

Chapter 1

What Is a Functional Respiratory Disorder?

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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

athletics, or a patient who develops anxiety-associated dyspnea as result of concerns about loss of income or job. A frequently unrecognized variant of this scenario is the patient who has been misdiagnosed with an organic disease, thereby receiving a medical diagnosis with potential lifelong ramifications, because he or she presented with functional symptoms consistent with that diagnosis. For example, a patient with habit cough who has been misdiagnosed with asthma may report episodes of anxiety-related dyspnea that are interpreted as representing exacerbations of uncontrolled asthma. In such cases, exploration of possible psychological stressors should be carried out in conjunction with appropriate medical assessment. This may prompt reconsideration of the diagnosis and will allow development of a more effective treatment plan.

2. The disorder develops in association with a diagnosed medical illness or an environmental exposure. Functional manifestations can arise because of fear or anticipation of worsening of symptoms due to a medical illness or threatening environmental exposure. For example, a patient with asthma may hyperventilate because of fear that an asthma exacerbation might become severe. In others, functional respiratory symptoms can be triggered because of anxiety following exposure to an environmental trigger such as a strong odor, even in the absence of documented allergic sensitivity. Similarly, anxiety can trigger noncardiac chest pain in patients with a history of a myocardial infarction or can lead to sensations of chest tightness in patients with early cancer that does not involve the lungs. Another variation of this scenario involves patients whose psychological factors influence treatment of a respiratory condition. For example, a patient with asthma and underlying anxiety may develop dyspnea as the result of school-related experiences such as test taking or bullying. However, in response to the dyspnea, a health-care provider often assumes that the patient's asthma is the trigger, and treats accordingly by modifying the asthma medications. The school-related anxiety, however, will not improve as a result of this medical therapy, and the patient thereafter may be characterized erroneously as having asthma that is difficult to treat.

Scenario 1 encompasses the diagnoses most frequently recognized as representing functional respiratory disorders, including habit cough and vocal cord dysfunction without a history of asthma. However, while frequently unrecognized, Scenario 2 conditions actually are much more common given the high prevalence of chronic respiratory illnesses, cardiac disease, and cancer. In these patients, stress and anxiety can be associated with exacerbations of respiratory symptoms such as chest pain, cough, and dyspnea/hyperventilation. For example, 29% of adult patients with asthma in primary care settings have been reported as having dysfunctional breathing [13]. Further, nearly 50% of pediatric patients with asthma in one study were identified as having clinical anxiety that could affect their medical management [14]. Scenario 2 also applies to patients with vocal cord dysfunction combined with asthma. In such cases, in order to distinguish between vocal cord dysfunction and asthma, clinicians need to probe and differentiate characteristics of the associated respiratory symptoms. For example, breathing difficulties arising during inhalation

and reported by patients to cause a feeling of blockage in the neck are more likely to be the result of vocal cord dysfunction. As another Scenario 2 example, the course of COPD appears to be influenced by anxiety and depression, which lead to poorer health quality-of-life measures [12, 15]. In turn, poor quality of health scores has been associated with increased risks for hospital readmission and mortality in adults with COPD [16, 17].

Regardless of the presenting scenario, functional respiratory disorders can cause physical pathology. For example, severe habit cough can lead to the development of tracheal petechiae or rib fractures [18]. Severe vocal cord dysfunction can cause loss of consciousness [19]. Anxiety-induced hyperventilation can trigger bronchospasm in patients with asthma, since air that is inhaled rapidly through the mouth does not get filtered, warmed, and moistened as with nasal inhalation, and thus is more likely to trigger asthma [20, 21]. In turn, an asthma exacerbation can lead to escalation of the anxiety. Chronic fatigue as a result of insomnia can be associated with a number of health complications. It is important that clinicians not confuse the secondary organic changes in such settings as the primary cause of the functional symptoms.

Not only can the development of functional respiratory disorders be the result of psychological factors, but functional disorders can lead to psychological sequelae. For example, anxiety may result from long-standing respiratory symptoms without an identifiable cause. Some patients may grow more resistant to therapy as their functional symptoms and associated psychological issues become more entrenched [22]. The functional symptoms of some patients can be reinforced by medical and family attention provided as a result of the symptoms [23–25]. In such instances, resolution of the symptoms can be facilitated by discontinuing extensive medical interventions and encouraging patients' families to become nonreactive in the face of ongoing symptoms. An unusual circumstance arises when patients receive disability payments as the result of functional symptoms, which can prompt their perpetuation [2]. Finally, patients' lives can be altered significantly as a consequence of persisting functional respiratory symptoms. Participation in athletic activities may cease because of dyspnea or vocal cord dysfunction. Disruptive habit cough and resulting negative interactions with teachers or fellow students can lead to absenteeism and dislike of school. In some instances, such life changes provide the patient with secondary gain as a result of the functional symptom. For example, a patient with academic difficulties may welcome being excused from school as the result of a disruptive habit cough and may prove resistant to its treatment.

Classification of patients with functional respiratory symptoms into one of the two scenarios can be helpful in terms of treatment planning. Most Scenario 1 patients tend to improve with behavioral and psychological therapy directly aimed at resolving the respiratory symptoms. Scenario 2 patients may require attention in tandem for both their psychological and underlying disease factors.

Lack of recognition of a functional component in the presentation of patients with respiratory symptoms can lead to ineffective or potentially harmful therapy. For example, long-term systemic corticosteroids might be prescribed for patients with asthma complicated by functional symptoms [20] or can lead to patients who grow frustrated with the medical system because they are not improving [26].

Furthermore, some patients with unrecognized functional respiratory disorders are classified as being “difficult” either because their disease appears resistant to medical therapy, or it is suspected that their lack improvement is related to their poor adherence to prescribed therapy [27]. Ironically, such patients’ rate of adherence to therapy may be compromised because of its seeming ineffectiveness!

Psychiatric Classification of Functional Respiratory Disorders

Functional respiratory disorders can be classified according to the DSM-IV-TR category of (316) psychological factors associated with the initiation, exacerbation, or course of a medical condition [28]. This would include both scenarios described above. Small subsets of functional respiratory disorders are attributable to specific psychiatric disorders (Table 1.1). Most of these can be classified as somatoform (from the Greek *soma*=body), which are defined as physical complaints without identified medical abnormalities.

Somatoform disorders can be subdivided into four types relevant to functional respiratory disorders:

1. Conversion disorder—This relatively rare disorder typically occurs suddenly in association with a very stressful event in a patient’s life. The conversion symptoms usually are preceded by a psychological conflict or stressor that involves the development of a protective physical symptom. The medical complaint functions to resolve the psychological dilemma (i.e., converts a psychological conflict into a physical form). The physical symptom may suggest physical disease, but often does not follow a physiologic or anatomically appropriate pattern, such as conversion blindness or pseudoseizures. The conversion disorder serves two

Table 1.1 Psychiatric classification of some functional respiratory disorders

Somatoform disorders
Conversion disorder
Subconscious conversion of a psychological conflict to a physical symptom
Somatization disorder
Symptoms involve many organ systems, causing significant discomfort and distress
Pain disorder
Significant pain in the absence of physical findings
Hypochondriasis
Excessive fear of a serious illness persisting despite lack of medical evidence
Malingering
Pretending to have a significant symptom as an avoidance behavior
Factitious disorder (Munchausen’s syndrome)
Manufacturing of evidence that leads to diagnosis of a medical condition
Vocal tic disorders
Vocal or phonic tic may involve coughing, throat clearing, sniffing, grunting, squeaking, screaming, barking, blowing, and sucking sounds

psychological functions. The “primary gain” is to keep the emotional conflict or stressor out of conscious awareness, while the “secondary gain” can help get the person out of a difficult situation and gain sympathy.

An example of a functional respiratory disorder attributable to conversion involves a girl who developed vocal cord dysfunction because she was afraid of possible repercussions of disclosing that she had been abused sexually. Therefore, she subconsciously developed vocal cord dysfunction that made her unable to breathe properly and precluded her from speaking well. A patient suffering from a conversion disorder often appears minimally distressed by the symptom (termed *la belle indifférence*), probably because it solves an issue for him or her [29]. However, as *la belle indifférence* can be expressed by patients with identified medical disease as well, it alone does not reliably identify patients with conversion reactions [30].

2. Somatization disorder—This diagnosis is characterized by patients’ reports of multiple symptoms, typically involving many organ systems, and causing significant discomfort and distress. Its respiratory manifestations can include shortness of breath, palpitations, and chest pain. Often, patients have seen multiple health-care providers for their various symptoms and may have been prescribed multiple medications. Thus, a patient with habit cough as a result of somatization disorder also might complain of headaches and recurrent abdominal discomfort [3].
3. Pain disorder—Patients with this condition report significant pain that may even cause disability in the absence of physical findings to explain the extent of the symptom. For example, a patient with asthma might complain of severe debilitating chest pain associated with relatively mild exacerbations of his or her condition.
4. Hypochondriasis—Patients with hypochondria have a fear that they have serious illness such as asthma or lung cancer, even though medical tests show no abnormality. Despite reassurance from their physicians that their symptoms do not indicate serious illness, patients with hypochondria may remain excessively worried and preoccupied with the symptoms. Often, such patients may seek multiple medical opinions in search of a “real” diagnosis. Although not classified as hypochondriasis, some parents of a child with dyspnea without an identifiable medical cause may refuse to accept the diagnosis of a functional disorder. Such parents typically are concerned that serious harm might come to their child if an underlying medical cause remains undiagnosed.

Two rare psychiatric diagnoses that can lead to functional respiratory symptoms and are unrelated to somatoform disorders are:

1. DSM-IV-TR (V65.2) malingering [28]—In which the patient voluntarily produces symptoms to attain some goal. For example, a teenager may lie or exaggerate about development of dyspnea in association with exercise in order to avoid participation in gym class.
2. DSM-IV-TR (300.19) factitious disorder (Munchausen’s syndrome) [28]—In this unusual situation, patients seek medical attention to such a degree that they manufacture evidence that would lead to diagnosis of a medical condition. For

example, a patient might inhale an irritating substance in order to induce coughing. (Munchausen's by proxy involves a caretaker who manufactures evidence that leads to an erroneous medical diagnosis in their child.)

It should be noted that persistent malingering with respiratory symptoms may be uncommon and factitious disorder in this setting is rare [2].

DSM-IV-R (307) tic disorders [28] is another diagnostic category associated with respiratory conditions:

1. Chronic vocal tic disorder—Vocal or phonic tics may involve coughing, throat clearing, sniffing, grunting, squeaking, screaming, barking, blowing, and sucking sounds [31]. The duration of chronic tic disorder is defined as longer than 1 year.
2. Transient tic disorder—Duration less than 12 consecutive months.
3. Tourette's disorder—This disorder involves multiple motor and vocal tics. Given that it appears to have some genetic basis, patients with tics related to Tourette's disorder should not be classified as having a functional respiratory disorder.

In cases involving psychiatric disorders, patients should be referred to providers specializing in mental health care.

Diagnosis of Functional Respiratory Disorders

An evaluation for functional respiratory disorders should include a thorough medical history, including a review of symptoms suggestive of functional respiratory disorders, as listed in Table 1.2. When inquiring whether patients are symptomatic during sleep, it is important for clinicians to keep in mind that while functional respiratory symptoms usually (but not invariably) resolve during sleep, they frequently worsen when the patient is lying awake in bed. Patients who report that their respiratory symptoms only are triggered in certain circumstances are more likely to have a functional respiratory problem. For example, vocal cord dysfunction is more likely to occur in competitive athletic situations rather than during athletic practice.

Following physical examination, and measurement of hemoglobin saturation with pulse oximetry, pulmonary function testing should be performed, if the patient is capable of cooperating. Additional diagnostic procedures might be appropriate including a chest x-ray (e.g., to exclude the possibility of foreign body aspiration or other pulmonary abnormality), blood gas analysis (e.g., to check for evidence of hypocapnia as a marker of hyperventilation), exercise or cold-air bronchoprovocation testing (e.g., to assess for asthma or vocal cord dysfunction), pertussis serological titers (e.g., to check for a cause of harsh prolonged cough), and flexible bronchoscopy (e.g., to check for vocal cord dysfunction, foreign body, or tracheomalacia) [11, 24]. Assessment for psychological issues such as panic, depression, and family disorganization also may be very helpful for managing asthma and other respiratory conditions with possible functional components [9].

Clinicians should keep in mind that identified abnormalities, such as may be discovered during bronchoprovocation testing, might not be the cause of a presenting

Table 1.2 Symptoms suggestive of functional respiratory disorders

Respiratory symptoms

Chest pain in the absence of cardiac or gastrointestinal disease

Difficulty with inspiration^a

Disruptive cough^b

Dyspnea despite normal lung function^c

Hyperventilation (which patients may term breathing too fast)

Inspiratory noise (e.g., stridor, gasping, rasping, or squeak)^a

Localization of breathing problem to the neck or upper chest^{a, c}

Sighing^c

Other symptoms

Anxious appearance

Dizziness^c

Feeling something is stuck in the throat

Lifted shoulders

Palpitations

Paresthesias^c

Shakiness^c

Tics^b

Weakness

Symptom characteristics

Absence during sleep or when patient is distracted

Associated with a particular location or activity

Emotional response to symptoms

Emotional trigger of symptoms

Exposure to traumatic life event

Incomplete response to medications

^aSuggestive of vocal cord dysfunction^bSuggestive of habit cough^cSuggestive of functional dyspnea/hyperventilation

Adapted from Anbar RD, Geisler SC. Identification of children who may benefit from self-hypnosis at a pediatric pulmonary center. *BMC Pediatrics* 2005; 5: 6, with permission

functional symptom. For example, some patients with anxiety-induced dyspnea have been diagnosed erroneously as having asthma-associated dyspnea solely on the basis of their abnormal bronchoprovocation test results. In such situations, the clinician should consider the possibility of a functional component when patients fail to respond to asthma therapy.

Habit cough and vocal cord dysfunction can be diagnosed based on characteristic symptoms, as discussed in Chaps. 5 and 6. However, when functional respiratory disorders occur in association with organic disease (Scenario 2), some of the symptoms can be attributed to either psychological or organic causes. For example, vocal cord dysfunction can be triggered by psychosocial stressors, gastroesophageal reflux to the level of the larynx, or postnasal drip associated with chronic sinusitis. Clinicians should be alert for any symptoms suggestive of a functional etiology as part of the initial assessment of patients presenting with pulmonary complaints. When such symptoms are identified, patients benefit from receiving concurrent

assessment and treatment for organic and functional disease. In this way, they are likely to improve more readily. Further, a prompt, complete, and comprehensive diagnostic approach may avoid extensive testing that frequently is undertaken when the diagnosis of a functional respiratory disorder is considered one of exclusion. Such testing can cause patients to feel more certain that they have a serious medical condition and thus less receptive to therapy for what turns out to be a functional disorder [24].

It should be kept in mind that airway behavior varies across the life span [32]. A complex interaction exists involving gender differences, sociocultural influences, and biologic factors such as lung size and immunological and hormonal factors since all may have an impact on airway behavior. Thus, stages of child development also play a role in the presenting characteristics of patients with functional respiratory disorders. For example, habit cough has been described primarily in pediatric and adolescent populations and as occurring much less commonly in adults [31]. Patients with habit cough are more likely to present with barking or honking cough during childhood, as compared to when they are older [31, 33].

Treatment of Functional Respiratory Disorders

Treatment of functional respiratory disorders requires acknowledgement of its existence by the patients, families, and the health-care staff. Some patients may be resistant to the idea that there is a psychological trigger of their symptoms because they feel that this means the clinicians do not believe their symptoms are real. The patients may think that the clinicians believe, “it’s all in my head,” think they are mentally disturbed, or that they are purposely causing their symptoms. When the possibility of a functional disorder is raised in such situations, patients feel disbelieved or dismissed, as if they are being given the functional diagnosis merely because the clinician is incapable of ascertaining the true medical cause. When this occurs, at minimum, rapport is disturbed, and frequently patients choose not to return for follow-up. When patients feel repeatedly disbelieved by medical practitioners, they may end up seeking care from nonmedical providers who might be unhelpful or unscrupulous [2]. Some patients may demonstrate an escalation of their symptom as a way of convincing the clinician that something is “truly” wrong [1].

Other patients reject the idea that they might have control over their symptoms because they do not feel strong enough emotionally to cope with the responsibility of taking care of themselves. Also, they may fear that they will be blamed if their symptoms fail to improve. Yet others may not want their symptoms to resolve because they benefit from secondary gain.

In situations when patients seem nonreceptive to the diagnosis of a functional disorder, clinicians should help the patients clarify their thoughts and feelings through a careful interview process, offer the patients reassurance that their thoughts are valid, and review various options regarding how their symptoms might be addressed [34]. For example, clinicians might begin by reassuring the patients that

Table 1.3 Treatment of functional respiratory disorders

	Acute	Chronic
Origin	Often minor stressors	Often major or multiple stressors
Treatment	Reassurance	Refer to mental health professional
Options	Address underlying organic disease Self-regulation strategies Pharmacologic therapy	Address psychological stressor Address psychiatric diagnosis Pharmacologic therapy

their symptoms are real, even if they are subjective. It can be emphasized that the functional nature of the symptoms provides an opportunity for utilization of self-regulatory therapies that give patients control, and gives them a chance to help themselves without the need for medications with their associated risk of side effects. The clinicians should state clearly that a patient’s ability to help symptoms resolve does not mean that the symptoms are not real or caused by the patient. An analogy that might be useful in this setting is reminding the patients of how they felt while learning how to ride a bicycle. While the patients did not cause themselves to fall off their bicycle on purpose, ultimately they learned to ride a bicycle by learning how to think differently. In some cases, referral to a respiratory specialist can help reinforce the functional diagnosis and help assure the patient that serious pathology is unlikely. When patients are receptive, mental health professionals can serve as a therapeutic bridge between their medical provider and functional symptoms.

The health-care staff may grow impatient and frustrated with providing care for patients with functional respiratory disorders because medical causes of the symptoms often cannot be identified, and even when the symptoms are associated with medical illness, they do not improve readily with standard therapy. Under such circumstances, patients and their families often are blamed for the lack of improvement. The medical staff also may be inclined to provide further therapeutic interventions based upon their frustration because the patient who is suffering with a functional disorder is not improving. Thus, it is important to review with health-care staff the nature of functional respiratory symptoms and appropriate approaches to patients with these symptoms.

Therapeutic approaches differ for acute and chronic functional respiratory disorders (Table 1.3):

1. Acute—These patients account for the majority of those with functional respiratory disorders. Their symptoms often are associated with acute stressors, such as vocal cord dysfunction that occurs in association with an athlete’s desire to excel during a competition, or habit cough that arises following an upper respiratory infection.

Acute symptoms sometimes resolve with reassurance alone, which can be provided through physician disclosure of benign medical findings [24]. It can be important for reassurance to be accompanied by an explanation of how the functional respiratory disorder may have arisen as a result of physiologic or neurologic

dysregulation. When a patient is told, instead, that there is no disease, he or she may feel as if the clinician has not undertaken sufficient investigations. For example, a patient with habit cough might be told that the cough was caused by discomfort in the throat as a result of an upper respiratory infection, and that ongoing coughing perpetuated the throat discomfort that led to the persistence of the cough; or a patient with vocal cord dysfunction might be told that the condition occurred as the body's way of saying the patient was stressed.

Some acute functional symptoms that are triggered by an identified disease (Scenario 2) simply resolve with its successful treatment. (For example, when uncontrolled asthma causes anxiety with associated dyspnea, treatment of the asthma often helps relieve the anxiety.)

If acute symptoms do not improve with the aforementioned approaches, they usually resolve readily shortly after patients are taught self-regulation techniques such as biofeedback (Chap. 10), breathing relaxation techniques (Chap. 11), hypnosis (Chap. 12), or speech therapy (Chap. 13). Importantly, these therapies typically also help the patient cope better with any psychological stressor that may have triggered the acute symptoms, and can even help patients when they encounter future life stressors. For example, the breathing relaxation techniques used to prevent vocal cord dysfunction recurrence in a competitive athlete can also help calm the athlete's psychological reactivity to competitive challenges. Pharmacologic treatment of exercise-induced vocal cord dysfunction with the inhaled anticholinergic ipratropium bromide may be therapeutic in this setting because the symptom is triggered through cholinergic stimulation that is mediated through the vagus nerve (Chap. 6). If acute symptoms do not resolve readily, then referral to a mental health specialist should be encouraged [34].

2. **Chronic**—Some patients develop chronic, persistent functional respiratory disorders, related to a significant psychological disturbance. For example, a patient might develop habit cough following a parent's death, or vocal cord dysfunction because of sexual abuse. In this setting, the functional symptom may act as an answer to the patient's dilemma. For example, development of dyspnea is a face-saving solution for a patient who does not want to participate in a sport despite parental urging. Another patient might develop habit cough as a way of expressing her worry about her father's smoking of cigarettes. As previously discussed, conversion disorder represents the classic diagnosis in which a symptom serves as a solution to an emotional conflict.

In patients with chronic symptoms, the underlying psychological issue needs to be explored and treated in order for symptoms to improve or resolve. A primary care provider may be in the position of helping some of these patients when sufficient time is allotted for a discussion of their psychosocial stressors and with application of appropriate cognitive behavioral techniques (Chap. 9). However, patients with psychiatric symptoms such as anxiety or depression should be referred to a mental health-care provider [34]. In rare instances, pharmacotherapy, especially with antidepressants, has been helpful in the treatment of persistent functional disorders (Chap. 14) [35].

The choice of therapy for a functional respiratory disorder primarily is based on the needs of the patient as well as on the clinician's expertise. In the third section of this book, "Treatment of Functional Respiratory Disorders," different treatment modalities for patients with functional respiratory disorders are described. Some of these therapies can be offered by primary care providers or pulmonologists who have the time and expertise to employ them. Qualification for providing such treatment may require clinicians to receive additional training.

Caveats

When functional manifestations of illness are treated without regard to potential underlying psychological issues, the physical symptoms may persist because they serve an important psychological function for the patient who is concurrently dealing with emotional stressors. On the other hand, when functional symptoms improve or resolve, patients may need to find another way of expressing their psychological issues. Rarely, improvement of functional symptoms may result in symptom substitution [36], wherein a new symptom arises that does not necessarily involve the respiratory system. For example, a child who had vocal cord dysfunction may subsequently develop hyperventilation with associated panic disorder, while another child with long-standing habit cough that resolved with hypnosis may later develop chronic headaches. In other situations, the patient may experience increased mental distress following resolution of a functional symptom.

Misdiagnosis of an organic disease as being attributable to a functional cause can delay the appropriate medical treatment. In one study, approximately a quarter of patients referred for hypnosis for a suspected functional disorder had an unrecognized biologic basis for their symptoms [37]. Thus, through close follow-up, clinicians should be prepared constantly to reevaluate their diagnoses if symptoms fail to improve. Even if the symptoms improve, clinicians should continue to monitor their patients for recurrence of the same or other symptoms that might reflect medically treatable disease, analogous to follow-up provided when patients are treated with medications for other conditions.

Conclusions

Patients with functional respiratory disorders benefit from prompt identification and therapy, which prevents perpetuation of the associated symptoms, development of sequelae, unnecessary medical investigations, and prescription of ineffective medical therapy that might have harmful side effects.

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