The international headache society classification of migraine headache—A call for substantiating data

Elliot Shevel[*], Daniel Shevel

Migraine Research Institute, Johannesburg, South Africa
Email: [*]drshevel@headclin.com

ABSTRACT

This paper proves conclusively that there is no scientific basis for the International Classification of Headache Disorders (ICHD) criteria for the diagnosis of migraine (MI). There are no data supporting the choice of diagnostic criteria, and where data do exist, they contradict the ICHD criteria. The Classification Committee (CC) of the International Headache Society (IHS) is called upon to revise the criteria according to the extensive available data.

KEYWORDS

Headache Classification; Migraine; Migraine Diagnosis; Migraine Classification; ICHD; Olesen

1. INTRODUCTION

The ICHD has become widely accepted and been used throughout the world. In the preface to the 1st edition, the recommendation was made that it should be put into "immediate use in scientific studies" [1]. This sentiment was reinforced in the preface to the second edition, which stated "No journal should publish papers related to headache that are not using this classification and the associated diagnostic criteria" [2]. This is indeed what has transpired, and it is rare to find a published study on MI that does not adhere to the ICHD criteria.

The ICHD uses a combination of the following criteria to diagnose MI [3]:

1) At least 5 attacks fulfilling criteria 2) - 4).
2) Headache attacks lasting 4 - 72 hours (untreated or unsuccessfully treated).
3) Headache has at least two of the following 4 characteristics:
a) Unilateral location.

b) Pulsating quality.
c) Moderate or severe pain intensity.
d) Aggravation of pain by routine physical activity.
4) During headache at least one of the following:
a) Nausea and/or vomiting.
b) Photophobia and phonophobia.

The authors have reviewed the literature carefully to ascertain the rationale for the selection of the diagnostic criteria for MI, and to ascertain upon what scientific data their selection and their relative values were based. Each criterion for MI diagnosis is analyzed in detail.

2. DIAGNOSTIC CRITERIA

2.1. Number of Attacks

For MI to be diagnosed according to the ICHD there should have been at least 5 attacks [1-3].

The reason given in the 3rd edition is that "one or a few migraine attacks may be difficult to distinguish from symptomatic migraine-like attacks" [3]. This number appears however to have been arbitrarily chosen, as there are no supporting data.

2.2. Duration of Attacks

To diagnose MI according to the ICHD the duration of attacks should be between 4 - 72 hours' [1-3]. As with the number of attacks, there are likewise no data cited in the bibliography to support this time-frame. The authors have also been unable to find any supporting data in the broader migraine literature.

2.3. Headache Has to Have at Least 2 of the Following Characteristics

2.3.1. Unilateral Location

The only study that the authors could find in the bibliography of the first and second editions of the ICHD that

[*]Corresponding author.

contains data relating one-sided pain, was a paper written by Professor Jes Olesen, chairman of the Classification Committee since 1985 [1,2]. In this paper he reported that the pain was unilateral in 56% and bilateral in 44% of migraineurs [4]. These numbers diametrically oppose the inclusion of unilaterality as a diagnostic criterion for MI.

The reader should consider further that the 750 cohorts in Olesen's study had already been classified with MI, using unilateral pain as one of the criteria. This means that there was a built-in bias favoring unilaterality in the sample, and even in spite of this violation of the principle of random selection, only 56% had unilateral pain.

A number of other studies, before the ICHD was first published also presented measurable, repeatable, independently verifiable data that showed that unilaterality is not a reliable criterion for diagnosing MI [5-8].

If the CC of the IHS has justification, given these contradictory data, for the selection of unilaterality as a diagnostic criterion for migraine, it has a duty to provide it.

2.3.2. Pulsating Quality

In one study published in "Headache", the incidence of pulsating pain was approximately equal in MI and tension-type headache (TTH) [9]. Even in a study authored by Professor Olesen himself, pulsatile pain occurred in only 47% of MI sufferers, while non-pulsatile headache was found in 53% [4]. An earlier study reported that as many as 30% of 1000 TTH sufferers had throbbing pain, whereas 80% of 1000 migraineurs had throbbing pain [10]. The reader is reminded though that in all these studies, the cohorts had been pre-selected with "pulsation" as one of the selection criteria for MI, rendering the numbers meaningless as support for the very criteria for which they were selected.

All the available data contradict the inclusion of "pulsatile pain" as criterion for migraine.

2.3.3. Moderate or Severe Pain Intensity

There are no data in the 3rd edition bibliography relating to pain intensity. There was however one reference in the 2nd edition, published by Professor Olesen. He showed 1) that the rate of throbbing is related to the severity of the pain—the more severe the pain, the more frequently it was pulsating, and 2) that patients with throbbing headache had more cranial muscle tenderness [4].

Combining these two results suggests that both the severity of the pain and the rate of throbbing are related to the degree of muscle tenderness.

Although this study has been removed from the bibliography of the 3rd edition, the data do not support the inclusion of moderate to severe pain intensity in the ICHD as a diagnostic criterion for MI as opposed to TTH. The data cannot be disregarded simply because the reference

has been removed from the public eye.

2.3.4. Aggravation of Pain by Routine Physical Activity

There are no data cited in the ICHD or in the broader MI literature to support the inclusion of aggravation of pain by routine physical activity as a diagnostic criterion for MI.

2.4. During Headache at Least One of the Following Must Be Present

2.4.1. Nausea and/or Vomiting.

Nausea and vomiting were found to occur more frequently (72%) in MI than in TTH (36%) [9]. The cohorts had however already been classified according to the Ad Hoc Committee classification, which included nausea and vomiting as criteria for MI, but not for TTH [11]. The present authors have been unable to find any other studies to support the inclusion of nausea and vomiting as criteria for MI.

2.4.2. Photophobia and Phonophobia

Visual disturbances were found to occur with the same frequency (52%) in MI as in TTH [9]. The implication is that the presence of photophobia cannot be used to differentiate between MI and TTH. The present authors have been unable to find any other studies to support the inclusion of photophobia as a criterion for diagnosing MI.

The present authors have likewise been unable to find any data supporting the inclusion of phonophobia as a diagnostic criterion for MI.

3. RESULTS

For most of the criteria used to diagnose MI, *i.e.*, number of attacks, duration of attacks, pain intensity, aggravation of pain with mild exercise, photophobia, phonophobia, and nausea and vomiting, the ICHD provides no supporting data. For those criteria where data do exist, *i.e.*, unilateral pain and pulsatile pain, the data in the 2nd edition, but which have been removed in the 3rd edition, actually contradict their inclusion as diagnostic criteria for MI.

4. DISCUSSION

The chairman of the CC has stated "The IHS headache classification system emphasizes headache diagnosis, which is ideally related to the underlying biology of these disorders" [12]. The criteria for diagnosing MI are however based entirely on the symptoms, and are not in any way related to the underlying biology [2]. Furthermore, the data that there were in the 2nd edition bibliography, but which do not support the inclusion of the

present criteria, have been expunged from the 3rd edition.

Hippocrates originally described MI as a one-sided headache accompanied by nausea and vomiting. Hippocrates description and the present classification are both simply lists of symptoms arbitrarily decided upon. This may have been acceptable in 400 BC, but in the 21st century it is an anachronism which has retarded our understanding of MI.

It is also of concern that two important references in the 2nd edition, one of which Professor Olesen authored, and the other which he co-authored, have been removed. Olesen's paper contained data showing that neither unilaterality nor pulsating headache can logically be criteria for migraine [4]. In the other paper, which he co-authored, it makes the astounding admissions that "The IHS criteria were developed without the collection of empiric data", and that "The IHS criteria were based on opinions" [12]. These references, with their embarrassing implications have been removed from the bibliography of the 3rd edition.

5. CONCLUSION

The ICHD diagnostic criteria for MI are not supported by data, and where data do exist, they contradict the ICHD criteria. The significance is clear—here is a document that is to be used by scientists, but which has never been substantiated scientifically.

As Professor E H Spierings of the Department of Neurology at Harvard Medical School, and past editor of "Cephalalgia" published in "Headache", "The IHS classification lacks biological/clinical validity and therefore undermines advancement in our understanding of headache. It is a waste of time, money, and effort as well as potentially misleading to study from a biological/clinical perspective a condition which, as in the classification, is defined purely on arbitrary grounds" [13].

The CC of the IHS is called upon to revise the criteria for migraine according to the extensive available data.

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