

# MIGRAINE RELATED VERTIGO

## CLASSIFICATION AND DIAGNOSTIC CRITERIA

Produced by the British Association of Audiovestibular Physicians and  
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### Introduction

The International Headache Society (IHS) has published well-recognised criteria for the diagnosis of migraine (ICHD-II, IHS 2004). Vertigo is mentioned in this classification only in respect of basilar type migraine and benign paroxysmal vertigo of childhood. Migraine is a common disorder with a one year prevalence of 11.7% (17.1% in women and 5.6% in men, Lipton *et al* 2007). Vertigo has been found to occur significantly more frequently in patients with migraine than in controls (Kayan and Hood, 1984) and a high prevalence of migraine has been found in vertigo sufferers (Savundra *et al* 1997). In some patients occurrence of migraine and vertigo are interrelated and in others they may be incidental. The exact relationship remains controversial (Brandt 2004).

Migraine without aura is described in ICHD-II as a “*recurrent headache disorder manifesting in attacks lasting 4–72 hours. Typical characteristics of the headache are unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and/or photophobia and phonophobia.*” The ICHD-II diagnostic criteria are given in the Appendix to this document.

### 1. MIGRAINOUS VERTIGO

There are no diagnostic tests for migrainous vertigo, and definitions are based on clinical features. Clinical assessment may reveal positional nystagmus (Von Brevern 2004) and some central and/or peripheral vestibular abnormalities may be found interictally.

#### **i. Definite migrainous vertigo**

Criteria for definite migrainous vertigo were proposed by Neuhauser *et al* (2001). Using these criteria the lifetime prevalence for MV is estimated to be 0.98% (Neuhauser *et al* 2006).

#### **Essential criteria:**

- Episodic vestibular symptoms of at least moderate severity (rotational vertigo, other illusory self or object motion, positional vertigo, head motion intolerance, i.e. sensation of imbalance or illusory self or object motion that is provoked by head motion)
- *Migraine according to the ICHD-II criteria*
- At least one of the following migrainous symptoms during at least two vertiginous attacks:
  - migrainous headache
  - photophobia
  - phonophobia
  - visual or other auras
- Other causes ruled out by appropriate investigations

**Severity of vestibular symptoms:**

Vestibular symptoms should be defined as “mild” if they did not interfere with daily activities, “moderate” if they interfered with but did not impede daily activities, and “severe” if patients could not continue daily activities.

**ii. Basilar-type migraine**

Basilar-type migraine (previously known as basilar artery migraine or basilar migraine) is a specific and comparatively unusual form of migrainous vertigo defined in ICHD-II as migraine with aura symptoms clearly originating from the brainstem and/or from both hemispheres simultaneously affected, but no motor weakness. It is defined using the following criteria:

**A.** At least 2 attacks fulfilling criteria B–D

**B.** Aura consisting of at least two of the following fully reversible symptoms, but no motor weakness:

- dysarthria
- vertigo
- tinnitus
- hypacusia
- diplopia
- visual symptoms simultaneously in both temporal and nasal fields of both eyes
- ataxia
- decreased level of consciousness
- simultaneously bilateral paraesthesias

**C.** At least one of the following:

- at least one aura symptom develops gradually over  $\geq 5$  minutes and/or different aura symptoms occur in succession over  $\geq 5$  minutes
- each aura symptom lasts  $\geq 5$  and  $\leq 60$  minutes

**D.** *Headache fulfilling criteria for migraine without aura* begins during the aura or follows aura within 60 minutes

**E.** Not attributed to another disorder

{**Nb.** Dieterich and Brandt (1999) proposed a useful extension to these criteria to include patients with three attacks that conform to one of the following four descriptions:

- A.** deficits attributable to the posterior circulation; headache; history of migraine
- B.** vestibular/oculo-motor dysfunction; headache; history of migraine
- C.** vestibular/oculo-motor dysfunction; headache; migraine treatment efficacy
- D.** vestibular/oculo-motor dysfunction; no headache; migraine treatment efficacy.}

**2. MIGRAINE EQUIVALENTS**

This term refers to a group of disorders that have some features in common with migraine. Many patients with these disorders can be successfully treated with migraine prophylactic drugs.

**i. Probable migrainous vertigo** (Neuhauser 2001)**Essential criteria**

- Episodic vestibular symptoms of at least moderate severity (rotational vertigo, other illusory self or object motion, positional vertigo, head motion intolerance)

- At least one of the following:
  - migraine according to the criteria of the IHS
  - migrainous symptoms during vertigo
  - migraine-specific precipitants of vertigo, e.g., specific foods, sleep irregularities, hormonal changes
  - response to antimigraine drugs
- Other causes ruled out by appropriate investigations

## ii. Benign recurrent vertigo (adapted from Slater 1979)

### Essential criteria

- Moderate or severe episodic vertigo without auditory symptoms
- Duration of attacks of the order of hours
- No unexplained audiometric abnormalities
- Other causes ruled out by appropriate investigations

### Supporting criteria

- Nausea/vomiting/ataxia during the episode
- Nystagmus seen during the episode
- Migrainous headaches outside vertiginous episodes
- Family history of migraine
- Normal audiometric findings, or no asymmetry if there is a hearing loss attributed to another cause
- Typical migraine triggers for attacks e.g. menstrual cycle phase, alcohol, sleep pattern disruption

## iii. Benign paroxysmal vertigo of childhood (ICHD-II, Basser 1964)

This disorder is characterized by recurrent brief episodic attacks of vertigo occurring without warning and resolving spontaneously in otherwise healthy children.

### Essential criteria

- A. At least 5 attacks fulfilling criterion B
- B. Multiple episodes of severe vertigo, occurring without warning and resolving spontaneously after minutes to hours
- C. Normal neurological examination and audiometric and vestibular functions between attacks
- D. Normal electroencephalogram

### Supporting criteria

- Nystagmus or vomiting during attacks
- First decade of life, commonly at ages between one to four years

## iv. Cyclical vomiting (ICHD-II)

This disorder is characterized by recurrent episodic attacks of vomiting and intense nausea. These are usually stereotypical in the individual patient. Attacks are associated with pallor and lethargy. There is complete resolution of symptoms between attacks. History and physical examination do not show signs of gastrointestinal disease.

### Essential criteria

- At least 5 attacks fulfilling criteria B and C
- Episodic attacks, stereotypical in the individual patient, of intense nausea and vomiting lasting from 1 hour to 5 days

- Vomiting during attacks occurs at least 4 times/hour for at least 1 hour
- Symptom-free between attacks
- Not attributed to another disorder

#### **v. Abdominal migraine (ICHD-II)**

This is an idiopathic recurrent disorder seen mainly in children and characterised by episodic midline abdominal pain. There is normality between episodes. The pain is of moderate to severe intensity and associated with vasomotor symptoms, nausea and vomiting.

##### **Essential criteria:**

- At least 5 attacks fulfilling criteria B–D
- Attacks of abdominal pain lasting 1–72 hours (untreated or unsuccessfully treated)
- Abdominal pain has all of the following characteristics:
  - midline location, periumbilical or poorly localised
  - dull or 'just sore' quality
  - moderate or severe intensity
- During abdominal pain at least two of the following:
  - anorexia
  - nausea
  - vomiting
  - pallor
- Not attributed to another disorder

#### **vi. Benign paroxysmal torticollis of infancy**

This disorder is also included in some classifications of paediatric migraine equivalents (Al-Twaijri 2002), but has not been formally recognised in the ICHD-II as one of the childhood syndromes which are common precursors of migraine. It typically begins during infancy and presents with episodic torticollis, with or without associated pallor, vomiting, or behavioural changes. Symptoms last between four hours and four days. Typically the frequency and duration of these episodes decline as the child gets older, and by early to mid-childhood the episodes have resolved in their entirety.

### **3. NEURO-OTOLOGICAL DISORDERS ASSOCIATED WITH MIGRAINE**

#### **i. Motion Sickness**

There is a high prevalence of history of motion sickness in migraineurs, and motion sickness is known to be a trigger for migraine attacks (Grunfeld 1998).

#### **ii. Menière disease**

There is a high prevalence of migraine in a population with Menière disease; and a high prevalence of Menière disease in migraineurs (Radtke 2002). Some cases have been reported to experience migraine aura in the form of Menière symptoms complex (Rassekh 1992).

### **iii. Familial episodic ataxias types II and III**

Episodic ataxias types II and III have a strong association with migraine. These disorders are characterized by attacks of vertigo lasting hours. In EAI nystagmus is usually present interictally. Many cases respond to treatment with acetazolamide (Baloh 1997, Jen 2008).

## REFERENCES

- Baloh RW, Yue Q, Furman JM, Nelson SF.  
Familial episodic ataxia: clinical heterogeneity in four families linked to chromosome 19p.  
*Ann Neurol* 1997; **41**:8–16.
- Basser LS  
Benign paroxysmal vertigo of childhood.  
*Brain* 1964;**87**:141-152.
- Brandt T  
A chameleon among the episodic vertigo syndromes: 'migrainous vertigo' or 'vestibular migraine'  
*Cephalalgia* 2004;**24**:81-2
- Dieterich M, Brandt T  
Episodic vertigo related to migraine (90 cases): vestibular migraine?  
*J Neurol* 1999;**246**:883-92.
- Grunfeld E, Gresty MA  
Relationship between motion sickness, migraine and menstruation in crew members of a "round the world" yacht race  
*Brain Res Bull* 1998;**47**:433-6
- Headache Classification Subcommittee of the International Headache Society  
The International Classification of Headache Disorders: 2nd edition  
*Cephalalgia* 2004;**24 Suppl 1**:9-160.
- Jen JC  
Recent advances in the genetics of recurrent vertigo and vestibulopathy.  
*Curr Opin Neurol.* 2008;**21**:3-7
- Kayan A and Hood JD  
Neurotological Manifestation of Migraine  
*Brain* 1984;**107**:1123-1142
- Lipton RB, Bigal ME, Diamond M, Freitag F *et al*  
Migraine prevalence, disease burden, and the need for preventive therapy  
*Neurology* 2007;**68**:343-9.
- Neuhauser HK, Leopold M, von Brevern M, Arnold G, Lempert T  
The interrelations of migraine, vertigo, and migrainous vertigo  
*Neurology* 2001;**56**: 436-441.
- Neuhauser HK, Radtke A, von Brevern M, Feldmann M *et al*  
Migrainous vertigo: prevalence and impact on quality of life  
*Neurology* 2006;**67**:1028-33
- Radtke A, Lempert T, Gresty MA, Brookes GB, Bronstein AM, Neuhauser H  
Migraine and Ménière's disease: is there a link?  
*Neurology* 2002;**59**:1700-4
- Rassekh CH and Harker LA  
The prevalence of migraine in Meniere's disease  
*Laryngoscope* 1992;**102**:135-138.

Savundra PA, Carroll JD, Davies RA, Luxon LM  
Migraine-associated vertigo  
*Cephalalgia* 1997;**17**:505-10

Slater R  
Benign recurrent vertigo  
*J Neurol Neurosurg Psychiat* 1979; **42**: 363-367

Von Brevern M, Radtke A, Clarke AH, Lempert T  
Migrainous vertigo presenting as episodic positional vertigo  
*Neurology* 2004;**62**:469-72

## **APPENDIX**

Headings within the ICHD-II classification of migraine are as follows:

- 1.1 Migraine without aura
- 1.2 Migraine with aura
  - 1.2.1 Typical aura with migraine headache
  - 1.2.2 Typical aura with non-migraine headache
  - 1.2.3 Typical aura without headache
  - 1.2.4 Familial hemiplegic migraine (FHM)
  - 1.2.5 Sporadic hemiplegic migraine
  - 1.2.6 Basilar-type migraine
- 1.3 Childhood periodic syndromes that are commonly precursors of migraine
  - 1.3.1 Cyclical vomiting
  - 1.3.2 Abdominal migraine
  - 1.3.3 Benign paroxysmal vertigo of childhood
- 1.4 Retinal migraine
- 1.5 Complications of migraine
  - 1.5.1 Chronic migraine
  - 1.5.2 Status migrainosus
  - 1.5.3 Persistent aura without infarction
  - 1.5.4 Migrainous infarction
  - 1.5.5 Migraine-triggered seizure
- 1.6 Probable migraine
  - 1.6.1 Probable migraine without aura
  - 1.6.2 Probable migraine with aura
  - 1.6.5 Probable chronic migraine

The ICHD-II diagnostic criteria for **migraine without aura** are as follows:

- A.** At least 5 attacks fulfilling criteria B–D
- B.** Headache attacks lasting 4–72 hours (untreated or unsuccessfully treated)
- C.** Headache has at least two of the following characteristics:
  - unilateral location
  - pulsating quality
  - moderate or severe pain intensity
  - aggravation by or causing avoidance of routine physical activity (e.g., walking or climbing stairs)
- D.** During headache at least one of the following:
  - nausea and/or vomiting
  - photophobia and phonophobia
- E.** Not attributed to another disorder.

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