therapies is of little use and can be harmful. Thus, the first section of this book will help clinicians recognize functional respiratory symptoms that can arise in association with both organic and psychological causes.

Another group of patients have respiratory complaints that many clinicians recognize as functional in nature, such as vocal cord dysfunction, habit cough, anxiety-related dyspnea, and stress-related chest pain. Further, treatment of patients with sleep disorders often involves addressing functional issues that complicate their management, e.g., learning to accept continuous positive airway pressure (CPAP) therapy or psychosocial stressors that can underlie development of parasomnia. Thus, the second section of this book provides detailed discussions of such disorders, links to video examples of laryngoscopic evaluation of patients with vocal cord issues, case studies, and quizzes. The examples and exercises should strengthen the clinician's confidence in identifying and treating these functional conditions.

Finally, even when clinicians are comfortable in identifying patients with functional respiratory disorders, planning a treatment program can be challenging. Some patients may be reluctant to see mental health providers, even when such competent providers are available. For this reason, the third section of the book will help clinicians differentiate patients for whom referral to a mental health provider is necessary from those for whom other approaches may be useful. For the latter group, the book can teach clinicians to empower themselves by learning how to incorporate various nonpharmacological therapeutic modalities for functional disorders into their practice, including biofeedback, breathing techniques, elements of basic cognitive behavioral therapy, hypnosis, speech therapy, acupressure, and meditation. Links are provided to instructive video examples of biofeedback, hypnosis, and speech therapy.

Information regarding how one might receive training in these modalities is provided in the Appendix. Rare instances in which functional respiratory disorders might be treated with pharmacologic agents also are discussed. Helpful case studies and quizzes are provided in this section as well.

The intended audience for this book includes pediatricians, family practitioners, internists, pulmonologists, sleep specialists, psychiatrists, psychologists, and other mental health-care providers. Students, residents, and fellows in medical and behavioral sciences also should find the book of significant interest, as it may help shape their approach to patients throughout their careers.

We are fortunate to have benefited from the expertise of the internationally renowned authors who contributed to this book, including pulmonologists, sleep medicine specialists, family practitioners, pediatricians, psychiatrists, psychologists, speech therapists, and experts in complementary and alternative medicine. It is our hope that the book will help clinicians consider the possible impact of functional contributions to the clinical presentation of every patient with respiratory symptoms and identified respiratory disease.

Syracuse, NY Ran D. Anbar

Acknowledgments

The concept for this book arose following presentation of a short course entitled "Functional Contributions to Respiratory Disorders in Children and Adults," which was offered at the 2010 American Thoracic Society conference in New Orleans, LA. I was approached by Amanda Quinn, an editor at Springer, who proposed the possibility of covering the topic in a book. I enthusiastically accepted this opportunity given the importance of alerting clinicians regarding the large and often unrecognized impact of functional respiratory disorders in clinical practice.

I would like to thank all of my coauthors, Devang Doshi, Reinhild Draeger-Muenke, Courtney DuMond, Adam Elias, Juliet Foster, Howard Hall, Charles Harris, Heather Hodges, Douglas Homnick, Christine Jenkins, David Johnson, Paul Lehrer, Dewey Meyers, Maximilian Muenke, Dilip Patel, Zafer Soultan, Brett Toelle, Miles Weinberger, and Joseph Zastrow, who worked diligently on their contributions to the book. Many of them helped review and provided invaluable feedback regarding some chapters in the book that were written by our coauthors.

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Now, it's time for a family vacation!

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Part I
Recognition of Functional Respiratory Symptoms

Chapter 1
What Is a Functional Respiratory Disorder?

Ran D. Anbar and Howard R. Hall

Abstract Functional respiratory disorders can be characterized as occurring in patients with persisting respiratory symptoms lacking an identifiable organic or physiologic basis, or symptoms in excess of what would be expected from just their physiologic cause. Such functional disorders typically have emotional or psychological associations. Common respiratory conditions that are thought to be functional include dyspnea/hyperventilation, habit cough, paroxysmal sneezing, throat clearing, and vocal cord dysfunction. These occur predominantly in children, adolescents, and young adults. Additionally, a functional component should be entertained as complicating existing diagnosed physical conditions, such as asthma, chronic obstructive pulmonary disease, and cystic fibrosis, which are diseases that affect patients of all ages. Treatment of functional respiratory disorders can include providing reassurance, biofeedback, breathing relaxation techniques, cognitive behavioral therapy, hypnosis, or speech therapy. Pharmacologic therapy for functional respiratory disorders occasionally may be helpful. Patients with functional respiratory disorders benefit from prompt identification and therapy, as this prevents perpetuation of the associated symptoms, development of further complicating sequelae, unnecessary medical investigations, and prescription of ineffective medical therapy that might have harmful side effects.

Keywords Anxiety • Asthma • Dyspnea • Habit cough • Hyperventilation • Somatoform disorders • Vocal cord dysfunction

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Functional respiratory disorders traditionally have been defined as symptoms occurring in the absence of organic pulmonary pathology. Functional disorders have been termed medically unexplained physical symptoms (MUPS), functional somatic symptoms (FSS), abnormal illness behavior, idiopathic symptoms, and somatoform symptoms (physical expression of psychological or psychiatric issues) [1, 2]. Frequently, these are transient phenomena and resolve without specific therapy [2]. At times, however, functional respiratory symptoms can be quite persistent and may require appropriate professional intervention [3]. In this chapter, the term functional respiratory disorder will be used to refer to patients with *persistent* respiratory symptoms in the absence of any identifiable organic or physiologic cause, or symptoms that are in excess of what would be expected from just their physiologic cause. Such functional disorders typically have psychological associations.

This chapter reviews how clinicians can enhance the effectiveness of their care by promptly diagnosing and offering treatment for functional respiratory disorders, including their associated complications such as sleep disturbances. Further, it illustrates how attention to possible psychological triggers of functional respiratory disorders can define or augment the appropriate course of treatment.

Background

A connection between psychological factors and respiratory disorders should not be surprising. Since antiquity, the word for breath has been strongly connected with the spiritual facets of human life. For example, the term for spirit in Hebrew is *ruach,* which also means breath or wind. As described in the Old Testament book of Genesis 2:7, the creation of human life began with God forming man from the dust of the ground and breathing into his nostrils, "the breath of life and man became a living soul." In the New Testament, the Greek term *pneuma* refers to breath, life, and God [4]. Not only does life begin with breath, but life also ends with the cessation of breath. Equivalent terms for this life force can be found in other cultures around the world in words such as *prana* from India, *Qi* and *Chi* from China, and *ki* from Japan [5].

An understanding of the association between psychological and breathing disorders developed in the medical field during the 1930s, when asthma was known as one of the Holy Seven psychosomatic disorders, alongside hypertension, ulcerative colitis, Graves' disease, rheumatoid arthritis, peptic ulcer, and neurodermatitis [6]. According to the prevalent psychoanalytic model, a child's separation from his or her mother caused an emotional conflict leading to anxiety, which underlay the development of asthma. Subsequent research, however, failed to find support for the existence of this specific conflict in individuals with asthma, and more nonspecific stress models began to emerge with the work of Selye and others [6].

Our growing understanding of the interaction between psychological factors and physical conditions was demonstrated through the evolution of the series of diagnostic and statistical manual of mental disorders (DSM) published by the American Psychiatric Association. For example, the DSM-II (1968) appeared to

restrict "psychophysiologic disorders" to nine specific types including (305.2) psychophysiologic respiratory disorders such as "bronchial asthma, hyperventilation syndromes, sighing, and hiccoughs in which emotional factors play a causative role" [7]. A major shift in this category had taken place upon publication of the DSM-III (1980), in which specific diseases were no longer listed but instead considered within the general category of (316) "psychological factors affecting physical conditions" [8]. This invited the clinician to more broadly note the contribution of psychological factors to the initiation or exacerbation of any physical disorder. DSM-III also introduced the category of "somatoform disorders," wherein physical symptoms can be associated with psychological factors in the absence of precipitating anatomic or physiologic causes.

Of course, we have long recognized that asthma is not simply a behavioral disease, but there have been major advances in our understanding of how behavioral and psychological factors can exacerbate or ameliorate this particular condition in a major way [9]. For example, stress may be mediated through the autonomic nervous system (ANS), hormonally, or through immune mechanisms, and thereby influence the extent of airway inflammation in patients with asthma [9]. Anxiety disorders, panic symptoms, and depression have been associated with asthma symptoms through indirect effects such as disorganization of self-care behaviors or through direct physiological effects mediated through the ANS or immune system. Yet, given the inconsistent findings and limitations of current published studies, definitive conclusions cannot be drawn regarding the interactions of mood and asthma [9].

Commonly recognized functional respiratory disorders present with dyspnea/hyperventilation, habit cough, paroxysmal sneezing, throat clearing, and vocal cord dysfunction. These occur predominantly in children, adolescents, and young adults [10, 11]. Additionally, functional factors may add to the management complexity of identified respiratory diseases, such as asthma, chronic obstructive pulmonary disease, and cystic fibrosis, which affect patients of all ages. Sleep disturbances frequently accompany respiratory disorders and may impact respiratory symptoms [12]. For example, fatigue and sleep disturbances have been associated with perceptions of poor health in adult patients with chronic obstructive pulmonary disease (COPD). Further, insomnia may arise in the context of school- or work-related worries in patients with functional respiratory disorders such as habit cough or vocal cord dysfunction.

The Wide Spectrum of Functional Respiratory Disorders and Associated Conditions

Functional respiratory disorders are associated with two distinct scenarios:

1. The disorder develops in isolated association with a psychological stressor. A common example is the teenager with no history of asthma, who develops vocal cord dysfunction because of stress arising from participation in competitive