Differential Diagnosis of Chronic Headache

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Abstract: Headache is one of the most frequent problems in daily general medical practice. New drugs effective for migraine, including triptan, have been released one after another, but it is beyond dispute that the first step to treatment requires primarily an accurate diagnosis. When headache is regarded to be a pain in the head, doctors often casually diagnose functional headache due to a lack of sense of seriousness or urgency. However, it must not be forgotten that serious sequelae, even death, can result if the correct diagnosis of an organic headache is not made. Furthermore, even with this in mind, diagnosing a chronic headache is not simple, and even diagnosing a migraine may sometimes be difficult. An accurate differential diagnosis of chronic headache, which may seem easy but actually is rather difficult, benefits patients' quality of life without question, and is very important.

Key words: Migraine; Tension-type headache; Cluster headache; Headache diagnosis

Introduction

Headache is such a common symptom that almost everyone experiences it now and then, and it is one of the most frequently encountered problems in daily general medical practice. The need for accurate diagnosis and proper treatment of an organic headache, which takes an acute course, is beyond dispute, but also in the case of a chronic headache like migraine and tension-type headache, which in the past has not necessarily been treated as a disorder because it is so common, the need for appropriate treatment has been advocated in recent years. However, an accurate diagnosis in patients with headache seems easy but is actually difficult.

Even when trying to make a diagnosis according to the classification[1)] of the International Headache Society (IHS), which can be called the bible of headache diagnosis, there are very many headaches that are difficult to be diagnosed. When we actually treat patients with headache after having studied headache to some extent, we encounter incredibly many cases which are puzzling.

In recent years, however, various useful drugs have become available, and the differential diagnosis of chronic headache, which seems easy but actually is difficult, benefits patients' lives without question, and is important.

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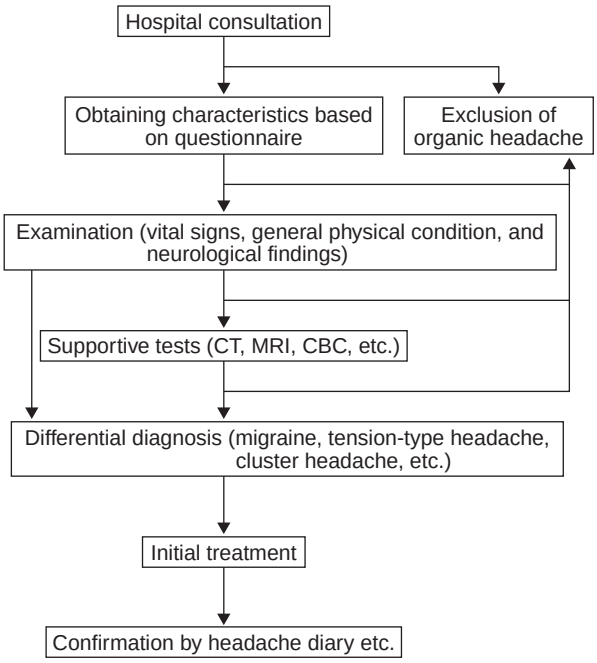

Fig. 1 Algorithm of Chronic Headache Diagnosis[2)]

When Consulted by a Patient with Chronic Headache

It is a well known fact that the causes of headaches are diverse. If the headache that the patient is seeking treatment for is clearly chronic and recurrent, there is probably nothing to worry about; however, the existence of serious diseases that would affect vital prognosis if diagnosis and treatment are delayed, such as subarachnoid hemorrhage, brain tumor, and cerebral meningitis, should be noticed.

In the case of acute/subacute headaches, a physical examination and laboratory tests should be performed quickly; however, it should be noted that organic headaches may be latent among chronic headaches. Therefore, if the patient's symptoms are completely different in character from past headaches, caution is needed. The entire flow-chart of the diagnosis of headache, centering on migraine, is shown in Fig. 1,[2)] but diagnosis, of course, does not always follow an established algorithm like this.

The IHS diagnostic criteria[1)] are considered useful to diagnose headache. The IHS classification was established in 1988 and revised in 2004,[3)] improving the old classification of headache, which was announced in 1962 by an Ad Hoc committee at the NIH in the U.S. Already over 10 years have passed since the announcement of this IHS classification in 1988, and today it is widely accepted internationally as the headache classification.

In addition to the diagnostic criteria, it is important to carefully collect information on the past history and present medical records, and especially concerning migraine, these are much more important than such supportive examinations as brain CT and MRI.[4–7)] Many cases can be diagnosed by careful history-taking alone.

We use a headache questionnaire[6)] prepared by ourselves, to help in making a diagnosis (Table 1). Excluding cases with acute or serious conditions, this form is completed while the patient is waiting, and can give easy and systematic general information on the age when the headache started, family history, past history, medication, character of the headache, aura, general condition including mental condition, and episodes related to the evoking for the headache. Various kinds of questionnaires are prepared at the respective institutions, but in recent years, Iwata *et al.* have been trying to standardize the questionnaires on chronic headache for use by primary care physicians (ADITUS Japan).

Based on these questionnaires, general physical and neurological findings are obtained, including blood pressure and various other vital signs. It is important even for physicians skilled in quickly and accurately obtaining neurological findings to pay attention to the mild consciousness disturbance, neck stiffness, minimal neurological signs, and temporal artery dilatation in temporal arteritis, and it is also essential to confirm the presence of a choked disc on funduscopic examination.

At our outpatient department, we also conduct such general examinations as blood cell count, biochemistry profile, and urinalysis, and

Table 1 Headache Questionnaire[6)]

• Please write (or circle the appropriate items) concerning your headache.
At what age did the headaches start?
Age: _____years old
Does anyone in your family (blood relatives) have headaches?
a) Yes (Who?: _____) b) No
What kind of headache is it?
a) Pulsating (throbbing pain, as if associated with the heartbeat and pulse)
b) Dull pain, a sense of pressure on the head (heavy feeling)
c) Sharp, stabbing-like pain
Please check any diseases you have experienced in the past.
Head injury Hypertension Epilepsy Diseases of the ear/nose, eye, and teeth, etc.
Do you take a medicine regularly for the headaches?
a) Yes (name of the medicine: _____) b) No
How does a headache occur?
a) Paroxysmal (occurs suddenly; How long does it last? About (__) hours)
b) Persistent (constantly)
How often does it occur?
a) Once a month to once in several months
b) Several times a month
c) Persistent, almost every day
In which part of the head do you have the headache?
a) Entire head b) One side c) Front part d) Around the eye(s) or deep behind eye(s)
e) Back of the head to neck
When do the headaches tend to occur?
a) Early morning b) Evening c) Night, during sleep
Do you have an aura (flickering, or blind spot/area in the visual field)?
a) Yes b) No
• About general physical and mental conditions
Do you have a fever?
a) Yes b) No
Do you have clear consciousness?
a) Yes b) No
Do you experience any abnormal vision?
a) Yes b) No
Do you experience nausea or vomiting?
a) Yes b) No
Do you experience stiffness of the shoulders?
a) Yes b) No
Do your eyes have excessive tears and/or is your nose runny?
a) Yes b) No
Do you feel depressed, such as feeling unwell all the time?
a) Yes b) No
Circle the items that are associated with your headache.
Fatigue Lack of sleep Hunger Light Noise Coldness Bathing Menstruation Mental stress
Relaxation after tension Foods (chocolate, cheese, hot dogs, nuts, wine, Chinese dishes) Alcohol
Change in position—such as standing and sitting Aggravated by climbing up or down stairs
Yawning

if a diagnosis cannot be made by observing the course, we order X ray imaging of the skull and cervical spine and brain CT/MRI examination, if there is no estimated risk from exposure to radiation and magnetism. Diagnosis of migraine does not necessarily require brain CT/MRI examination, but they are conducted to find rare brain tumors, subarachnoid hemorrhage,

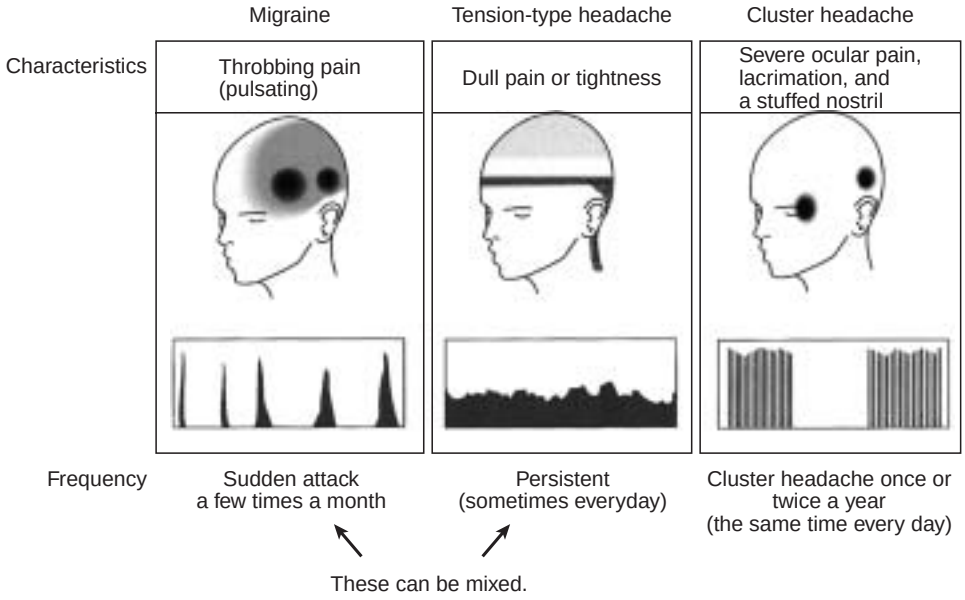

Fig. 2 Three types of chronic headaches

chronic subdural hematomas, etc., which do not take an acute course or have clear neurological signs. Electroencephalography is sometimes useful to diagnose basilar migraine in addition to the differentiation of organic headache.[8)]

When the migraine can clearly be diagnosed by the first examination, this may not be necessary, but diagnosis is occasionally very difficult in transitional, or intermediate, or mixed cases of both tension-type headache and migraine. In these cases, a "headache diary" or "headache notebook" is given to the patient to obtain longitudinal information for treatment.[4)]

Knowledge Necessary for the Differential Diagnosis

The main chronic headaches are migraine, tension-type headache, and cluster headache, which are primary headaches (Fig. 2), but it is necessary to know about the existence of headaches due to glaucoma, trigeminal neuralgia, and intracranial hypotension, and very rare functional headaches such as benign exertional headache and primary headache associated with sexual activities.

1. Migraine

Migraine is characterized by the following: hemicrania or, occasionally, bilateral pulsatile headache; a headache has a paroxysmal onset at an interval of several days or weeks, but lasts only a few days; there is also nausea, vomiting, and hypersensitivity to light and sound during attacks; and a pain is caused by release from stress, hunger, crowdedness, excessive sleep, being in direct hot sunlight, drinking, exercise, etc.

Further, a headache begin by age 30 at the latest, and almost always similar headaches are experienced by some blood relatives of the patient, such as parents, siblings, and children. If the pain is severe, the patient prefers to lie down in a quiet, darkened room and tries to sleep.[4)]

Migraine is further classified according to the IHS diagnostic criteria,[1)] as shown below.

(1) **Migraine without aura**

This corresponds to the former common migraine, and this most common migraine accounts for 80% of all migraines. There is no aura like scintillating scotoma, but other associated symptoms, such as nausea, vomiting, and

hypersensitivity to light and sound, occur. A pulsating or non-pulsating headache occurs on one side of the head or the entire head, and it lasts for 4 to 72 hours. As there is no characteristic symptom that can be identified as an aura, diagnosis is sometimes difficult particularly differentiation from episodic tension-type headache.

(2) **Migraine with aura**

This corresponds to the former classic migraine, and is relatively uncommon, accounting for approximately 10 to 30% of all migraines. The characteristic sign is the aura preceding the onset of the headache. The most frequent aura is scintillating scotoma, where a small blind spot in the visual field gradually expands over approximately 20 minutes and ends within 60 minutes. The border shines zigzag and the blind spot in the visual field remains inside.

In general, a headache appears in the opposite temporal region of the side on which the scintillating scotoma is seen after the aura disappears. The headache pain is usually pulsating. Migraine with a typical aura, usually a visual aura, is further classified as "migraine with typical aura", and this is characterized by hypoesthesia of one side of the body or hemiplegia.

Though rare, we also find familial hemiplegic migraine, which has an attack of familial migraine with hemiplegia during the aura; basilar migraine, which has symptoms of ischemia in the vertebrobasilar artery region, such as consciousness disorder and brain stem symptom, during the aura; and migraine with only aura without headache itself. These may require different treatment policies, and caution is needed.

2. Tension-type headache

Tension-type headache is the most frequent chronic headache, and it is said that it is experienced by 20 to 30% of Japanese people. Tension-type headache is relatively clearly classified by diagnostic criteria. In actual clinical practice, however, it is sometimes difficult to differentiate between and classify episodic tension-type headache (ETTH) and chronic tension-type headache (CTTH), the latter of which lasts longer than 15 days a month. Tension-type headache is bilateral, and often located in the occipital region, and the pain feels like being pressed or tightened up. The headache is not paroxysmal but persistent, accompanied by stiff shoulders and a sense of dizziness, but without vomiting or hypersensitivity to light and sound; and it is characterized by being induced by a posture of looking down,[9] stress, and overfatigue.[4]

This headache represents a trash box-like diagnostic concept that includes former psychogenic headache and headache due to dysfunction of the mouth and jaw, and it is sometimes difficult to make a diagnosis. It is often difficult to differentiate between chronic migraine and tension-type headache, especially CTTH. Some patients are judged to have transitional, or intermediate, or mixed types of tension-type headache and migraine, like the former mixed-type headache. Differentiation from CTTH is difficult, and in addition, transformed migraine and chronic daily headache (CDH), which are related to drug overuse and have characteristics of both migraine and tension-type headache, are also found.[10,11]

Chronic daily headache is also referred to as chronic habitual headache, but this name is not found in the IHS classification. Presently, most cases with chronic daily headache are considered to have an aberrant type of migraine. In other words, it is considered that this type of headache has an initial migraine-like phase, and that its main pathology is migraine which gradually progresses to chronic daily headache in many cases.

Headache caused by drug overuse, as mentioned earlier, is also called drug-induced headache, and it is caused by the excessive administration and chronic use of ergotamine and analgesics, which are originally used for treatment, or sometimes triptan. In fact, a considerable number of patients have drug-induced

headache.

3. Cluster headache

Cluster headaches are so called because they occur in clusters, daily, almost at a set time, for one to two months, in many cases. The cluster period, in which a severe headache behind the eyes is accompanied by lacrimation from the eyes and a stuffed nostril, can occur once or twice a year, or once in several years, but after the period passes, no headaches occur. The severe headache lasts for one to two hours, and then resolves on its own.

Less than 0.1% of people have cluster headaches, and we don't see patients with this type of headache very often in clinical practice. Cluster headache is accompanied by relatively characteristic symptoms, so making a diagnosis is not very difficult. It is one of the most excruciating pains people experience, similar to trigeminal neuralgia, and its existence should be known.

Conclusion

As mentioned at the beginning, diagnosing chronic headache seems to be easy but actually difficult. An accurate diagnosis of functional headache should only be made after excluding organic headache. Toward this end, it should be reconfirmed that the most important is to have knowledge of the accurate diagnostic criteria and accurate medical history-taking based on the patient's understanding and cooperation.

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