

## SECTION V

# The Secondary Headaches

## Chapter 104

### The Secondary Headaches: Introduction

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Secondary, according to Webster, is a term used in medicine to indicate “dependent or consequent upon other diseases.” The International Classification of Headache Disorders (ICHD-II) categorizes headaches as primary if not caused by another disorder and as secondary if caused by another disorder. Thus, conditions such as central nervous system infections or trauma cause secondary headaches (headache is a symptom of the underlying medical illness), whereas the headaches of migraine are primary. It is important to underline that the term primary does not mean nonorganic or idiopathic or without a neurobiologic basis. The causes of *secondary* headaches are numerous. In ICHD-II they have been ordered in eight groups (1) (Table 104-1). Alcohol overuse (hangover), infections, trauma, and fasting are among the most common causes of secondary headache (2,3). Often, the characteristics of secondary headaches overlap with those of primary headache disorders, which might pose significant diagnostic difficulties.

#### CHARACTERISTICS OF SECONDARY HEADACHES

The exact characteristics of many secondary headaches are not sufficiently documented. The new standard for diagnostic criteria for secondary headaches (Table 104-2)

allows a characterization of the headache features of all secondary headaches. Some secondary headaches (e.g., postlumbar puncture headache) have distinctive characteristics that would be essential to the diagnosis. Such unique characteristics are listed. Systematic documentation of secondary headache characteristics, as now required in the revised classification, will undoubtedly facilitate future nosologic headache studies.

Headache is one of the most common presenting symptoms to a physician, and an identification of differentiating headache characteristics may aid in arriving at the correct diagnosis. Such situations are quite important when headache is a cardinal symptom of the underlying disorder (e.g., arteritis, arterial dissection, cerebral venous thrombosis, increased intracranial pressure, low spinal fluid pressure, hypophyseal neoplasms, and meningitis). In other instances, headache is not essential to the diagnosis or management, and a detailed etiologic classification is not worthwhile. An example would be a subclassification of headaches attributed to infection on the basis of the causative pathogen (e.g., virus, bacteria, etc.). It should be borne in mind, however, that criterion A of the ICHD-II can stimulate research that may indicate differential headache characteristics with different infections. Then, a thorough knowledge of the headache characteristics will have far-reaching diagnostic implications.

#### CAUSALITY IN SECONDARY HEADACHES

A close temporal relation is the most important, and sometimes the only, reason for causality. In acute-onset headaches, a temporal relationship usually is established easily and causality is inferred accordingly. On the other hand, it may be quite difficult to establish a temporal relationship in chronic conditions associated with headache. In such instances, removal of the putative cause and resolution of the headache establishes the link (criterion D, Table 104-2). For example, a patient suffered from migraine

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**TABLE 104-1 The Secondary Headaches**

Headache attributed to head and/or neck trauma
Headache attributed to cranial or cervical vascular disorders
Headache attributed to nonvascular intracranial disorder
Headache attributed to a substance or its withdrawal
Headache attributed to infection
Headache attributed to disorder of homeostasis
Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures
Headache attributed to psychiatric disorder
Cranial neuralgias and central causes of facial pain
Other headache, cranial neuralgia, or central or primary facial pain

attacks for years, and a cerebral arteriovenous malformation or meningioma is discovered during the evaluation for increasing headache attack frequency. The answer to the causality issue in this case can be established if the headache greatly improves or disappears after a successful operation. In other words, diagnostic criterion D is fulfilled (Table 104-2). Alternatively, if the headache does not improve or disappear and a clear temporal relationship cannot be established, a *probable* diagnosis of the secondary headache can be given (see Chapter 2).

The Headache Classification Committee reviewed published data on the causal link between headaches and a particular condition but did not define the level of evi-

**TABLE 104-2 General Diagnostic Criteria for the Secondary Headaches**

A. Headache has at least one of the following characteristics <sup>1,2</sup> :
B. Another disorder known to be able to cause headache has been demonstrated.
C. Headache occurs in close temporal relation to the other disorder and/or there is other evidence of a causal relationship.
D. Headache is greatly reduced or disappears within 3 months (this may be shorter for some disorders) after successful treatment or spontaneous remission of the causative disorder. <sup>3</sup>

<sup>1</sup>For most secondary headaches the characteristics of the headache itself are poorly described in the scientific literature. Even for those where it is well described, there are usually few diagnostically important features. Therefore, diagnostic criterion A in the standard set of criteria is usually not very contributory to establish causality. However, criteria B, C, and D usually effectively establish causality. This makes it possible to use criterion A not only as a defining feature, but also to tell as much about the headache as possible or to show how little we know in order to stimulate research. This is why the formulation of criterion A now allows mentioning a number of features in order of their frequency. Hopefully, this will stimulate more research into the characteristics of secondary headaches so that, eventually, criterion A for most of these headaches can become much more clearly defined.

<sup>2</sup>If nothing is known about the headache, it is stated after the "no typical characteristics known."

<sup>3</sup>Criterion D cannot always be ascertained and some conditions cannot be treated or do not remit. In such cases criterion D may be replaced by "Other causes ruled out by appropriate investigations."

dence required to establish causality. In general, published reports were scarce and committee members determined causality based on consensus (level III evidence) and level II evidence when available. For example, it generally had been accepted that chronic arterial hypertension causes headache, but relatively recent epidemiologic studies with suitable control groups made it clear that the association largely reflects the high prevalence of both disorders. This is in line with the concept that the coexistence of headache and an organic disorder often is due to chance when primary headaches are so prevalent (3). Of note is that only diastolic blood pressures above 120 mm Hg are associated with increased headache prevalence (see Chapter 109). Furthermore, every drug trial lists headache as an adverse event, which might implicate causality, but only double-blind, placebo-controlled trials are poised to address the association, or lack of it, based on the comparative incidence of headache between cohorts treated with active drugs and those who receive placebo.

Another example is that of headache and ischemic stroke. One may ask, is headache associated with the emotional trauma of stroke or to the ischemic event itself? The answer has been uncertain for quite some time, but several studies have now shown a clear relation between the location of the ischemic lesion and the location of headache, implicating that stroke itself can cause headache (see Chapter 104). Lastly, some patients with brain tumors report headache and others do not. The questions in this instance are, is headache due to the size, location, or other characteristics of the tumor, or is the headache due to a pre-morbid low headache threshold? Relatively recent studies indicate that both factors are involved (see Chapter 113).

These examples illustrate the need for appropriate level I and level II evidence in assessing a potential relationship between a medical illness or disorder and headache.

**PRIMARY VS. SECONDARY HEADACHE**

The differences between primary and secondary headache are listed in Table 104-3. A secondary headache could only be classified as such using the ICHD-I if it occurred for the first time in close temporal relation to the suspected cause. This implied that, for example, a patient with a history of tension-type headache could not receive the diagnosis of a secondary headache if he or she developed a brain tumor with rapidly worsening headaches that had features of tension-type headache. Likewise, a patient with mild and infrequent migraine attacks who, following a head trauma, developed very frequent and severe migraine attacks could not be classified as having a secondary headache. This case is no longer applicable with the ICHD-II. Accordingly, the physician will exercise his or her judgment in making

TABLE 104-3 Primary or Secondary Headache?

Diagnosis	Primary Headache Only	Primary + Secondary
Temporal relation of other disorder to headache exacerbation	Loose	Close
Degree of exacerbation	Slight	Marked
Other evidence that other disorder can cause secondary headache	Weak	Strong
Other disorder eliminated	Headache unchanged	Headache returns to previous pattern

the diagnosis of a secondary headache in patients with preexisting primary headaches. In favor of assigning two diagnoses are a very close temporal relationship with the putative cause, marked aggravation of the headache over its previous pattern, a high level of evidence linking the putative underlying illness or condition to the induction of headache, and major improvement or relief of the headache after effective treatment when the putative underlying cause is treatable. Thus, the case of the patient with migraine aggravated by head trauma that was illustrated earlier could receive two diagnoses under ICHD-II because of very marked headache aggravation, close temporal relation to the head trauma, and an established link between head trauma and induction of headache. A treatment response is not applicable in this example to assign two diagnoses.

Similar to the rules in the ICHD-I, a headache that occurs for the first time in close temporal relations to a known cause of headache shall be coded only as a secondary headache, even if its characteristics are migrainous or tension-type-like. For example, migraine occurring for the first time after a head trauma is coded as a post-traumatic headache of the migraine type, but not as a migraine.

## IMPORTANCE OF SECONDARY HEADACHES

The characteristics and profile of secondary headache can be important for several reasons. First, they could be valuable diagnostic tools that steer toward a particular underlying illness. Second, and equally important, is the fact that secondary headache may have management implications. For example, headaches after subarachnoid hemorrhage, brain tumor, or trauma often do not respond to simple analgesics or primary headache-specific drugs, and experts sometimes resort to use morphinomimetics on the basis of level III evidence. This calls for future well-controlled studies of headache treatment in patients with secondary headaches. Third, secondary headaches may provide a window toward further understanding basic mechanisms of headache. Benign intracranial hypertension, for example, is interesting not only from the perspective of diagnosis and management but also because further study of this disorder is likely to help in understanding the interrelationships between increased intracranial pressure and headache.

## CONCLUSION

Secondary headache is an important element in neurologic differential diagnosis, may be a key to understanding headache mechanisms, and often cause considerable suffering to the patient. Research into its mechanism(s), epidemiology, characteristics and profiles, and treatment should be a future priority.

## REFERENCES

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