Chapter 79

Differential Diagnosis and Prognosis of Tension-Type Headaches

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DIFFERENTIAL DIAGNOSIS

According to the second edition of the International Headache Society's (IHS) International Classification of Headache Disorders (ICHD-II codes 2.1, 2.2, and 2.3), the headache of the various subtypes of tension-type headache (TTH) is usually bilateral, of a pressing quality, of mild or moderate intensity, not aggravated by physical activity, and rarely accompanied by mild symptoms such as nausea, photophobia, or phonophobia. Although these characteristics are encountered in the vast majority of patients, it must be kept in mind, as demonstrated by a population-based study (18), that 18% of patients may have a pulsating headache, 10% unilateral pain, 28% aggravation on routine physical activity, 18% anorexia, 4% nausea, and 11% photophobia (Table 79-1). Two problems arise, therefore, in diagnosing TTH. On the one hand, although it is the most frequent present in up to 78% in the population-based study by Rasmussen (20), it is also the least distinct of all headache types; its clinical diagnosis is based chiefly on negative features, that is, on the absence of symptoms that characterize other primary or secondary headaches (the absence of unilaterality, pulsatility, aggravation by physical activity, associated symptoms, and so on). On the other hand, a nonnegligible minority of patients may present with symptoms that are found in other headache types. The lack of specificity as well as the uncommon features may make the clinician, and thus the patient, hesitate about the correct diagnosis and explain why paraclinical investigations to exclude organic disease are (and probably should be) performed more frequently in tension-type headache than in other headaches (e.g., migraine). In particular, an atypical history or an abnormality on clinical examination indicates the need for further investigations, for example, for computed tomography (CT) or magnetic resonance imaging (MRI). Several studies confirm that brain imaging studies have a low likelihood of discovering significant intracranial disease in adult or pediatric patients with normal physical and neurologic exams, typical headache patterns, and no change in preexisting headache (7,18, 23,37).

Differential Diagnosis With Secondary Headaches

Many of the secondary headache types listed under the major headings of the IHS classification, however, may mimic TTH at some stage of their clinical course. Here we examine only the most frequent among them (Table 79-2). In clinical practice, the most frequent cause of chronic daily headache is medication-overuse headache (ICHD code 8.2), to which patients may evolve after having presented initially with migraine or with episodic tension-type headache or chronic tension-type headache (CTTH) (2,8,19,26). (For further details see Chapter 118.) Even if the initial disorder is migraine, with medication overuse, migraine attacks progressively become less characteristic and mixed with another headache type that phenotypically resembles tension-type headache (2,15). Recognizing this condition is of crucial importance because any kind of therapy for the initial headache type becomes effective only after the patient has been withdrawn from analgesic or specific antimigraine compounds.

Headache is usually the most prominent symptom of the so-called "posttraumatic syndrome" that may occur after minor or major injury to the head or neck (ICHD-II code 5) (see Chapters 105 and 106). In more than 80% of patients the headache resembles TTH. According to the ICHD-II of the IHS, any headache that develops within 7 days after a head or neck trauma can be considered to be posttraumatic. Acute posttraumatic headache (code 5.1) resolves within 3 months after the trauma, while the chronic type persists beyond this time point (code 5.2).

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TABLE 79-1 Atypical Features of Tension-Type Headache and Their Incidence

Feature	*Percentage*
Aggravation by routine physical activity	28
Pulsating headache	18
Anorexia	18
Photophobia	11
Unilateral headache	10
Nausea	4

(From Maytal J, Bienkowski RS, Patel M, Eviatar L. The value of brain imaging in children with headaches. *Pediatrics* 1995;96:413–416, with permission.)

Usually there is little difficulty in distinguishing symptomatic headache caused by *sinus or eye disease* from TTH. Chronic sinusitis cannot be accepted as a cause of headache on the basis of a simple radiologic thickening of sinus mucosa. At least intermittent radiologic or clinical signs of ongoing sinus disease must be present. Similarly, radiologic evidence of *cervical spondylosis* is rarely a satisfactory explanation for a headache, because it can be found with equal prevalence in age-matched headache-free subjects (36).

The relation between *oromandibular dysfunction* and TTH remains controversial (see Chapter 73). Oromandibular dysfunction was listed in the first edition of the IHS classification as a possible causative factor at the fourth digit code level. The fourth digit coding has been omitted in the ICHD-II. Because of its high prevalence, however, the occurrence of oromandibular dysfunction with TTH in the same subject can be fortuitous. The similar prevalence of oromandibular dysfunction in subjects from the general population suffering from TTH or migraine or devoid of headache suggests that a causal relationship with TTH is rare (3,12).

Changes in intracranial pressure are well-known causes of headache (see Chapters 113 and 114). Whereas spontaneous or symptomatic intracranial hypotension is most often distinguishable from other headache types by its clear-cut accentuation when the patient is in the erect position (*orthostatic headache*), intracranial hypertension may produce a headache that can mimic migraine or TTH. Although *brain tumors* (see Chapter 116) represent only a small minority of the causes of headache, they obviously are a major concern to patients and clinicians. Headache occurs at presentation in approximately 36 to 50% of patients with brain tumors and develops in the course of the disease in 60% (31). Headaches are a more common symptom of brain tumor in children (i.e., in more than 90%). The headache is usually generalized like TTH, though in 30 to 80% of patients, it overlies the tumor. Headache awakening the patient from sleep or present on awakening and associated with vomiting is a frequent characteristic of brain tumor, which may also occur in some migraineurs but is not a feature of TTH.

The syndrome of *idiopathic intracranial hypertension* (ICHD-II 7.1.1) (see Chapter 113), also known as *pseudotumor cerebri* or *benign intracranial hypertension*, may mimic CTTH. It has, however, characteristic features that should suggest the diagnosis: predominant occurrence in young, obese women (93%); the "most severe headache ever" (93%); pulsatile character (83%); nausea (57%); vomiting (30%); orbital pain (43%); transient visual obscuration (71%); diplopia (38%); and visual loss (31%) (34). Papilledema without neuroradiologic abnormalities (except for a possible "empty sella") is pathognomic for this condition (31). Idiopathic intracranial hypertension may occur without papilledema (35). In such patients, who may be indistinguishable from others with intractable chronic daily headache, increased cerebrospinal fluid (CSF) pressure, visual obscurations, obesity, and pulsatile tinnitus suggest the diagnosis.

There is limited evidence supporting *psychiatric causes of headache*. The only diagnostic categories included in the ICHD-II are those rare cases in which a headache occurs in the context of a somatization (ICHD-II 12.1) or a psychotic (ICHD-II 12.2) disorder. Clinical experience suggests nonetheless that, in some cases, headache occurring exclusively during some common psychiatric disorders such as major depressive disorder, panic disorder, generalized anxiety disorder, and undifferentiated somatoform disorder may best be considered as attributed to these disorders (see ICHD-II appendix A12). In many of these patients the pain characteristics are those of TTH. The vast majority of headaches that occur in association with psychiatric disorders are not causally related to them but instead represent *comorbidity* (perhaps reflecting a common biologic substrate) (4). This is best documented for migraine (see Chapter 26) but may also occur for TTH. Evidence suggests that the presence of a comorbid psychiatric disorder tends to worsen the course of migraine and/or TTH by increasing the frequency and severity of headache and making it less responsive to treatment (33). Thus, identification and treatment of any comorbid psychiatric condition is important for the proper management of the headache.

TABLE 79-2 Secondary Headache Disorders That Sometimes Mimic Chronic Tension-Type Headache

Medication overuse headache	(ICHD-II 8.2)
Chronic posttraumatic headache	(ICHD-II 5.2)
Sinus/eye disease	(ICHD-II 11.3, 11.5)
Cervical spondylosis	(ICHD-II 11.2)
Temporomandibular joint disorder	(ICHD-II 11.7)
Idiopathic intracranial hypertension	(ICHD-II 7.1.1)
Brain tumor	(ICHD-II 7.4)
Psychiatric disorders	(ICHD-II 12)

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Differential Diagnosis With Other Primary Headaches

TTH may also be difficult to distinguish from other primary headaches in certain patients. For instance, infrequent (ICHD-II code 2.1) and frequent TTH (2.2) can be difficult to distinguish from *migraine without aura* (ICHD-II code 1.1) in patients with atypical, but not necessarily uncommon, clinical features. Primarily for this reason, some authors have hypothesized that migraine and TTH might represent a continuum rather than two distinct entities. Recent epidemiologic studies based on the operational diagnostic criteria of the ICHD-II do not confirm this hypothesis (20,32). There are, however, some reasons to believe that, with the diagnostic pain criteria set out in the first edition of the IHS and maintained unchanged in the ICHD-II, patients coded for frequent TTH include some who have a mild form of migraine without aura and patients coded for CTTH include some who have chronic migraine (ICHD-II 1.5.1). Clinical experience favors this suspicion, especially in TTH patients who also have migraine attacks, and some patients may display pathophysiologic features usually found in migraine (1,29). To improve the clinical distinction between these two headache types, stricter diagnostic criteria for TTH are proposed in Appendix A2 of the ICHD-II (Table 79-3). Further studies are necessary to compare sensitivity and specificity of the explicit criteria (ICHD-II 2.1–2.3) and the more stringent appendix criteria. Meanwhile, it must be kept in mind that TTH and migraine often coexist in the same patient and that the individual episode of TTH is more severe and more frequent in migraineurs compared with nonmigraineurs (22).

In the ICHD-II *new daily-persistent headache* (NDPH) (ICHD-II 4.8) is classified as a separate entity from CTTH (ICHD-II 2.3). Although it has many similarities to TTH, NDPH is unique in that headache is daily and unremitting from the moment of onset, typically in individuals without a prior headache history. A clear recall of such an onset is necessary for the diagnosis, which is not always reliable when the history is taken a long time after onset. The headache of NDPH can have associated features suggestive of either migraine or TTH. NDPH may take either of two subforms: a self-limiting subform, which typically resolves without therapy within several months, and a refractory subform, which is resistant to aggressive treatment programs. It seems to represent a heterogeneous primary headache group, which clearly needs further research. Secondary headaches such as low CSF volume headache, raised CSF pressure headache, posttraumatic headache, and headache attributed to infection (particularly viral) or medication overuse should be ruled out by appropriate investigations.

TABLE 79-3 Alternative Diagnostic Criteria for Tension-Type Headache

A. Episodes, or headache, fulfilling criterion A for [whichever of 2.1 Infrequent episodic tension-type headache, 2.2 Frequent episodic tension-type headache, or 2.3 Chronic tension-type headache] and criteria B through D below
B. Headache lasting from 30 minutes to 7 days actually this criteria is not useful in chronic tth ??? Report to the committee !!!
C. At least three of the following pain characteristics:
   1. Bilateral location
   2. Pressing/tightening (nonpulsating) quality
   3. Mild or moderate intensity
   4. Not aggravated by routine physical activity such as walking or climbing stairs
D. No nausea (anorexia may occur), vomiting, photophobia, or phonophobia
E. Not attributed to another disorder

From ICHD-II, Appendix A2.

Distinction Between Tension-Type Headache Subgroups Associated or Not With Pericranial Tenderness

Finally, within the category of TTH, the validity and clinical usefulness of the subdivision into subgroups "associated ***(third digit code 1)*** or not associated ***(third digit code 2)*** with pericranial tenderness" (code 2.2.2 and 2.2.1) remain to be proven. Pericranial tenderness, a frequent finding in patients with TTH (30), is by no means pathognomic for this disorder. It can be found in other primary headaches as well as in symptomatic headaches, for instance, in the case of intracerebral lesions, such as tumor or hemorrhage. In the latter case, however, the tenderness tends to overlie the lesion. Pericranial electromyographic (EMG) levels are not useful for subdividing TTH types; the proportion of abnormal findings increases with multiple recording sites, under stress conditions (28), and with the disorder becoming chronic (11). No correlation exists between pericranial tenderness and EMG levels, and subjects with increased tenderness, who represent the vast majority of TTH patients, do not differ from those without such abnormalities regarding clinical presentation, pathophysiology, or response to therapy (27,14).

CONCLUSION

In conclusion, significant overlap exists between the headache of organic brain disease and TTH. Any headache of recent onset with fixed localization that has changed in character and, obviously, any headache accompanied by a neurologic sign or symptom requires a thorough evaluation. Although a normal electroencephalogram (EEG) may reassure the patient, the doctor must be aware that it does not exclude organic brain disease and plays no role in the workup of headache patients (10). If an intracranial

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lesion is suspected on the basis of clinical history or examination, a CT or MRI scan should be performed. The distinction between TTH and migraine without aura may be difficult in some patients. At present, there are no reliable paraclinical tests that are useful in the differential diagnosis. Therefore, a careful history and examination as well as a prospective follow-up using diagnostic headache diaries (24) probably constitute the most effective strategy.

PROGNOSIS

The prognosis and clinical course of TTH are variable. Subjects with frequent TTH are probably at increased risk of developing CTTH over a period of many years (14). Whether subjects with more severe TTH are at increased risk for developing migraine is still controversial, because patients with coexisting migraine, TTH, and medication-overuse headache represent the vast majority of clinical populations. Recent studies from the general population suggest, however, that migraineurs have the same lifetime prevalence of TTH as nonmigraineurs, but the migraineurs have significantly more frequent and more severe episodes of TTH, indicating that migraine may be one of numerous aggravating factors of TTH (22,32). Various factors can influence headache frequency and transform the infrequent/frequent form into the chronic one; among these, the most frequent are comorbid psychiatric factors (see above) and overuse of combined analgesics, ergotamine, or triptans (4,8,9,16,25,26).

Another factor important to the onset of primary headaches, especially for their persistence, is psychosocial stress. Some evidence has been found, particularly in TTH, that chronic recurrent headache is associated with the report of high frequency as well as severity of minor life events and so-called daily hassles (5,6,11). These studies suggest that the ability to cope with minor daily life events might be a relevant prognostic parameter in TTH. As a corollary, they offer a rational basis for behavioral therapies designed to improve coping strategies.

The role of sex hormones in primary headaches becoming chronic is a controversial topic, although it is probably minor. Nonetheless, because menstruation is a frequent precipitating factor of migraine (see Chapters 17 and 35) as well as of TTH (20,27), it seems likely that fluctuations of hormonal plasma level, such as those associated with premenopause or inadequate hormonal therapy, can aggravate any primary headache.

In conclusion, it is of major prognostic importance to identify and distinguish TTH from migraine and secondary headache to initiate an early and specific treatment and to prevent inappropriate and excessive drug consumption.

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