

Classification of vestibular symptoms: Towards an international classification of vestibular disorders

First consensus document of the Committee for the Classification of Vestibular Disorders of the Bárány Society

Alexandre Bisdorff^{a,*}, Michael Von Brevern^b, Thomas Lempert^c and David E. Newman-Toker^d

^aDepartment of Neurology, Centre Hospitalier Emile Mayrisch, L-4005 Esch-sur-Alzette, Luxembourg

^bVestibular Research Group Berlin, Department of Neurology, Park-Klinik Weissensee, Berlin, Germany

^cVestibular Research Group Berlin, Department of Neurology, Schlosspark-Klinik, Berlin, Germany

^dDepartment of Neurology, The Johns Hopkins University School of Medicine, Baltimore, MD 21287, USA

On behalf of the Committee for the Classification of Vestibular Disorders of the Bárány Society: Pierre Bertholon, Alexandre Bisdorff, Adolfo Bronstein, Herman Kingma, Thomas Lempert, Jose Antonio Lopez Escamez, Måns Magnusson, Lloyd B. Minor, David E. Newman-Toker, Nicolás Pérez, Philippe Perrin, Mamoru Suzuki, Michael von Brevern, John Waterston and Toshiaki Yagi

Received 4 February 2009

Accepted 1 September 2009

1. Introduction

The Committee for Classification of Vestibular Disorders of the Bárány Society was inaugurated at the meeting of the Bárány Society in Uppsala 2006. Its charge is to promote development of an implementable classification of vestibular disorders.

Symptom and disease definitions are a fundamental prerequisite for professional communication both in clinical and research settings. However, the perceived need for a formalized classification system, uniform definitions, or explicit diagnostic criteria varies somewhat by discipline. Having structured criteria for diagnosis is obviously mandatory for disciplines which rely heavily on symptom-driven syndromic diagnosis,

such as psychiatry and headache, where often there is no histopathologic, radiographic, physiologic, or other independent diagnostic standard available. However, diagnostic standards and classification are also crucial in areas of medicine such as epilepsy and rheumatology, where, although confirmatory tests do exist, there is substantial overlap in clinical features or biomarkers across syndromes.

Interestingly, not only scientific and therapeutic progress but also public awareness of psychiatric and headache disorders has vastly increased after the introduction of the Diagnostic and Statistical Manual of Mental Disorders (DSM) by the American Academy of Psychiatry and the International Classification of Headache Disorders (ICHD) by the International Headache Society (IHS). In contrast, vestibular nomenclature remains in its infancy. Other than the definition of Menière disease by the American Academy of Otolaryngology – Head and Neck Surgery (AAOHNS) [3]

*Corresponding author: Alexandre Bisdorff, Department of Neurology, Centre Hospitalier Emile Mayrisch, L-4005 Esch-sur-Alzette, Luxembourg. E-mail: alexbis@pt.lu.

and the Classification of Peripheral Vestibular Disorders by the Spanish Society of Otorhinolaryngology [4], we are unaware of other systematic efforts to create widely accepted classification criteria.

Although numerous advances in vestibular research have been made over the past several decades, there is now mounting evidence that the field may be hampered moving forward by the lack of explicit and uniform criteria for various clinical disorders. For example, witness the ongoing controversy surrounding the distinction between “vestibular migraine” and “vestibular Menière disease” [2] or the varied use of the terms “vestibular neuritis,” “cochleovestibular neuritis,” “labyrinthitis,” “cochleolabyrinthitis,” and “acute peripheral vestibulopathy” in the medical literature. Worse yet, problems of terminology have now been demonstrated at the level of describing core vestibular symptoms such as dizziness and vertigo. Even when studied in a single, English-speaking country, the term “vertigo” has been shown to have diverse meanings for patients [5], generalist physicians [6] and even otologists [6].

We believe the time is right to pursue development of the first International Classification of Vestibular Disorders (ICVD-I). Initially, we expect its predominant use would be to guide investigators conducting clinically-oriented vestibular research. It is our belief that, over time, well-honed research criteria will gradually spread to use in the clinical domain. We envision a staged and iterative development process that involves international experts from both neurology and otolaryngology backgrounds. It is our hope that the Bárány Society will partner with the AAOHNS and other neuro-otological associations who are willing to promote this project, including funding agencies whose priorities are to support vestibular research. To initiate this process, the Committee sought first to define key vestibular symptoms as a basis for a subsequent classification of specific vestibular disorders and then to build consensus around these formalized definitions.

2. Methods

The Bárány Society is an international society comprised of vestibular experts with a wide range of backgrounds from basic science, bioengineering, and space flight to clinical medicine and physiotherapy. At the XXIV Bárány Society Meeting 2006 in Uppsala, Sweden, the General Assembly decided to launch an initiative to elaborate a classification of vestibular disorders.

A small working group of clinicians formed a Classification Committee and began to draft the concept of the approach, analysing what existed in this area and what prior models to follow. The International Headache Society’s International Classification of Headache Disorders [7] provided the most inspiration.

Since there is no consensus on the use of terms to describe vestibular symptoms, the Committee decided to initiate the classification process by first defining and building consensus around formalized definitions of key vestibular *symptoms*. This document would then, in turn, serve as a basis for a subsequent classification of specific vestibular *disorders*. It was agreed upon that the definitions should cover all principal symptoms thought to arise from disturbances of the vestibular system, with this system defined broadly as the sensory inputs, central processing and motor outputs that relate to balance.

The discussion gradually involved members and opinion leaders worldwide, mainly through electronic communications as well as several in-person meetings and phone conferences. The task was to make the best compromise between traditional use of terms, modern developments, and practicability in the research and clinical settings. A first draft was presented at the XXV Bárány Society Meeting in Kyoto in April 2008 [8,9] with the opportunity for the delegates to discuss and cast votes on controversial issues from the Committee’s discussions.

The input from the Kyoto Meeting was very helpful for the Classification Committee to see what definitions were easily accepted and which were rejected or required further clarification. The draft was then discussed at the annual meeting in May 2008 in Lausanne, Switzerland of the French speaking Société Internationale d’Otoneurologie. Members of the latter society as well as members of the Spanish Comisión de Otoneurología de la Sociedad Española de Otorrinolaringología and the American Academy of Otolaryngology – Head and Neck Surgery (AAOHNS) joined the Bárány Society’s Classification Committee to finalize the present classification.

3. Results

In the attached document (Appendix 1), we present the first iteration of a consensus classification of vestibular symptoms (ICVD-I: Classification of Symptoms v 1.0) produced by the committee. The committee also developed an algorithm to facilitate coding of

symptoms observed in a particular patient (Appendix 2). Several broad principles were agreed upon as part of the consensus building process:

- 1) Symptoms chosen for definition should be broad enough to cover the spectrum of clinical symptoms typically resulting from vestibular disorders yet specific enough to enable effective research.
- 2) No “vestibular” symptom has a totally specific meaning in terms of topology or nosology and its pathogenesis is likely to be incompletely understood.
- 3) Symptom definitions should be as purely phenomenological as possible without reference to a theory on pathophysiology or a particular disease.
- 4) Definitions for symptoms are clearest if they are non-overlapping and non-hierarchical but allow one or more symptoms to coexist in a particular patient.
- 5) Consideration should be given in choice of terminology to ease of translation to languages beyond English, given current word usage patterns.

Some areas were relatively uncontroversial, while others sparked disagreement and even heated debate. Although typical American usage identifies *dizziness* as an umbrella term that includes *vertigo* as a subset [5], the decision to make terms non-hierarchical suggested that dizziness and vertigo should be defined separately, as is more often done in Europe. This choice was also felt to be more compatible with certain linguistic issues in anticipation of future translations. The definition of vertigo was controversial, as some wished to restrict its usage to only a false sense of spinning, while others felt it should refer to any false sense of motion, a controversy that has been described previously [1]. If non-spinning sensations were to be considered “not vertigo,” alternatives would have been to introduce one or more new terms or to include these sensations within the framework of *dizziness*, making that definition less clear. The compromise was the addition of a specification to note whether vertigo is spinning or non-spinning.

Because vertigo and dizziness are often triggered symptoms and many vestibular disorders are identified by the presence (or absence) of particular triggers, it was considered crucial to elaborate symptom definitions for several common types of triggered vertigo and dizziness. As others have previously, some members initially advocated for use of the term “positioning” vertigo as opposed to “positional” vertigo to indicate patients whose symptoms are tied to the act of moving

the head to a new position, rather than the attainment and maintenance of that new head position. The committee’s consensus, however, was that this differentiation was impractical given the relatively obtuse nature of the distinction and well-established status of the symptom *positional vertigo*.

The introduction of a separate category on vestibulo-visual symptoms was unanimously considered important, but the specific symptom definitions generated much discussion. The fact that vestibular dysfunction can result in a range of visual disturbances is not always well understood outside the vestibular community. Developing a category devoted to these symptoms was, in part, an explicit attempt to promote awareness around this issue. The principal controversy surrounded how to define the visual sense of motion that typically accompanies the balance or “bodily” sense of vestibular motion in patients who experience spinning vertigo. Because these two sensations can sometimes be dissociated clinically (e.g., in a patient who sees the world spinning or rotating from jerk nystagmus but feels no spinning with eyes closed), the committee agreed that the visual sense of motion should not simply be incorporated into the definition of vertigo. Some wished to call this sense of visual flux “oscillopsia” as has been done in some prior studies [10]. However, the majority preferred that oscillopsia be used only to describe a bidirectional, to-and-fro visual motion that incorporated complaints such as “jumping” or “bouncing” vision. The term “objective vertigo” was rejected as it was considered confusing to label a symptom “objective” when all sensory symptoms are, by definition, subjective experiences. “Visual vertigo” was not a consideration, since this term is now often used to refer to the experience of vertigo incited by the movement of objects within a patient’s field of vision. The proposal to introduce the neologism “vertigopsia,” preferred by some, was eventually dropped in favour of the new term “external vertigo.”

The definitions for postural balance symptoms that often accompany vestibular disorders required little discussion to achieve consensus. The committee was comfortable using *unsteadiness* as the preferred descriptive term for postural instability (when sitting, standing, or walking), rather than the often-used but more linguistically ambiguous terms *disequilibrium* or *imbalance*. The term *drop attack* (sudden fall without loss of consciousness) was considered ambiguous, since neuro-otologists sometimes restrict the term to those with vestibular causes for the fall but neurologists, cardiologists, and generalists typically do not (Meissner, 1986;

Table 1
Planned stages for developing the ICVD-I

Stage	Name	Description
I	Classification	Create ICVD-I
	IA Symptoms	Develop definitions for vestibular symptoms
	IB Nosology	Establish rubric for classifying vestibular disorders
	IC Disorders	Define diagnostic criteria for vestibular diseases or syndromes
	ID Harmonization	Unify diagnostic criteria into cohesive compendium (ICVD-I)
II	Dissemination	Promulgate use of these criteria for research purposes (e.g., publication, endorsement of relevant professional societies)
III	Renewal	Establish a mechanism for knowledge maintenance and periodic updates to the criteria with evolving scientific knowledge.

Parry, 2005). Drop attacks of apparent vestibular cause were instead parsed into the categories *balance-related falls* and *balance-related near falls*.

A decision was made in this first iteration not to operationally define all symptoms that might be linked to dizziness or vertigo if they were less specifically linked to vestibular disorders (e.g., syncope, diplopia, dysarthria, dysmetria). Similarly, no specific definitions are offered in this iteration for neurovegetative (e.g., nausea, vomiting, fatigue, malaise, weakness) or neuropsychiatric (e.g., anxiety, depression, phobia) symptoms that might accompany vestibular disorders. However, we do offer limited definitions (in commentary) for some such symptoms where necessary to clarify an important distinction from a defined vestibular symptom (motion sickness, presyncope, mental confusion, depersonalization/derealisation).

4. Discussion

This work on vestibular symptom classification represents an initial step towards the first International Classification of Vestibular Disorders (ICVD-I). We envision three successive stages to implement this program (Table 1). Although these stages are listed in order, implying a linear progression, the actual process is likely to be dynamic and iterative. This will be particularly so during the genesis of ICVD-I (Stage I), where subsequent work (e.g., defining diagnostic criteria) may lead to substantial revision of prior work (e.g., establishing a classification schema).

To successfully navigate this complex process, we expect to take a modular approach. For example, a few parallel working groups will be tasked with defining diagnostic criteria for a small subset of related vestibular diseases (e.g., “positional vertigo syndromes” or “acute peripheral vestibulopathies”). These first modules will be chosen based on priority for the vestibular community, and will likely develop at a greater pace as

the classification “vanguard.” As a consequence, some modules may be disseminated in published form while others remain merely topic placeholders. Interrogating the process of developing these “vanguard” modules will then inform development of subsequent modules.

Throughout the process we plan to solicit periodic feedback from the vestibular community and begin validating and testing definitions or criteria that have reached a more advanced stage. For example, we hope to recruit investigators willing to validate criteria for those disorders where strong reference standard diagnostic tests exist (e.g., benign paroxysmal positional vertigo) and establish reliability of coding rules where no firm diagnostics are available (e.g., vestibular migraine).

We anticipate that these subsequent stages of development will prove more challenging than this symptom classification and will require more resources. Even with an ambitious timeline for development, adequate finances, and political support from relevant stakeholders, completing just the first stage (developing a complete, published ICVD-I) will take at least several years. We look forward to partnering with societies and funding agencies to advance the science of vestibular disorders research through consensus criteria for classification and diagnosis.

Appendix 1

International Classification of Vestibular Disorders I (ICVD-I)

Authored and approved by the Committee for the Classification of Vestibular Disorders of the Bárány Society.

ICVD-I: Classification of Symptoms v1.0 (January, 2009)

Contents

1. Vertigo

- Spontaneous vertigo
 - Triggered vertigo
 - * Positional vertigo
 - * Head-motion vertigo
 - * Visually-induced vertigo
 - * Sound-induced vertigo
 - * Valsalva-induced vertigo
 - * Orthostatic vertigo
 - * Other triggered vertigo
2. Dizziness
- Spontaneous dizziness
 - Triggered dizziness
 - * Positional dizziness
 - * Head-motion dizziness
 - * Visually-induced dizziness
 - * Sound-induced dizziness
 - * Valsalva-induced dizziness
 - * Orthostatic dizziness
 - * Other triggered dizziness
3. Vestibulo-visual symptoms
- External vertigo
 - Oscillopsia
 - Visual lag
 - Visual tilt
 - Movement-induced blur
4. Postural symptoms
- Unsteadiness
 - Directional pulsion
 - Balance-related near fall
 - Balance-related fall

1. Vertigo

Definition: **(Internal) vertigo** is the sensation of self-motion when no self-motion is occurring or the sensation of distorted self-motion during an otherwise normal head movement. This “internal” vestibular sensation is distinguished from the “external” visual sense of motion referred to in this classification as either *external vertigo* or *oscillopsia* (see 3. Vestibulo-visual symptoms). For simplicity, the unmodified term “vertigo” will mean, by default, “internal vertigo.” The term encompasses false spinning sensations (spinning vertigo) and also other false sensations like swaying, tilting, bobbing, bouncing, or sliding (non-spinning vertigo).

Comment: An appropriate sensation of motion (i.e., matching an actual motion) is not vertigo. In this clas-

sification, no distinction is made between a false sense of rotational motion and a false sense of linear motion (often referred to as “translation”) or static tilt with respect to gravity (often referred to as “tilt”); all three are considered vertigo when experienced by a patient as a symptom of false motion. If a sensation of sway is felt only when standing or walking then this should be termed *unsteadiness* and labelled under postural symptoms (see 4 below) rather than vertigo. If the internal sensation of vertigo is accompanied by a false sense of external visual motion (*external vertigo* or *oscillopsia*), this should be labelled as an additional vestibulo-visual symptom (e.g., “combined internal and external spinning vertigo” or “non-spinning vertigo with oscillopsia”). A false sense of visual motion that occurs in isolation (without false internal sensation of self-motion) should only be labelled as *external vertigo* or *oscillopsia*. Vertigo should always be further categorized as spinning, non-spinning, or both (see *Symptom Coding Algorithm*).

Terms not used in this nomenclature: true vertigo, false vertigo, objective vertigo, subjective vertigo, rotatory/rotational vertigo, linear/translational vertigo.

Several contexts where vertigo occurs are distinguished:

1.1. Spontaneous vertigo

Definition: **Spontaneous vertigo** is vertigo that occurs without an obvious trigger.

Comment: Spontaneous vertigo may be exacerbated by movements (especially head movements). When spontaneous vertigo is aggravated by such movements, a second symptom (*head-motion vertigo* 1.2.2) should be added.

1.2. Triggered vertigo

Definition: **Triggered vertigo** is vertigo that occurs with an obvious trigger.

Comment: The presence of an “obvious” trigger requires a temporally-appropriate relationship between trigger stimulus and vertigo. Under most circumstances, a reproducible, repetitive relationship between trigger stimulus and vertigo spell should also be present. Note that while chemical triggers (e.g., food, hormonal states, medications) may contribute to the cause of apparently-spontaneous vertigo spells in patients with certain vestibular disorders (e.g., vestibular migraine or Menière disease), these should only be considered *triggered vertigo* if the relationship between the trigger and vertigo episode is clear.

1.2.1. Positional vertigo

Definition: **Positional vertigo** is vertigo triggered by and occurring *after* a change of head position in space relative to gravity.

Comment: This is distinguished from *head-motion vertigo*, which occurs *during* a head movement (see 1.2.2). A note should be made whether symptoms are persistent (≥ 1 minute) when the head reaches and maintains the new position, or merely transient (< 1 minute). If transient, the duration should be noted. *Positional vertigo* should also be distinguished from *orthostatic vertigo* (see 1.2.6).

Terms not used in this nomenclature: positioning vertigo.

1.2.2. Head-motion vertigo

Definition: **Head-motion vertigo** is vertigo occurring only *during* head motion (i.e., that is time-locked to the head movement).

Comment: Such vertigo may be triggered by the head movement (from a baseline state without vertigo), or spontaneous vertigo may be exacerbated by the head movement. Head-motion vertigo is conceptualized as a distorted sensation of self-motion during actual self-motion. This state is differentiated from *positional vertigo*, which occurs *after* head motion, upon adoption of a new resting head position in space. Head-motion vertigo should also be distinguished from motion sickness, in which the predominant symptom is a lasting, visceral feeling of nausea.

Terms not used in this nomenclature: space and motion discomfort, space and motion sensitivity.

1.2.3. Visually-induced vertigo

Definition: **Visually-induced vertigo** is vertigo triggered by a complex, distorted, large field or moving visual stimulus, including the relative motion of the visual surround associated with body movement.

Comment: The symptom includes the visually-induced illusion of circular or linear self-motion (often referred to as “vection”). If the sensation is one of non-vertiginous dizziness triggered by a visual stimulus, it should be classified under 2.2.3 (visually-induced dizziness). If the disturbing visual input originates from a primary ocular motility disorder (e.g. ocular muscle myokymia or non-vestibular nystagmus) and induces vertigo, the symptom should be classified here. Visually-induced vertigo should also be distinguished from motion sickness, in which the predominant symptom is a lasting, visceral feeling of nausea.

Terms not used in this nomenclature: space and motion discomfort, space and motion sensitivity, visual vertigo.

1.2.4. Sound-induced vertigo

Definition: **Sound-induced vertigo** is vertigo triggered by an auditory stimulus.

Comment: *Sound-induced vertigo* should not be used to describe vertigo triggered by Valsalva, pressure changes across the tympanic membrane (e.g., as with pneumo-otoscopy), or vibration, which should either be classified as *Valsalva-induced vertigo* or *other triggered vertigo* (see 1.2.5 and 1.2.7).

Terms not used in this nomenclature: Tullio phenomenon

1.2.5. Valsalva-induced vertigo

Definition: **Valsalva-induced vertigo** is vertigo triggered by any bodily maneuver that tends to increase intracranial or middle ear pressure.

Comment: Typical behavioral stimuli that tend to decrease venous return from the intracranial space by raising intrathoracic pressure against a closed glottis (glottic Valsalva) include coughing, sneezing, straining, lifting heavy objects etc. By contrast, nose-pinched Valsalva forces air directly into the middle ear cavity without a significant change in intrathoracic pressure. A note should be made whether symptoms are triggered by glottic Valsalva, nose-pinched Valsalva, or both. Pneumatic otoscopy/insufflation and other “extrinsic” pressure changes should be classified as other triggered vertigo (see 1.2.7 below).

1.2.6. Orthostatic vertigo

Definition: **Orthostatic vertigo** is vertigo triggered by and occurring on arising (i.e. a change of body posture from lying to sitting or sitting to standing).

Comment: *Orthostatic vertigo* (present on arising) should be distinguished from *positional vertigo* (triggered by a change in head position relative to gravity) and *head-motion vertigo*, since positional symptoms may be triggered by the head motion that occurs during arising (see 1.2.1 and 1.2.2 above). See *orthostatic dizziness* (2.2.6 below) for additional comment.

Terms not used in this nomenclature: postural vertigo

1.2.7. Other triggered vertigo

Definition: **Other triggered vertigo** is vertigo triggered by any other stimulus than those listed above.

Comment: Other triggers include those related to dehydration, drugs, environmental pressure shifts (such as those during deep-sea diving, height, hyperbaric

oxygenation, pneumatic insufflation during pneumotoscopy), exercise/exertion (including upper extremity exercise), after prolonged exposure to passive motion (as occurs following sea voyages), hormones, hyperventilation, phobic situations, tight neck collars, vibration and idiosyncratic, atypical triggers unique to a particular patient.

2. Dizziness

Definition: (**Non-vertiginous**) **dizziness** is the sensation of disturbed or impaired spatial orientation without a false or distorted sense of motion.

Comment: Dizziness as defined here does not include vertiginous sensations. Often the term is used in a broad sense encompassing sensation of false movement but here the terms vertigo and dizziness are clearly distinguished. In the description of the symptoms of a patient several symptoms may coexist or occur sequentially, e.g. vertigo and dizziness. For this classification, one symptom does not pre-empt the other (specifically, the presence of vertigo does not, a priori, preclude labelling the patient as having [non-vertiginous] dizziness if both symptoms are present).

The term should not be applied when there is a pure sensation of impending faint (presyncope), disordered thinking (mental confusion), or detachment from reality (depersonalization or derealization) when such sensation is unaccompanied by a sense of spatial disorientation. Likewise, dizziness should not be applied when a patient's complaint is one of generalized or focal motor weakness or a non-specific sense of malaise, fatigue, or ill-health (sometimes referred to as "the weak and dizzy patient").

Terms not used in this nomenclature: lightheadedness, non-specific dizziness

Several contexts where dizziness occurs are distinguished:

2.1. Spontaneous dizziness

Definition: **Spontaneous dizziness** is dizziness that occurs without an obvious trigger.

Comment: Spontaneous dizziness may be exacerbated by movements (especially head movements). When spontaneous dizziness is aggravated by such movements, a second symptom (*head-motion dizziness* 2.2.2) should be added.

2.2. Triggered dizziness

Definition: **Triggered dizziness** is dizziness that occurs with an obvious trigger.

Comment: The presence of an "obvious" trigger requires a temporally-appropriate relationship between trigger stimulus and dizziness. See 1.2 above for additional comment.

2.2.1. Positional dizziness

Definition: **Positional dizziness** is dizziness triggered by and occurring after a change of head position in space relative to gravity.

Comment: This is distinguished from *head-motion dizziness* which occurs during a head movement (see 1.2.2). A note should be made whether symptoms are persistent (≥ 1 minute) when the head reaches and maintains the new position, or merely transient (< 1 minute). If transient, the duration should be noted. *Positional dizziness* should also be distinguished from *orthostatic dizziness* (see 2.2.6).

Terms not used in this nomenclature: positioning dizziness.

2.2.2. Head-motion dizziness

Definition: **Head-motion dizziness** is dizziness occurring only during head motion (i.e. that is time-locked to the head movement).

Comment: Such dizziness may be triggered by the head movement (from a baseline state without dizziness), or spontaneous dizziness may be exacerbated by the head movement. Head-motion dizziness is conceptualized as a distorted sensation of spatial orientation during actual self-motion. This state is differentiated from *positional dizziness*, which occurs after head motion, upon adoption of a new resting head position in space. Head-motion-induced dizziness should also be distinguished from motion sickness, in which the predominant symptom is a lasting, visceral feeling of nausea.

Terms not used in this nomenclature: space and motion discomfort, space and motion sensitivity

2.2.3. Visually-induced dizziness

Definition: **Visually-induced dizziness** is dizziness triggered by a complex, distorted, large field or moving visual stimulus, including the relative motion of the visual surround associated with body movement.

Comment: If the visual input induces clear circular or linearvection then the symptoms should be labelled under 1.2.3 (visually-induced vertigo). If the disturbing visual input originates from a primary ocular motility disorder (e.g. ocular muscle myokymia or non-vestibular nystagmus) and induces dizziness, the symptom should be classified here. Visually-induced dizziness should also be distinguished from motion sick-

ness, in which the predominant symptom is a lasting, visceral feeling of nausea.

Terms not used in this nomenclature: space and motion discomfort, space and motion sensitivity, visual dizziness.

2.2.4. Sound-induced dizziness

Definition: **Sound-induced dizziness** is dizziness triggered by an auditory stimulus.

Comment: *Sound induced dizziness* should not be used to describe dizziness triggered by Valsalva, pressure changes across the tympanic membrane (e.g., as with pneumo-otoscopy), or vibration, which should either be classified as *Valsalva-induced dizziness* or *other triggered dizziness* (see 2.2.5 and 2.2.7).

Terms not used in this nomenclature: Tullio phenomenon

2.2.5. Valsalva-induced dizziness

Definition: **Valsalva-induced dizziness** is dizziness triggered by any bodily maneuver that tends to increase intracranial or middle ear pressure.

Comment: Typical behavioral stimuli that tend to decrease venous return from the intracranial space by raising intrathoracic pressure against a closed glottis (glottic Valsalva) include coughing, sneezing, straining, lifting heavy objects etc. By contrast, nose-pinched Valsalva forces air directly into the middle ear cavity without a significant change in intrathoracic pressure. A note should be made whether symptoms are triggered by glottic Valsalva, nose-pinched Valsalva, or both. Pneumatic otoscopy/insufflation and other “extrinsic” pressure changes should be classified as other triggered dizziness (see 2.2.7 below).

2.2.6. Orthostatic dizziness

Definition: **Orthostatic dizziness** is dizziness triggered by and occurring on arising (i.e., a change of body posture from lying to sitting or sitting to standing).

Comment: *Orthostatic dizziness* (present on arising) should be distinguished from *positional dizziness* (triggered by a change in head position relative to gravity) and *head-motion-induced dizziness*, since positional symptoms may be triggered by the head motion that occurs during arising (see 2.2.1 and 2.2.2 above). The distinction between positional and orthostatic dizziness can be accomplished by asking the patient with dizziness on arising whether the symptoms also occur on reclining or while recumbent (e.g., when rolling in bed); if so, the symptoms are likely positional rather than orthostatic. Although the most common cause of *orthostatic dizziness* is probably *orthostatic hypotension*,

it is not the only possible cause; it is not the intent of this nomenclature to consider the two as synonymous. *Orthostatic dizziness* is a symptom, while *orthostatic hypotension* a disorder or etiology.

Terms not used in this nomenclature: postural dizziness

2.2.7. Other triggered dizziness

Definition: **Other triggered dizziness** is dizziness triggered by any other stimulus than those listed above.

Comment: Other triggers include those related to dehydration, drugs, environmental pressure shifts (such as those during deep-sea diving, height, hyperbaric oxygenation, pneumatic insufflation during pneumo-otoscopy), exercise/exertion (including upper extremity exercise), after prolonged exposure to passive motion (as occurs following sea voyages), hormones, hyperventilation, phobic situations, tight neck collars, vibration and idiosyncratic, atypical triggers unique to a particular patient.

3. Vestibulo-visual symptoms

Definition: **Vestibulo-visual symptoms** are visual symptoms that usually result from vestibular pathology or the interplay between visual and vestibular systems. These include false sensations of motion or tilting of the visual surround and visual distortion (blur) linked to vestibular (rather than optical) failure.

Comment: Visual illusions or hallucinations that involve movement of objects *within* the visual surround, but in which the visual surround itself remains static, should not be considered vestibulo-visual symptoms. Examples would include seeing mobile visual “floaters,” migrating scintillations of migraine visual aura, etc.

3.1. External Vertigo

Definition: **External vertigo** is the false sensation that the visual surround is spinning or flowing.

Comment: The symptom *external vertigo* encompasses the false sensation of continuous or jerky visual flow in any spatial plane (e.g., horizontal [yaw]). It is distinguished from *oscillopsia* (see 3.2 below) by the absence of bidirectional (oscillatory) motion. External vertigo (visual motion) often accompanies a sense of internal vertigo (bodily motion) (see 1 above for details). However, jerk nystagmus alone may provoke a sense of continuous visual flow even without a false sensation of self-motion ([internal] vertigo). In this classification visual and bodily symptoms are differentiated and may (or may not) co-exist in the same

patient. Therefore, the false sensation of visual flow (e.g., world spinning) should be coded separately from vertigo (e.g., “combined internal and external spinning vertigo”) (see *Symptom Coding Algorithm*).

Term not used in this nomenclature: true vertigo, false vertigo, objective vertigo, subjective vertigo, rotatory/rotational vertigo, linear/translational vertigo.

3.2. Oscillopsia

Definition: **Oscillopsia** is the false sensation that the visual surround is oscillating.

Comment: The term oscillopsia, as a hybrid from Latin and Greek means swinging and vision. This back-and-forth movement can occur in any direction and will often be reported as an experience of “bouncing,” “bobbing,” or “jerking” of the visual world. As with external vertigo, the visual symptom of oscillopsia is distinguished and recorded separately from any associated bodily sense of motion (i.e., vertigo or dizziness). It should be specified if the symptom is head-movement-dependent or occurs even when the head is completely still (as in oculomotor disorders like pendular nystagmus) (see *Symptom Coding Algorithm*).

3.3. Visual lag

Definition: **Visual lag** is the false sensation that the visual surround follows behind a head movement with a delay or makes a brief drift after the head movement is completed.

Comment: This sense of visual lag is momentary, lasting generally less than 1–2 seconds. It may occur in association with head-motion vertigo or dizziness (see 1.2.2 and 2.2.2 above). This brief movement of the visual surround should not be classified as external vertigo, since it lacks the sense of continuous motion or flow.

3.4. Visual tilt

Definition: **Visual tilt** is the false perception of the visual surround as oriented off the true vertical.

Comment: Symptomatic static visual tilt with the head upright is typically episodic and brief (lasting seconds to minutes) and is not synonymous with the asymptomatic, static alteration in perception of the subjective visual vertical (SVV tilt) seen under controlled viewing conditions among patients with central or peripheral vestibular disorders. The so-called “room tilt illusion” (or “room inverted illusion”) is often used to refer to a special form of visual tilt with tilt angles of either 90° or 180°, although the term visual tilt

(with an approximate angle specified) is preferred in this nomenclature. If the sense of visual tilt is in motion (i.e., angle changing) rather than fixed (i.e., angle fixed), then it should be referred to as external vertigo (for the visual sensation) or (internal) vertigo (for the bodily sensation) rather than visual tilt.

Terms Not Used in This Nomenclature: room tilt illusion, room inverted illusion, upside down vision.

3.5. Movement-induced blur

Definition: **Movement-induced blur** is reduced visual acuity during or momentarily after a head movement.

Comment: The vestibular system contributes to the stabilization of the retinal image during head motion. A disturbance of this function can lead to retinal slip and, consequently, to reduced visual acuity during or immediately after head motion. This sense of visual blur may be continuous during a continuous head movement (e.g., during walking) or be momentary (e.g., in association with head-motion vertigo or dizziness (see 1.2.2 and 2.2.2 above)). Some people experience oscillopsia or visual lag rather than visual blur in these situations (see 3.2 and 3.3 above).

4. Postural symptoms

Definition: **Postural symptoms** are balance symptoms related to maintenance of postural stability, occurring only while upright (seated, standing, or walking).

Comment: The term “postural” in this nomenclature refers to balance symptoms while upright (e.g., standing) rather than the set of symptoms linked to changing body posture with respect to gravity (e.g., standing up). These latter symptoms are referred to as “orthostatic” in this nomenclature.

4.1. Unsteadiness

Definition: **Unsteadiness** is the feeling of being unstable while seated, standing, or walking without a particular directional preference.

Comment: Regardless of upright position (seated, standing, or walking), added stability (as in holding on to a stable surface, such as a wall) should clearly reduce or eliminate any unsteadiness present; if it does not, consideration should be given to whether the symptom is, instead, vertigo or dizziness. Unsteadiness is a symptom which can occur in many other conditions beyond those of the vestibular system. If unsteadiness is present without any other vestibular symptom (see 1,

2, 3 above), a vestibular disorder is unlikely although not excluded.

Terms Not Used in This Nomenclature: disequilibrium, imbalance.

4.2. Directional pulsion

Definition: **Directional pulsion** is the feeling of being unstable with a tendency to veer or fall in a particular direction while seated, standing, or walking. The direction should be specified as latero-, retro or anteropulsion. If lateropulsion, the direction (right or left) should be specified.

Comment: Regardless of upright position (seated, standing, or walking), added stability (as in holding onto a stable surface, such as a wall) should clearly reduce or eliminate any directional pulsion present; if it does not, consideration should be given to whether the symptom is, instead, vertigo or dizziness.

Terms Not Used in This Nomenclature: disequilibrium, imbalance.

4.3. Balance-related near fall

Definition: A **balance-related near fall** is a sensation of imminent fall (without a completed fall) related to strong unsteadiness, directional pulsion, or other vestibular symptom (e.g., vertigo).

Comment: Falls which are “caught” (e.g., by an outstretched arm reaching a wall) should be classified as near falls. Although it is not always possible to identify *balance-related* near falls with perfect certainty, near falls clearly due to environmental obstacles (e.g., “stumble”), weakness (e.g., leg buckling under strain), or near loss of consciousness (e.g., presyncope) should not be classified as balance-related. Near falls sometimes result from a sudden alteration in the perception of verticality (as with visual tilt), a feeling of being pushed over or pulled to the ground, or unanticipated loss of lower extremity or postural tone linked temporally to other vestibular symptoms. In neuro-otologic parlance, such spells are often referred

to as “otolithic crises” or “drop attacks” (particularly if sometimes associated with completed falls). In this nomenclature, these near falls are referred to simply as balance-related near falls. Similar near falls unlinked to other vestibular symptoms (also sometimes referred to as “drop attacks”) may be seen in various conditions (e.g., carotid sinus syndrome, cardiac arrhythmia, epilepsy) and should not be classified as balance-related in the absence of corroborative vestibular symptoms.

Terms Not Used in This Nomenclature: drop attack, otolithic crisis, Tumarkin’s crisis.

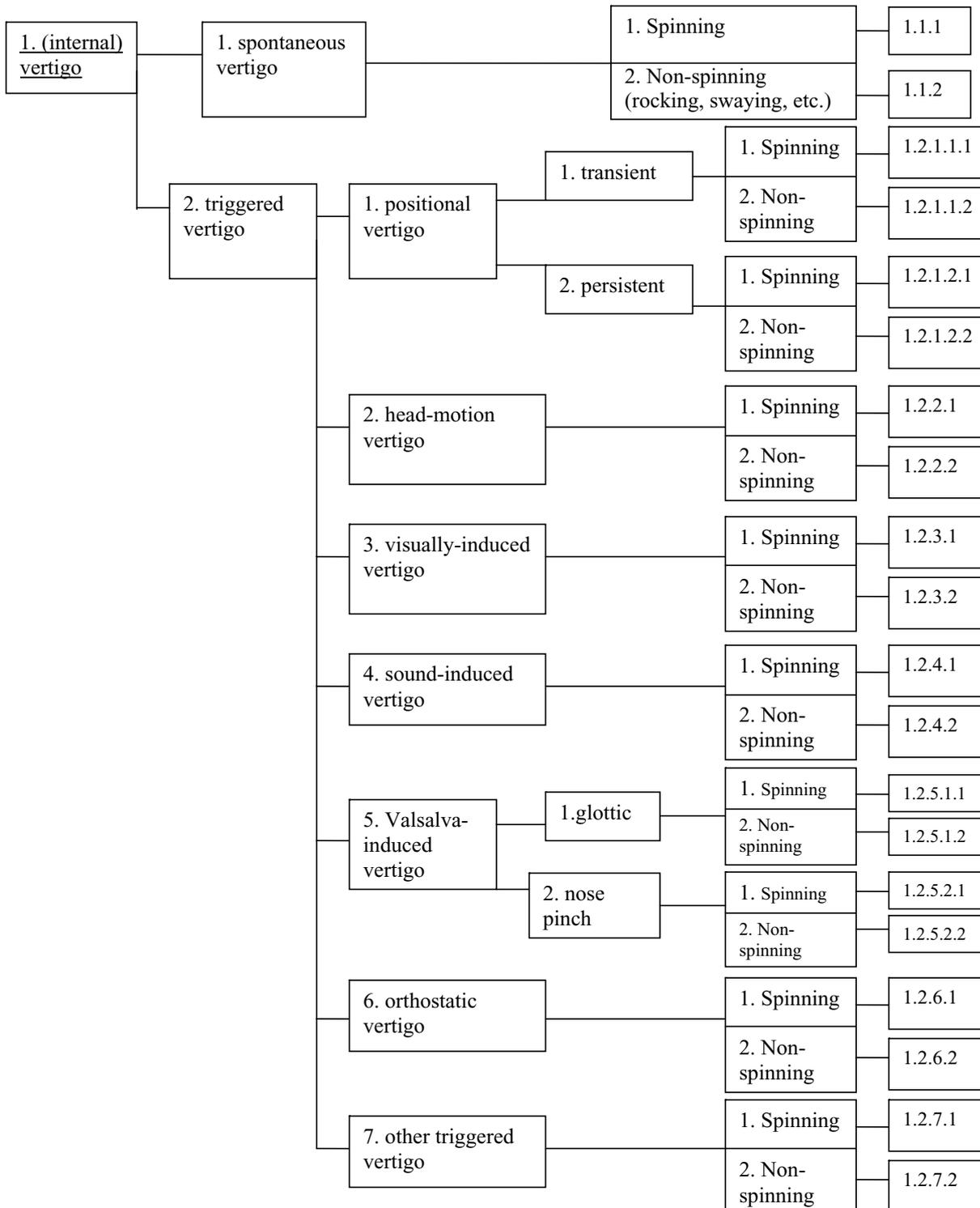
4.4. Balance-related fall

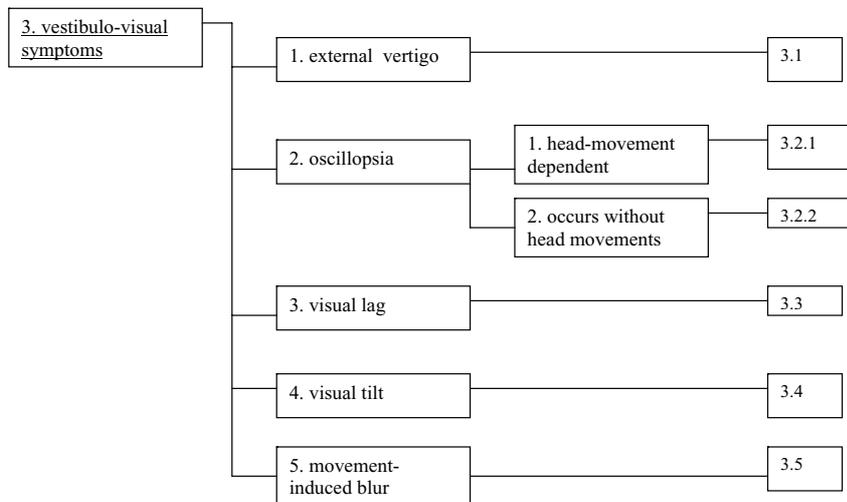
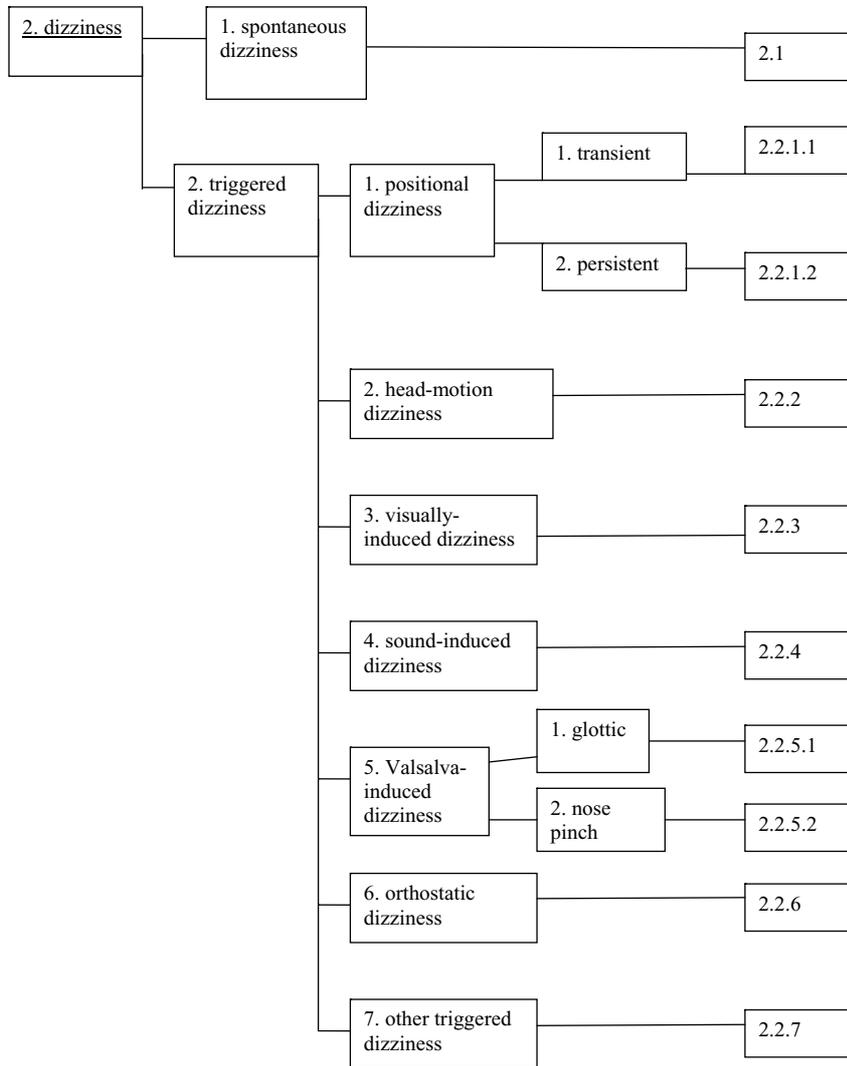
Definition: A **balance-related fall** is a completed fall related to strong unsteadiness, directional pulsion, or other vestibular symptom (e.g., vertigo).

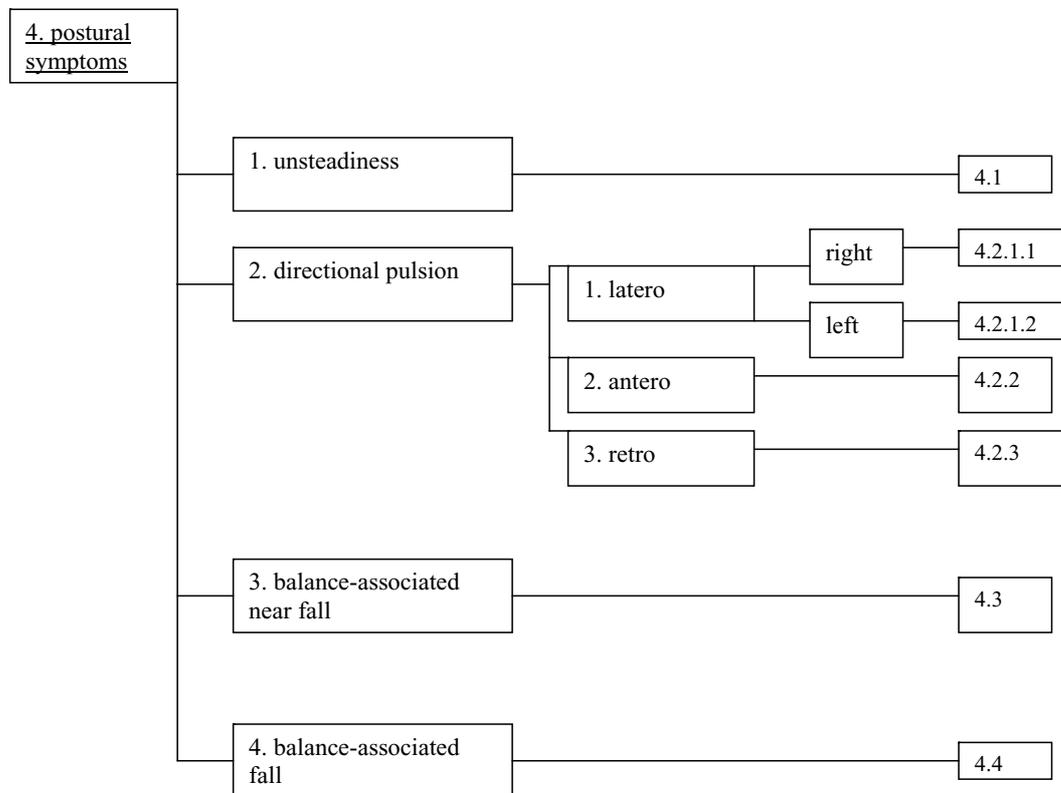
Comment: Falls which are “caught” (e.g., by an outstretched arm reaching a wall) should be classified as *near falls* (see 4.3 above). Although it is not always possible to identify balance-related falls with perfect certainty, falls clearly due to environmental obstacles (e.g., “slip-trip”), weakness (e.g., acute motor stroke), or loss of consciousness (e.g., syncope, seizure, or coma) should not be classified as balance-related. Falls sometimes result from a sudden alteration in the perception of verticality (as with visual tilt), a feeling of being pushed over or pulled to the ground, or unanticipated loss of lower extremity or postural tone linked temporally to other vestibular symptoms. In neuro-otologic parlance, such spells are often referred to as “otolithic crises” or “drop attacks.” In this nomenclature, these falls are referred to simply as balance-related falls. Similar falls unlinked to other vestibular symptoms (also sometimes referred to as “drop attacks”) may be seen in various conditions (e.g., carotid sinus syndrome, cardiac arrhythmia, epilepsy) and should not be classified as balance-related in the absence of corroborative vestibular symptoms.

Terms Not Used in This Nomenclature: drop attack, otolithic crisis, Tumarkin’s crisis.

Appendix 2. Symptom Coding Algorithm







References

- [1] B.W. Blakley and J. Goebel, The meaning of the word “vertigo”, *Otolaryngol Head Neck Surg* **125**(3) 2001, 147–150.
- [2] K.P. Boyev, Meniere’s disease or migraine? The clinical significance of fluctuating hearing loss with vertigo, *Arch Otolaryngol Head Neck Surg* **131**(5) (May 2005), 457–459.
- [3] E.M. Monsell, T.A. Balkany, G.A. Gates, R.A. Goldenberg, W. Meyerhoff and J.W. House, Committee on Hearing and Equilibrium guidelines for the diagnosis and evaluation of therapy in Meniere’s disease, *Otolaryngol Head Neck Surg* **113** (1995), 181–185.
- [4] C. Morera, H. Pérez, N. Pérez and A. Soto, Peripheral Vertigo Classification. Consensus Document. Otoneurology Committee of the Spanish Otorhinolaryngology Society (2003-2006), *Acta Otorrinolaringol Esp* **59**(2) (2008), 76–79.
- [5] D.E. Newman-Toker, L.M. Cannon, M.E. Stofferahn, R.E. Rothman, Y.H. Hsieh and D.S. Zee, Imprecision in patient reports of dizziness symptom quality: a cross-sectional study conducted in an acute-care setting, *Mayo Clin Proc* **82**(11) (Nov 2007), 1329–1340.
- [6] V.A. Stanton, Y.H. Hsieh, C.A. Camargo Jr., J.A. Edlow, P. Lovett, J.N. Goldstein, S. Abbuhl, M. Lin, A. Chanmugam, R.E. Rothman and D.E. Newman-Toker, Overreliance on symptom quality in diagnosing dizziness: results of a multi-center survey of emergency physicians, *Mayo Clin Proc* **82**(11) (Nov 2007), 1319–1328.
- [7] Headache Classification Committee. The International Classification of Headache Disorders, *Cephalgia* **24**(Suppl.1) (2004), 9–160.
- [8] A. Bisdorff, A. Bronstein A, H. Kingma, T. Lempert, H. Neuhauser, D.E. Newman-Toker, A. Radtke and M. von Brevern, Building worldwide expert consensus around a glossary of vestibular symptoms – the first step towards a structured international classification of vestibular disorders. Abstracts of the Bárány Society XXV International Congress. Kyoto, Japan, March 31–April 3, 2008.
- [9] T. Lempert, M. von Brevern, D.E. Newman-Toker, A. Bronstein, H. Neuhauser, H. Kingma, A. Radtke and A. Bisdorff, Controversies in the classification of dizziness and vertigo. Abstracts of the Bárány Society XXV International Congress. Kyoto, Japan, March 31–April 3, 2008.
- [10] H.K. Neuhauser, M. von Brevern, A. Radtke, F. Lezius, M. Feldmann, T. Ziese and T. Lempert, Epidemiology of vestibular vertigo: a neurotologic survey of the general population, *Neurology* **65**(6) (27 Sep 2005), 898–904. Erratum in: *Neurology* **67**(8) (24 Oct 2006), 1528.
- [11] I. Meissner, D.O. Wiebers, J.W. Swanson and W.M. O’Fallon, The natural history of drop attacks, *Neurology* **36** (1986), 1029–1034.
- [12] S.W. Parry and R.A. Kenny, Drop attacks in older adults: systematic assessment has a high diagnostic yield, *J Am Geriatr Soc* **53** (2005), 74–78.