Chapter 13
Psychological Morbidity in Patients with Vestibular Disorders

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Introduction

From the 1870s to the 1890s, physicians in Germany, France, and elsewhere engaged in a lively debate about the relative contributions of neurotologic, neuro-ophthalmologic, and psychological processes to the onset and persistence of vestibular and balance symptoms. As reviewed wonderfully by Balaban and Jacob [1], papers written at that time included the one of the most elegant descriptions of panic attacks recorded anywhere in the medical literature, an observation that anxiety-related personality traits might predispose patients to persistent dizziness after they sustained vestibular insults, the concept of fear of fear, and recommendations for treating patients with repeated exposure to provocative situations, forerunners of cognitive behavioral therapy in psychology and vestibular rehabilitation in physical therapy. With the discovery of caloric irrigation and advent of psychoanalytic theories in the early twentieth century, however, these integrative insights were lost as the fields of neurotology and psychiatry matured quite separately from one another, although intriguingly, Robert Bárány, who won the Nobel Prize in 1916 for describing the caloric response, studied for a time under Sigmund Freud in Vienna [2]. In the 1950s, coexisting vestibular and psychological symptoms were observed once again. Hysteria and anxiety were recognized as causes of vestibular and balance symptoms and anxiety and depression as sequela of vestibular illnesses, often dominating the long-term clinical picture. They could be treated successfully with vestibular rehabilitation ranging from repeated sets of bending at the waist while standing to the then newly described Cawthorne–Cooksey exercises [3]. After the

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publication of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) in 1980 [4], the first systematic studies using modern definitions of anxiety and depressive disorders were undertaken to investigate the incidence and prevalence of these conditions in patients with vestibular and balance disorders and vice versa [5–15]. Investigations in humans [16–22] and animals [23–25] also provided a framework for understanding the effects of threat and anxiety on postural control. Neuroanatomical studies identified links between threat/anxiety and vestibular networks from brainstem to cerebral cortex (please see Ref. [26] for review). More recent clinical epidemiologic investigations confirmed the high prevalence of anxiety and depressive disorders (up to 50%) in patients with various vestibular illnesses [27–32] and demonstrated the adverse effects of anxiety and aberrant illness perceptions on the outcomes of pharmacologic [33] and rehabilitative treatments [34, 35].

Normal Effects of Threat and Anxiety on Posture and Gait

Before reviewing clinically significant effects of anxiety on posture and gait, it is worthwhile summarizing research on the normal influences that threat assessment exerts on locomotion. In human studies, investigators used the threat of height to compare posture and gait parameters, physiologic markers of instinctive fear, and self-reports of anxiety-related variables while healthy volunteers were standing or walking on raised platforms versus at ground level [16, 18–22]. In animals, researchers manipulated trait and state anxiety while measuring locomotion on elevated mazes [23–25]. In studies of healthy human volunteers, the threat of height altered stance, tone of antigravity muscles, autonomic activation, perception of motion, and confidence in balance [16, 17, 19–21]. While standing on a platform 10 ft (3.2 m) above floor level, participants instinctively leaned back from the edge and reduced their postural sway displacement by stiffening their lower leg musculature. The gain of the soleus reflex increased by an average of 10%. Sympathetic tone also increased. Cognitively, participants overestimated voluntary forward sway by 2–10%. Emotionally, they reported less balance confidence [19, 20]. Curiously, the threat of height induced smaller changes in patients with unilateral peripheral vestibulopathies than in healthy volunteers [36]. The threat of height also changed posture and gait dynamics. Compared to ground level, healthy human participants rose from standing flat footed onto tiptoes more slowly at height, and even more slowly at the edge than in the center of a raised platform [16]. Healthy persons also walked slower and took shorter strides on a raised catwalk than on the ground, an effect that increased with age [18]. Threat of height amplified the mutual interference of cognitive-motor dual tasking (e.g., answering questions while walking). Both response times to questions and gait speed were slower at height than at ground level [22].

In a mouse model, investigators used pharmacologic manipulations and comparisons of strains of mice with inherently different levels of anxiety-related

behaviors to study the effects of threat and anxiety on locomotion [23–25]. Animals from a strain of mice selectively bred for highly anxious behaviors made more pauses, slips, and falls on an elevated rotating beam than mice from a nonanxious strain. Their performance improved to the level of the nonanxious mice after they were treated with the anxiolytic antidepressants, fluoxetine or paroxetine, or the benzodiazepine, diazepam. In contrast, the balance function of mice from the nonanxious strain deteriorated after they were treated with the anxiogenic agent beta carboline (β-CCM) [24, 25].

In these human and animal experiments, the mechanics of stance and gait were identical at ground level and at height, but the consequences of failure were greater at height. Thus, perception of the threat of height induced top down adjustments in the functioning of postural control reflexes, gait dynamics, and autonomic arousal, and produced cognitions of fear of falling and loss of balance confidence that were not present at ground level. Importantly, these changes did not run in lockstep. Spinal reflex and cortical activity were not correlated. Neither were spinal reflexes, autonomic arousal, state anxiety, and cognitive appraisal [21]. This indicates that human beings vary control of the reflexes and learned behaviors of locomotion and associated emotions and cognitions in a nuanced manner depending on the situational risks of everyday circumstances.

Prevalence of Anxiety and Depressive Disorders in Patients with Vestibular Symptoms

Anxiety disorders may be a primary cause of vestibular symptoms or develop secondary to acute, episodic, or chronic vestibular disorders. Additionally, patients with pre-existing anxiety disorders may experience an exacerbation of their condition after onset of vestibular illnesses [27, 37]. Panic attacks are the most common anxiety-related cause of vestibular and balance symptoms. In tertiary care centers, panic disorder was identified as the primary diagnosis of 8–10% of all patients referred for evaluation of vestibular symptoms [7, 29, 37, 38]. Panic attacks may be caused by panic disorder, other anxiety disorders, medical conditions (e.g., hyperthyroidism), or states of substance intoxication or withdrawal. Vestibular and balance symptoms caused by panic attacks include dizziness, unsteadiness, and mild vertiginous sensations, but not sharply spinning vertigo or ataxia [39, 40]. Patients with vestibular symptoms caused by panic attacks may have an unmistakable presentation of sudden, overwhelming fear accompanied by palpitations, chest pain, dyspnea, tremulousness, and diaphoresis. However, when vestibular symptoms dominate clinical manifestations of panic attacks, chest symptoms are less prominent than light-headedness, nonspecific swirling sensations, or fogginess in the head with autonomic symptoms reminiscent of motion sickness. If patients with such symptoms acknowledge anxiety, they tend to attribute it to worry about being dizzy. Nonetheless, there are very few other causes of episodic dizziness, unsteadiness,

and autonomic symptoms without headache or aural symptoms peaking in 2–5 min, then decreasing spontaneously over another 15–60 min, with low level lingering sensations for a few more hours. Vestibular migraine, which may present like this, often coexists with anxiety disorders [38]. Generalized anxiety disorder, which manifests chronic worry accompanied by restlessness, irritability, muscle tension, fatigue, or insomnia, may cause nonspecific dizziness, lightheadedness, heavy-headedness, or foggy-headedness that is severe enough to trigger neurologic or otologic consultation [39, 40]. However, it is more likely to develop secondary to a vestibular disorder or present as a pre-exiting condition worsened by an incident vestibular illness [37]. During vestibular examination procedures, such as positional or positioning tests, patients with panic attacks or generalized anxiety disorder may report troublesome dizziness. They also may complain of unsteadiness and demonstrate falls or near falls on dynamic posturography, but they will not have signs of pathological nystagmus or ataxia due to their psychopathology. When present, these signs in patients with anxiety disorders indicate co-occurring neurotologic illnesses [41].

Patients with functional gait disorders may complain of dizziness or unsteadiness that suggest the presence of structural neurologic or vestibular disorders. The key diagnostic feature of a functional gait disorder is variability of symptoms and signs over time and tasks. Examples include patients whose stance and gait vary over the course of an examination, ones who can successfully perform more challenging than simpler tasks (e.g., able to stand on one leg, but not in tandem), and those whose abnormal signs improve with dual tasks or distraction (e.g., reduction in abnormal body sway in Romberg position during simultaneous finger-to-nose testing). Importantly, functional gait disorders may coexist with or develop secondary to structural vestibular illnesses [42] or psychiatric disorders such as posttraumatic stress disorder. Contrary to common teaching, patients with functional gait disorders may experience falls or other physical injuries, such as a patient examined by this author who developed degenerative arthritis in both hips after a decade of walking with a functionally splayed gait. Fortunately, patients with functional gait disorders may be treated quite successfully, with 70% of patients achieving sustained improvement with specialized physical therapy [43]. The primary intervention is motor reprogramming or retraining therapy also called behavioral shaping therapy delivered by a physical therapist experienced in treating functional neurologic conditions [43], sometimes in conjunction with cognitive behavioral psychotherapy for associated psychological factors [44].

Patients with the condition called somatic symptom disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [45] or bodily distress disorder in the 11th edition of the International Classification of Diseases (ICD-11) [46] may experience chronic dizziness as one burdensome symptom among others such as chronic pain and fatigue. When present, this condition usually requires a multidisciplinary rehabilitation plan. Addressing vestibular symptoms apart from a comprehensive intervention for the full spectrum of somatic symptoms is too often futile [47].

Clinicians sometimes worry about patients faking symptoms to achieve undeserved gains [48]. Data suggest little reason for such concerns in routine neurotologic practice. For example, only 2 of 345 (0.6%) patients in a large retrospective study of individuals referred to a tertiary care specialty clinic for patients with longstanding dizziness were diagnosed with primary functional gait disorders and none with factitious disorders or malingering [38]. In certain environments such correction facilities or military service, the prevalence of these conditions may be higher.

New onset, secondary psychiatric disorders are more common in patients with vestibular illnesses than primary psychiatric causes of vestibular and balance complaints. In addition, patients with a strong anxiety diathesis in the form of a significant family history of anxiety disorders, an anxious (neurotic) temperament, or pre-existing anxiety disorder may experience a significant worsening of their anxiety with the onset of vestibular illnesses [37]. Studies conducted in the 1990s [5–15] and second group of investigations completed after 2000 [27, 30–32, 49] found that rates of anxiety or depressive disorders ranged from 24% to over 50% among patients who had been ill with a vestibular condition for more than 1 year. The nature of the vestibular disorder may play a role in the prevalence of psychiatric morbidity. Acute peripheral vestibulopathies such single attacks of vestibular neuritis and chronic stable disorders such as bilateral vestibulopathy are associated with lower rates of anxiety or depressive disorders (weighted average from the three latest studies of 26%) than episodic peripheral disorders such as benign paroxysmal positional vertigo or Menière's disease (weighted average of 40%) or episodic central disorders such as vestibular migraine or vestibular paroxysmia (weighted average of 52%) [27, 31, 49]. Two potential explanations have been offered for this twofold range. A neurophysiologic hypothesis posited that recurrent abnormal stimulation of anxiety pathways by episodic vestibular disorders (i.e., from vestibular nuclei to parabrachial nuclei in the brainstem and then to the amygdalae in the temporal lobes) is more likely to drive the development of anxiety disorders than a one-and-done acute vestibular disorder or a chronic condition marked by stably diminished vestibular input [50]. A behavioral hypothesis suggested that the unpredictability of recurrent attacks of episodic vestibular disorders is more anxiety-provoking and demoralizing than a single period of illness or a predictable chronic condition [51]. Of course, these hypotheses are not mutually exclusive though the latter provides an explanation for the increased prevalence of both anxiety and depressive disorders in patients with vestibular illnesses.

Effects of Anxiety Disorders on Vestibular and Balance Function Tests

Several research groups described results of vestibular laboratory tests in patients with panic and other anxiety disorders [8–10, 12, 14, 52, 53]. Isolated abnormalities on tests of vestibular and oculomotor reflexes were not uncommon, but these varied among subjects within and between investigations. In the two most detailed of these analyses, Jacob et al. [10] found that persistent hypersensitivity to motion stimuli and agoraphobic avoidance were positively, but not universally, associated with the presence of compensated peripheral vestibular deficits on balance function tests and Furman and colleagues [54, 55] found that patients with anxiety disorders had slightly higher gains and shorter time constants on caloric testing of the canal-ocular reflex and slightly higher gains on off-vertical axis rotation testing of the otolith-ocular reflex than nonanxious control subjects, though none of these results was clinically significant (i.e., not diagnostically meaningful). More recently, Angov and colleagues [52] found no differences in the results of cervical or ocular vestibular evoked myogenic potentials or video head impulse tests in patients with panic disorder compared to age- and sex-matched healthy volunteers. Thus, the results of these studies suggest that nonspecific, isolated abnormalities on tests of semicircular canal, otolith, or oculomotor reflexes should be interpreted with caution in patients with anxiety disorders and not taken as evidence of peripheral or central vestibular deficits in the absence of well correlated clinical histories or physical examination findings.

In contrast to the lack of clinically meaningful effects of anxiety disorders on tests of vestibular and oculomotor reflexes, investigations using static and dynamic posturography demonstrated that anxiety disorder have a clear influence on balance functioning. Patients with panic disorder swayed more on static posturography [56] and were more likely to be destabilized by disorienting visual or somatosensory cues on dynamic posturography than healthy control subjects [15, 57]. Postural instability correlated positively with agoraphobic avoidance and anticipatory anxiety [15, 56]. Patients with anxiety disorders showed more vision and surface dependence than healthy control subjects on the Sensory Organization Test (SOT) [10]. Subjects with anxiety disorders plus heightened sensitivity to motion cues performed particularly poorly on SOT Conditions 3 and 4, where visual or somatosensory information is misleading. Posturographic performance improved in 15 patients with panic disorder after treatment with the anxiolytic antidepressant, paroxetine [58]. These physiologic investigations counter the erroneous notion that poor performance on Conditions 3 and 4 or across the board on all conditions is an indication of malingering [48, 59, 60].

Effects of Coexisting Anxiety on Treatment of Vestibular Disorders

Anxiety may adversely affect the outcomes of medical or surgical treatment for vestibular diseases. In one illustrative example, Boleas-Aguirre and colleagues [33] prospectively followed 103 patients with Menière's disease for a mean of 5.3 years after treating them with transtympanic gentamicin. Although they achieved excellent control of episodic vertigo attacks, pretreatment anxiety-related functional impairment predicted the persistence of chronic nonvertiginous dizziness at their final outcome point. Specifically, 16 patients (15.5%) developed chronic unsteadiness after gentamicin treatment, most of whom had pretreatment scores on the Autonomic/Anxiety subscale of the Vertigo Symptom Scale indicative of clinically significant anxiety. These subjects reported no reduction in dizziness handicap following treatment. This authors' integrated neurotology team regularly screens patients for anxiety and depression and offers presurgical interventions to patients with Menière's disease when needed, including treatment with anxiolytic antidepressants, psychotherapy, and physical therapy modeled on the prehabilitation studies of Magnusson and colleagues [61]. Anecdotal experience found that adequate control of psychiatric morbidity avoided surgical treatment in some patients.

Emerging Focus on the Influence of Illness-Related Anxiety, Beliefs, and Behaviors on Patient Outcomes

To summarize results of work since the 1990s: (1) Anxiety disorders, primarily panic attacks triggered by panic disorder or other illnesses, are the primary diagnoses for 8–10% of patients presenting with vestibular symptoms. (2) A pre-existing anxiety diathesis may be exacerbated by the onset of a vestibular illness. (3) Vestibular illnesses commonly trigger new onset, secondary anxiety and depressive disorders. (4) The combination of (2) and (3) create a situation in which one-quarter to one-half of patients who have had vestibular disorders for more than 1 year suffer with coexisting psychiatric morbidity. (5) The nature of vestibular illnesses may be one factor associated with high rates of psychiatric comorbidity, with episodic vestibular syndromes twice as likely to trigger or exacerbate psychiatric disorders than one-time acute or stable chronic conditions. (6) Anxiety disorders may produce minor, nonspecific abnormalities on tests of canal, otolith, and oculomotor reflexes. (7) Anxiety disorders may substantially disrupt performance on static and dynamic posturography. (8) Close neuroanatomical links between vestibular and anxiety networks from brainstem to cortex subserve safe and secure locomotion and also underlie the strong propensity for vestibular and psychiatric illnesses to coexist and the effect of anxiety on vestibular and balance tests.

This knowledge, which placed 150-year old observations [1] in the context of early twenty-first century concepts of vestibular physiology and psychopathology,

Table 13.1 Vestibular activities avoidance instrument

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree
1. It is difficult for me to do strenuous homework or yard work because of my dizziness.						
2. My participation in social activities, such as going out to dinner, going to the movies, dancing, or going to parties, is significantly restricted because of my dizziness.						
3. My dizziness interferes with my job or household responsibilities.						
4. I cannot do physical activities, which might make my dizziness worse.						
5. I can't do all the things normal people do because of my dizziness.						
6. I am afraid that I might make myself dizzy or unsteady if I exercise.						
7. I am afraid to leave my home without having someone go with me because of my dizziness.						
8. I should not do my regular work with my present dizziness.						
9. My work makes my dizziness worse.						

Modified from Dunlap PM, Marchetti GF, Sparto PJ, Staab JP, Furman JM, Delitto A, Whitney SL (2021) Exploratory factor analysis of the vestibular activities avoidance instrument. JAMA Otolaryngol Head Neck Surg 147(2):144–150 with permission of the publisher

did not identify actionable interventions specifically related to the human factors of having a vestibular illness. Therefore, research begun in the late 2010s delved more deeply into illness-related anxiety, beliefs, and behaviors that may perpetuate vestibular and balance conditions and impede recovery from these disorders. Investigators gathered quantitative measures that were being used to assess vestibular and psychological symptoms in patients with vestibular disorders and obtained additional input from experts in the field using a Delphi process to create an 81-item Vestibular Activities Avoidance Instrument (VAAI) [62]. After item reduction and validation studies were conducted, a final 9-item VAAI questionnaire was published that contained queries about patients' core beliefs and behaviors related to their vestibular and balance symptoms (Table 13.1) [34]. An early treatment outcome

study showed that high baseline scores on the VAAI correlated with persistent vestibular symptoms and handicap and poorer levels of functional recovery [35]. Thus, the VAAI may cut across categories of vestibular and psychiatric disorders to identify transdiagnostic, illness-related anxiety (e.g., item #6—"I am afraid that I might make myself dizzy or unsteady if I exercise."), beliefs (e.g., item #8—"I should not do my regular work with my present dizziness."), and behaviors (e.g., item #2—"My participation in social activities … is significantly restricted because of my dizziness.") that may be amenable to behavioral interventions such as psychologically informed vestibular rehabilitation or formal cognitive behavior therapy.

Detecting Psychiatric Disorders in Patients with Vestibular Illnesses

Given the high prevalence of psychiatric disorders in patients with vestibular illnesses and the fact that anxiety disorders, in particular, affect illness manifestations, laboratory assessments, and treatment outcomes, proper recognition and management of these conditions are essential to optimize patient care. Fortunately, several simple and reliable methods are available to accomplish this task in busy neurologic, otologic, audiologic, physical therapy, and primary care practices.

Patient Self-Report Questionnaires

The easiest and most reliable approach to detecting psychiatric morbidity in patients with vestibular disorders is to use short, validated patient self-report questionnaires as a routine part of diagnostic consultations.

1. Dizziness Handicap Inventory (DHI)—The DHI, a 25-item questionnaire, is one of the most widely used measures of dizziness-related handicap in the world [63]. It contains three subscales, including an emotional (E) subscale. However, the subscale structure of the DHI is not well-validated, so it is best to calculate only the total score. Fortunately, this single metric can give a strong clue about the presence or absence of psychiatric illnesses. Graham and colleagues [64], based on data from two tertiary dizziness centers, found that a total DHI score >60 indicated the presence of a functional vestibular or psychiatric disorder with a specificity of 0.88. High DHI scores did not identify specific diagnoses; rather, they identified the strong likelihood that a functional vestibular or psychiatric disorder was present with or without structural illnesses. Conversely, a total DHI score $\leq$30 indicated the absence of a functional or psychiatric disorder with a specificity of 0.98.
2. Vertigo Symptom Scale (VSS)—The short form of the VSS is a 15-item questionnaire with two subscales, including an autonomic/anxiety subscale that was

derived from a questionnaire for panic disorder [65]. As such, a high score on the VSS autonomic/anxiety subscale suggests the need for further attention to the presence of anxiety disorders.

3. Patient Health Questionnaire (PHQ-9)/Generalized Anxiety Disorder Scale (GAD-7)—The patient-rated PHQ-9, a 9-item scale for depression, and the GAD-7, a 7-item scale for anxiety, both available in many languages, were derived from a standardized set of clinician-administered questionnaires developed to screen for five classes of psychiatric illnesses in primary care settings [66]. Persoons and colleagues [32] validated these tools in adults with vestibular disorders. A 4-item version, the PHQ-4, which has two questions each to screen for anxiety and depression is available free of charge without copyright restrictions at https://www.phqscreeners.com.
4. Vestibular Activities Avoidance Inventory (VAAI)—The 9-item VAAI (Table 13.1), which was just published, queries patients about illness-related anxiety, beliefs, and behaviors that are not covered by other instruments designed for use in patients with vestibular and balance disorders [34]. It may develop into a useful tool for identifying psychological barriers to successful therapeutic interventions.

A combination of the DHI or VSS, PHQ-4, and VAAI, would screen reliably for psychiatric and behavioral morbidity of greatest clinical significance for patients with vestibular disorders. With a total 28 or 38 questions, they present minimal burden for patients when included in paper or electronic previsit forms, and can be easily scored by hand or automated in electronic health records for routine use in diagnostic consultations.

Clinical History

In taking a clinical history from patients with vestibular and balance symptoms, filter the information through three questions [67]:

1. Are symptoms consistent with an active vestibular disorder? The present illness must involve conditions that are continuing to produce symptoms, or patients would not be seeking care. Therefore, if the history suggests a past event (e.g., an acute vestibular syndrome years ago), the current differential diagnosis must include structural, functional, and psychiatric disorders that could perpetuate illness (e.g., structural—an uncompensated peripheral vestibular deficit; functional—persistent postural perceptual dizziness, functional gait disorder; psychiatric—panic or generalized anxiety disorder, fear of falling).
2. If the history indicates that an active vestibular disorder is present, does it explain all of the symptoms that the patient is reporting? If not, then open the diagnosis to coexisting illnesses, including additional structural, as well as functional and psychiatric disorders.

3. Did the patient describe symptoms indicative of behavioral morbidity. With the knowledge that at least one-quarter of patients who have had vestibular symptoms for more than a year will have psychiatric comorbidity, expect them to provide clues in their history (e.g., restriction of activities due phobic avoidance, troubling worries about the consequences of their illnesses, demoralization).

Physical Examination

Positive findings on neurotologic examination are most likely to be present in patients presenting with complaints of spinning vertigo, ataxia, diplopia, or oscillopsia than nonvertiginous dizziness, unsteadiness, or vague visual symptoms [68]. Positive findings also are more likely to be present in patients presenting during acute vestibular syndromes (peripheral or central) or active attacks of episodic vestibular syndromes than otherwise. Patients with chronic vestibular syndromes arising from uncompensated peripheral vestibular deficits, central structural lesions, or bilateral vestibulopathies also may have positive findings on examination. Physical examination evidence of psychiatric morbidity includes excessive sway due to stiff legged stance on the Romberg test, slow or cautious gait, unnecessary reliance on gait aids, and anxious reactions to provocative maneuvers (e.g., Dix–Hallpike test).

Laboratory Tests

As described above, isolated or nonspecific abnormalities on laboratory tests of vestibular and oculomotor reflexes should not be overcalled as evidence of structural lesions [39–41, 69]. Anxiety, migraine, and mild traumatic brain injuries may cause nondiagnostic abnormalities on balance function tests [38]. Poor performance on dynamic posturography also may indicate the presence of psychiatric disorders, keeping in mind that posturography is a test of balance functioning and cannot be used for diagnostic classification [70].

Treatment of Psychiatric Morbidity in Patients with Vestibular Disorders

There have not been any large-scale, randomized, clinical trials of treatments specifically targeting psychiatric disorders in patients with vestibular illnesses. Thus, treatment options have to be extrapolated from the standards of care for patients with primary major depressive [71] and anxiety disorders [72]. Regarding medications, selective serotonin reuptake inhibitors (SSRIs) and serotonin norepinephrine

reuptake inhibitors (SNRIs) are first line treatments for depressive and anxiety disorders. Interestingly, small human [58] and animal studies [25] showed that SSRIs are capable of exerting corrective effects on anxiety-related abnormal postural control and locomotion. Anxiolytic antidepressants are considered to be more favorable than benzodiazepines for treating anxiety disorders, except in cases where rapid pharmacologic treatment is needed, and then in most cases only for a short-term to allow an anxiolytic antidepressant to be introduced. Cognitive behavioral therapy (CBT) is the most widely recommended form of psychotherapy for depressive and anxiety disorders, although interpersonal therapy and psychodynamic psychotherapy for major depressive disorder and panic-focused psychodynamic psychotherapy for panic disorder have supporting evidence as do newer variations of CBT such as acceptance and commitment therapy. Vestibular rehabilitation has been shown to reduce depressive and anxiety symptoms in patients with vestibular and balance disorders [73] and elements of CBT have been successfully combined with vestibular rehabilitation programs [74].

Conclusions

Psychiatric disorders, particular anxiety and depressive disorders, are very common in patients with vestibular illnesses, affecting up to 50% of those who have vestibular and balance conditions lasting for more than a year. Most psychiatric morbidity develops secondary to vestibular disorders, although 8–10% of patients presenting to tertiary neurotology practices have an anxiety disorder as the primary cause of their vestibular symptoms. Anxiety disorders affect the clinical manifestations of structural vestibular illnesses, may cause abnormalities on vestibular laboratory testing, particularly posturography, and may interfere with successful medical or surgical treatments of vestibular disorders if not properly identified and treated. Routinely incorporating short, validated patient self-report screening questionnaires for psychiatric symptoms into neurotologic consultations increases the likelihood of detecting clinically significant anxiety and depression. When identified, these psychiatric illnesses may be treated according to established guidelines for managing major depressive and anxiety disorders with anxiolytic antidepressants and psychotherapy. Vestibular rehabilitation also has a salutary effect on anxiety and depressive symptoms in patients with vestibular and balance disorders.

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