Chapter 2
Disorders that can easily develop into cephalic hypersensitivity syndrome

As I mentioned at the outset, this book has two objectives. The first is to make patients themselves aware of cephalic hypersensitivity syndrome, and how to look after themselves to prevent and treat it. The other is to let young doctors know that cephalic hypersensitivity syndrome cannot be treated by simply following the guidelines. If young doctors can stay focused on individual characteristics while deciphering the origin of the disorder, they will find it is actually far from intractable. I also hope to instruct young doctors on what initial treatment to use to prevent cephalic hypersensitivity syndrome from developing in the first place. The first step in treating cephalic hypersensitivity syndrome is to distinguish it from other conditions. The symptoms that patients complain of, including headache, dizziness / vertigo, stiffness and pain, numbness in the limbs, and insomnia, are also seen in other disorders. The key to distinguishing cephalic hypersensitivity syndrome is a broad-ranging, careful medical interview that asks about the patient's history of illness and medication over the past decade or more, going back several decades in some cases, as well as subjective symptoms overshadowed by the main complaint and even symptoms that may not be noticed by the patient himself or herself but are matters of concern to the patient’s family and other people around him/her. Of course, it is necessary to identify disorders that require urgent treatment and those that clearly need specialist therapy, but those are outside the main thrust of this book, and I will therefore not address them in detail. In this chapter, my focus is on describing the various disorders that often progress to cephalic hypersensitivity syndrome and their symptoms, as well as patients' characteristics and the identification, prevention, and treatment of cephalic hypersensitivity syndrome.

1 Headache

Many people who visit a doctor complaining of headache have already been treated at several other medical institutions. Headache can become chronic, transformed, and eventually intractable.

A condition originally caused by migraine, tension headache, straight neck, or eye fatigue becomes chronic and transformed, developing into cephalic hypersensitivity headache due to psychological stress and inappropriate treatments.

Medical interview for headache

Patients who present complaining of violent or splitting headache must be treated with caution. Observe their vital and neurological signs, and after ruling out inflammation, carry out an MRI immediately. The MRI should be used to rule out conditions such as brain hemorrhage, subarachnoid hemorrhage, cerebral infarction, and dissecting arterial stenosis or aneurysm. One blind spot in headache outpatient clinics is the intense pain caused by dissection of the vertebral artery. If an acute dissecting aneurysm is overlooked, this can be fatal. Even if it spontaneously improves to a chronic state, it may develop into a chronic illness syndrome (Case 42). The effectiveness or otherwise of Imigran (sumatriptan) nasal drops and oxygen inhalation are useful diagnostic resources for ordinary headache outpatient clinics. Both Imigran nasal drops and oxygen inhalation can be performed in outpatient treatment rooms. Changes in pain can be assessed by the use of a facial scale. If neither treatment is effective, a cautious attitude should be adopted, including referral to a specialist.

In many cases, headache is chronic. The technique used to take medical interviews of headache patients is extremely important. The true worth of medical interviews is not apparent if patients are just asked to fill in a form by themselves.

The medical interview should start by confirming three points: "Do you always suffer from this sort of headache?" "Have you often suffered from headache before?" and "Is this the first time you have experienced this sort of headache?" These questions are extremely important. Even if a patient answers "Yes" to the

question "Is this the first time you have experienced this sort of headache?" it is important to go on to ask "What about before?" and "What about ten years ago?" This may elicit a response such as "Oh yes, I used to suffer from headaches," or "Now that you mention it, this time it probably is worse than my usual headache."

In terms of headache frequency, do not fall into the easy trap of thinking that a headache several times a month means a migraine, sustained pain for a week to 10 days or more is a tension headache, and intermittent pain for several weeks two or three times a year is a cluster headache. Transformed migraine can be uncovered by a careful preliminary examination.

HIT-6 is an abbreviation for the Headache Impact Test, a questionnaire consisting of six questions that provide a simple score for the physical and mental effects of headache and their influence on daily life.

This test is widely used in headache outpatient clinics, and I value the score it provides. Leaving aside the issue of how to classify the severity of headache, people with a score of 60 or more can be viewed as experiencing at least some difficulties in daily life and as in need of proactive treatment.

Administering this questionnaire on a regular basis also provides an indication of the effectiveness of headache treatment.

Date _____ Name _____

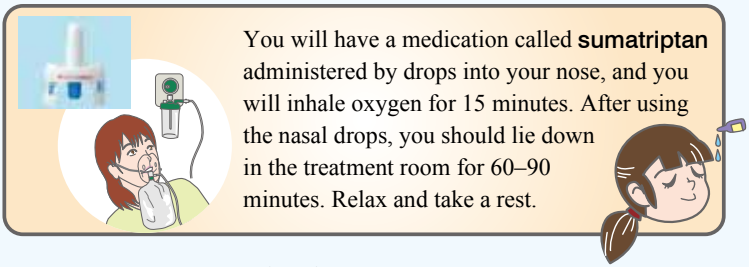
Nasal drop test Oxygen inhalation

- Administer Imigran nasal drop and observe whether or not it has any effect.
- Administer oxygen inhalation for 15 minutes and observe whether or not it has any effect.
- This reveals the type of headache.

Numerical Rating Scale for expressing the level of pain on an 11-point scale from 0 to 10

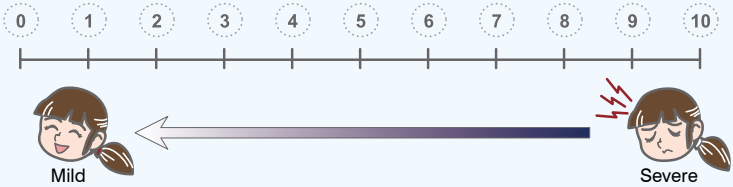
► How painful is your headache at this moment?

Draw a circle on the line below to show how badly it hurts now, with 10 being how painful it was at its worst.



► How painful is your headache 60 or 90 minutes after the nasal drop and oxygen inhalation?

Draw a circle on the line below to show how badly it hurts now, with 10 being how painful it was at its worst.



Thank you for your cooperation.

Kosuke Oota

Oota Medical Interview Form for Headache Patients

Please tick the boxes next to the answers that apply, and fill in numbers where necessary

	Migraine	Tension headache / Transformed headache	Cluster headache
This headache is ...	☐ The same sort of pain as always	☐ Similar to headaches I used to have before	☐ A sort of pain never previously experienced
Frequency of headache	☐ Between [ ] times and [ ] times a month (episodic)	☐ 1 week to more than 10 days (persistent)	☐ About once a year for several weeks Intermittently persistent Seasonal
Duration of each headache	☐ 4 hours to 3 days	☐ All day long	☐ Less than 3 hours
Time when it often occurs	☐ When relaxing, e.g., on weekends ☐ Headache present on waking up	☐ Worse in the evening	☐ No particular time ☐ Woken by pain during the night
Location of pain	☐ Mostly on one side ☐ Behind the eyes	☐ Usually at the back of the head, in the temples ☐ The whole head	☐ Behind the eyes ☐ Around the forehead
Characteristic type of pain	☐ Pounding, pulsating, or gushing Throbbing pain	☐ Like a painful band squeezing around the head ☐ Persistent pain that drags on	☐ Fierce piercing, gouging, or burning pain
Level of pain	☐ Want to stay still ☐ Bedridden when it is too bad	☐ Bearable ☐ Jobs such as work and chores are manageable	☐ Unable to keep still ☐ Roll around holding head ☐ Become manic/cry out
Impairment of everyday activities	☐ Not impaired	☐ Impaired	☐ Severely impaired
Exercise/ alcohol/ menstruation	☐ Gets even worse with exercise ☐ Gets worse in the bath ☐ Often more painful during, before, and after menstruation	☐ Gets better with exercise ☐ Happens after spending a long time in the same posture at work or in the house	☐ Drinking alcohol brings on headache ☐ Straining (like pushing out a bowel movement) or looking down makes headache worse
Characteristic symptoms other than headache	☐ Nausea ☐ Vomiting Sensitive to : ☐ light, ☐ sound, or ☐ smell ☐ See flashes or streaks of light, unable to read letters	☐ Stiff shoulders or neck muscles ☐ Light-headed dizziness ☐ Just touching the hair is painful ☐ Numbness of the head or face	☐ Bloodshot/tearful eyes ☐ Blocked or runny nose ☐ Sweaty forehead ☐ Swollen eyelids ☐ Contracted pupils or drooping eyelids
Other	☐ Often use painkillers (name of medication:) ☐ Painkillers ineffective ☐ Stress ☐ Insomnia ☐ Constipation ☐ Diarrhea		
	☐ Family history ( ) ☐ No family history		
Date	Name M/F Age		

Kosuke Oota

HIT-6™ Headache Impact Test

HIT is a tool used to measure the impact headaches have on your ability to function on the job, at school, at home, and in social situations. Your score shows you the effect that headaches have on normal daily life and your ability to function. HIT was developed by an international team of headache experts from neurology and primary care medicine in collaboration with the psychometricians who developed the SF-36® health assessment tool. This questionnaire was designed to help you describe and communicate the way you feel and what you cannot do because of headaches.

To complete, please circle one answer for each question.

When you have headaches, how often is the pain severe?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

How often do headaches limit your ability to do usual daily activities including household work, work, school, or social activities?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

When you have a headache, how often do you wish you could lie down?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

In the past 4 weeks, how often have you felt too tired to do work or daily activities because of your headaches?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

In the past 4 weeks, how often have you felt fed up or irritated because of your headaches?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

In the past 4 weeks, how often did headaches limit your ability to concentrate on work or daily activities?

never ▼ rarely ▼ sometimes ▼ very often ▼ always ▼

☐	+	☐	+	☐	+	☐	+	☐
COLUMN 1 6 points each		COLUMN 2 8 points each		COLUMN 3 10 points each		COLUMN 4 11 points each		COLUMN 5 13 points each

To score, add points for answers in each column.

If your HIT-6 is 50 or higher:

You should share your results with your doctor. Headaches that stop you from enjoying the important things in life, like family, work, school, or social activities could be migraine.

☐
TOTAL SCORE

Types of headache

A sort of pain never previously experienced

Many people are rattled when they experience a sudden splitting headache.

It raises the spectra of conditions such as brain hemorrhage and subarachnoid hemorrhage.

At the very least, a CT scan must be performed.

MRI is useful for identifying dissecting lesions, which are common in the vertebral artery.

Similar to headaches I used to have before

Patients who present for examination because of violent headache must be asked persistently about the sort of headaches they have experienced before.

A surprising number will answer "Now that you mention it, there was a time when I used to suffer from headaches and stiff shoulders."

This should lead you to suspect transformed migraine or cephalic hypersensitivity syndrome.

The same sort of pain as always

Patients who have been experiencing the same sort of headache and stiff shoulders for many years often have transformed migraine or cephalic hypersensitivity syndrome.

More concerned about dizziness / vertigo than headache

Bothered by bright lights and sound as well as an aching head

Frequency of headache

Between ( ) and ( ) times a month, episodic

In most cases, a headache that occurs about once a month, and at most once a week is a migraine.

Types include dizzy headache, ophthalmic headache, and headache with hypersensitivity to sound.

Persists for 1 week to 10 days or more

Most often the type known as tension headache.

Tension headache and transformed migraine are often difficult to distinguish, and a detailed medical interview questionnaire and examination are required.

About once a year for several weeks, intermittently persistent

This pattern is characteristic of cluster headache. It should be noted that as the headache symptoms in episodic migraine resemble those of cluster headache, it is easily misdiagnosed.

Indometacin or Voltaren (diclofenac sodium) suppositories are effective.

Severity of headache

A fierce headache generates two different types of response: wanting to lie down and stay still, and being in such pain that staying still is impossible, so that the patient has to keep moving or roll around holding their head. The former is more common in migraine, and the latter in cluster headache. These are treated in entirely different ways. Patients with cluster headache are often woken by intense pain during the night. Those with migraine may also wake up from sleep, but as the pain of migraine is comparatively less severe, sufferers often complain of pain when they wake up. As I have already mentioned, however, headaches that are so violent that they leave sufferers unable to move or serious conditions that would require an MRI, even if the patient is sufficiently mobile to visit a clinic, should be excluded here.

Wanting to stay still, bedridden when it is too bad

This is a common characteristic of migraine!

Patients tend to want to rest in a darkened and quiet room.

Bearable, jobs such as work and chores are manageable

Often the case in chronic migraine and chronic tension headache.

Common in mild to moderate cephalic hypersensitivity syndrome.

Unable to keep still, roll around holding head

The typical characteristic of cluster headache!

Association with exercise, bathing, menstruation, and alcohol

Gets worse with exercise

This is a characteristic of migraine and transformed migraine!

Tension headache, by contrast, usually improves.

Gets worse in the bath

This is frequently the case for migraine sufferers.

Often feel pain during, before, or after menstruation

This is frequently the case for migraine sufferers.

Drinking alcohol brings on the pain

Characteristic of cluster headache, although it is also often the case for migraine.

Many people are unable to drink alcohol during headache episodes.

Diverse migraine-associated symptoms

Many patients assume from the name "migraine" that this condition always involves a headache, but in fact in many cases, cephalic hypersensitivity syndrome is present and is associated with a wide variety of different symptoms. In the medical interview, it is vital to ask detailed questions not just about headache, but also about the symptoms described below. This is because different medications work better for different symptoms. Patients who visit a headache outpatient clinic must be asked persistently whether or not they also have any other symptoms that concern them. This is because they may not raise the subject of symptoms other than headache themselves.

Sensitivity to light, sound, and smell, and scintillating scotoma

One of the most important aspects of the medical interview prioritized in my headache outpatient clinic is to determine whether or not a patient is hypersensitive to light, sound, or smell by asking questions such as "Do you find light unpleasant or dazzling?", "Are you bothered by sounds?" and "Are you bothered by smells?" These are closely connected with the choice of medication. In specialist terms, migraine attacks associated with an aura and reflex epilepsy

may be treated with the same drugs. Various drugs are more effective for light, sound, and smells, specifically Depakene (sodium valproate)/Selenica (sodium valproate), Gabapen (gabapentin), and Topina (topiramate).

Light-sensitive migraine can be effectively treated with Depakene (sodium valproate)/Selenica (sodium valproate) or Topina (topiramate). Sound-sensitive migraine can be effectively treated with Tegretol (carbamazepine), Mystan (clobazam), Gabapen (gabapentin), and Topina (topiramate), which mainly soothe the temporal lobe. Smell-sensitive migraine can be effectively treated with Depakene (sodium valproate)/Selenica (sodium valproate) and Topina (topiramate), which soothe a broad area of the brain from the temporal lobe to the frontal lobe. Patients with chronic tension headache may also be hypersensitive to light and sound.

The phenomenon of flashing lights or a jagged pattern of light in front of the eyes, or vision of letters becoming partly blurred is known as scintillating scotoma and is a visual aura that precedes migraine.

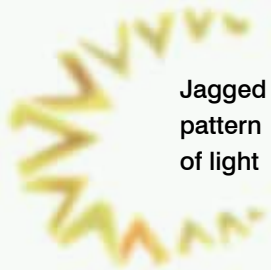
Column

●Ryunosuke Akutagawa and scintillating scotoma

Have you ever heard of "scintillating scotoma"?

Although most migraine patients have never heard this term, if you show them color photographs of the most common types of scintillating scotoma in a medical interview, they are surprisingly likely to say "This is what I see" or "That's my experience" in the medical interview.

Scintillating scotoma is a common visual impairment in which a jagged pattern of light appears in a person's vision, or the visual field narrows, making letters difficult to see and blurry. It frequently appears as a visual aura preceding migraine.



Jagged pattern of light

The well-known Japanese writer Ryunosuke Akutagawa also suffered from migraine, experiencing the classic symptoms of scintillating scotoma.

In his story *Cogwheels* (*Haguruma*), Akutagawa included the following description of scintillating scotoma.

"I discovered something strange in my visual field. Something strange? To wit, constantly spinning semitransparent cogwheels. I had had this experience several times before. The cogwheels gradually increased in number, half-obstructing my visual field, but not long afterward, after a little while they disappeared, to be replaced by the onset of a headache. This was what always happened."

Flashes and jagged pattern of light

The medical interview form for headache patients is an important gateway to the diagnosis of cephalic hypersensitivity syndrome, and going through it with care is the first step toward its correct diagnosis and treatment.

• Migraine-associated vertigo

Migraine-associated vertigo (vestibular migraine), in which dizziness / vertigo may be present in combination with other symptoms or by itself, is explained in the section on dizziness / vertigo.

• Migraine-associated allodynia

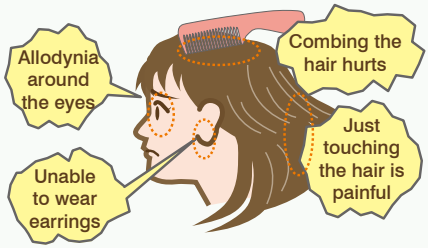
In many cases, allodynia is associated with migraine. The addition of stress to migraine, whether frequent or in the past, causes the brain to become hypersensitive and to feel numbness or pain from stimuli that would not be felt as painful by individuals in good health. Numbness may involve both sensory sensitization and hypoesthesia. Distinguishing between them is the first step in diagnostics, but this process is surprisingly hit-and-miss. For many patients attending clinics, numbness is hypersensitive allodynia. In the great majority of cases, this is effectively improved by the tricyclic antidepressants Tryptanol (amitriptyline) and Noritren (nortriptyline) and the antiepileptic Depakene (sodium valproate). It is far from an intractable symptom.

Column

●Cranial allodynia

Patients arrive complaining of a wide variety of symptoms: just touching their hair is painful, it hurts to comb or tie back their hair, wearing earrings is unpleasant, or the area around their eyes is painful and wearing glasses is difficult. These constitute cranial allodynia, which is associated with migraine. In most cases, it can be effectively treated with tricyclic antidepressants such as Noritren (nortriptyline) and Tryptanol (amitriptyline) or with antiepileptics such as Depakene (sodium valproate) and Tegretol (carbamazepine).

Patients with extracranial allodynia complain of uncomfortable numbness and pain in the limbs. It is most common in the arms. Patients may say that it is uncomfortable when something touches their arms or when they wear a wristwatch or belt. The treatment is the same as for cranial allodynia.



Cranial allodynia

Differentiating migraine and tension headache is difficult in clinical practice

If one asks whether these two conditions are easily differentiated in practice by means of the medical interview form for headache patients, the answer is no. At one point, the term "mixed-type headache" was used. This convenient name was recognized worldwide, but was excluded from the 1988 international classification on the grounds that the two types could be distinguished. Even for doctors who have been treating headache for many years, however, this is no easy task. Given the extent to which migraine and tension headache overlap, it may be more correct to speak of migraine-predominant mixed-type headache and tension-predominant mixed-type headache. Empirically, there are strong genetic and familial factors that contribute to migraine, whereas tension

headache develops when stiff shoulders or neck caused by maintaining a forced posture at work or in daily life becomes chronic and progresses to headache. If tension headache is treated inappropriately, it becomes chronic. Fortunately, the treatment for tension headache is not so different from that for migraine; the only difference between them lies in whether or not to prescribe triptan to be used as needed. The first-choice medications for tension headache also include Tryptanol (amitriptyline), Noritren (nortriptyline), and Depakene (sodium valproate). Highly experienced doctors who have been holding headache outpatient clinics for many years diagnose tension headache-predominant headache rather than tension headache alone. This is because some aspects of migraine may also be present. In addition to the first-choice medication, an experienced doctor will also prescribe ergotamine or triptan to be used as needed and observe its effectiveness. Such an empirical knowledge of diagnosis and treatment is not described in the Japanese Headache Society guidelines. This is a pitfall into which young doctors who are dependent on guidelines may easily fall.

In headache outpatient clinics, it is often difficult to make a clear distinction between migraine and tension headache. Tension headache was formerly referred to as "muscle tension headache," and as this name suggests, tension headache is often associated with symptoms connected to muscle tension. Mixed-type headache, in which elements of both migraine and tension headache are present, often develops into cephalic hypersensitivity syndrome. I often explain this to patients using the analogy of the "monster headache." Although it may have started out as migraine or muscular stiffness, these are exacerbated by a range of different factors and transformed into a "monster headache." One factor in such aggravation is stress. Another is the excessive use of different painkillers. The key to preventing this alteration is not to overlook mixed-type headache during the initial stage. Under the ICHD-3β classification criteria for headache based on the frequency of attacks and the duration for which the symptoms persist, headaches that combine the characteristics of migraine and tension headache are difficult to distinguish.

Chronic daily headache is actually cephalic hypersensitivity syndrome

Based on long experience, I regard the use of the name "chronic migraine" with disfavor. "Chronic migraine" was not defined in the first edition of the

International Headache Classification (1988), but was introduced into the second edition (2004), in tandem with the adoption of diagnostic criteria for drug abuse headache. As the diagnosis of chronic migraine presumes that drug abuse is not taking place, it is intimately connected with the diagnostic criteria for drug-abuse headache. The supplementary criteria for chronic migraine and the diagnostic criteria for drug-abuse headache were partly revised in 2006, but as patients with chronic migraine not infrequently abuse medication for acute headache, clinically the dividing line between them is unclear [1]. The purpose of the International Headache Classification is the diagnosis of individual episodes of headache, and the fact that it does not mesh with criteria that take account of previous history makes it inconvenient as a classification for clinical use. For this reason, the Clinical Practice Guideline for Chronic Headache edited by the Japanese Society of Neurology and the Japanese Headache Society in 2013 also mention Stephen Silberstein *et al*.'s diagnostic criteria for chronic daily headache which, although it is not mentioned in the International Headache Classification, is an expedient category for clinical use.

According to Silberstein *et al*.'s diagnostic criteria, headaches lasting at least four hours a day that continue for 15 or more days a month are regarded as chronic daily headache, which is subdivided into four types, including transformed migraine [2]. In other words, after headache has become chronic, it is characteristically difficult to classify whichever set of diagnostic criteria is used, and what is most troublesome is that although chronic ongoing headache can be classified at a glance as a single type of symptom, its different causes and underlying mechanisms mean that this classification is meaningless in clinical practice, as they affect the efficacy of treatment. On this point, I believe it is crucial to focus on the process of transformation. In this sense, the "transformed headache" I describe is different from Silberstein *et al*.'s definition. Rather than setting out detailed definitions such as "A headache with X characteristics continued to for Y days or more to meet Z criteria for ZZ items" as diagnostic criteria, I would like to propose the concept of "transformed headache" whereby the current headache is caused by some sort of original trigger, with a range of factors such as the abuse of painkillers, heavy psychogenic stress, and lifestyle habits that change brain chemicals bringing about changes in the original symptoms that result in persistent daily headache. This is because in clinical

practice, it is difficult to restrict the original trigger to migraine and classify it in past terms.

In this way of thinking, rather than classification into neat categories, the emphasis is on an in-depth, careful search for the disorder and its symptoms that triggered the condition. This is more effective for the purpose of clinical treatment. As I have already described in Chapter 1, diagnostic criteria and classifications should not lose sight of the underlying truth that their purpose is not efficient coding but the discovery of effective treatment.

In many cases, transformed headache is fomented by psychogenic stress and the use of multiple different painkillers. It is therefore difficult to cure with the antidepressants Tryptanol (amitriptyline) and Noritren (nortriptyline) and the antiepileptic Depakene (sodium valproate) alone. The help of other medications such as Topina (topiramate), Tegretol (carbamazepine), Risperdal (risperidone), and Abilify (aripiprazole) is also required. What is most important is fine adjustment in line with the origin of the patient's headache, based on a detailed medical interview. I treat such patients by prohibiting the regular use of over-the-counter painkillers, prescribing night therapy focused on antiepileptics and antidepressants, and helping them to improve their lifestyles and thinking. If muscle stiffness and tender or trigger points are also present, I add medication with a muscle-relaxing action such as Cercine (diazepam) or Rivotril (clonazepam), along with other therapies such as nerve block and thermal therapy.

Migraine-associated vertigo and vestibular migraine are discussed in detail in the section on dizziness / vertigo.

The increasing number of children with migraine

The number of children aged around 6–9 who suffer from headache is increasing. Many of them have a family history of headache, but this is not the whole story. I believe that it is also related to the frightening decrease in the amount of time children spend sleeping (see Page 176). Data from the Ministry of Education, Culture, Sports, Science, and Technology show that in 1970, elementary school students spent an average of 9 hours 23 minutes sleeping, but in 2000 this was only 8 hours 43 minutes, an average decrease of 40 minutes in a 30-year period. Data from the Ministry of Health, Labour and Welfare show

that an increasing number of children go to bed after 10 p.m., with a rapidly decreasing number asleep before 9 p.m. According to the WHO Europe 2004, children aged around 6–9 should sleep for 10 hours a night [3]. From a global perspective, Japan is a world leader in lack of sleep. There are concerns that as the proportion of women with jobs outside the home increases, children's hours of sleep will further diminish. The important first step in treatment is to ensure that they are getting sufficient sleep. Drug therapy comes after that. Although the Japanese Headache Society clinical guidelines on childhood migraine state that Tryptanol (amitriptyline) is the most common choice of medication, my own drug of choice is Depakene (sodium valproate)/Selenica (sodium valproate), as in the clinical guidelines on valproate-induced migraine (preliminary version). In intractable cases, I also use Tryptanol (amitriptyline) or Noritren (nortriptyline). Although ibuprofen and acetaminophen are the recommended medications to be taken as needed, I first see whether or not Cleamine (ergotamine tartrate) S 0.5 mg or Imigran tablets (sumatriptan) 50 mg are effective.

2 Dizziness / vertigo

It is surprising that there are so few clinics to treat dizziness / vertigo. Dizziness / vertigo ranks alongside headache, stiff shoulders, and lower back pain as one of the most common complaints. Although it is not perceived as such, it is actually a genuine form of pain. A surprisingly large number of people are troubled by dizziness / vertigo, most of whom will attend an ENT clinic. Even people with dizziness / vertigo originating in the inner ear are seldom given any instructions on how to perform special maneuvers to improve vertigo based on a practical explanation of the cause, and many of them are just treated with medication such as Merislon (betahistine mesylate). Even if it resolves spontaneously, dizziness / vertigo that are sufficiently severe to cause problems in daily life may be incorrectly dealt with or treated. For patients, this confusion in how dizziness / vertigo are handled clinically is a tale of woe. It has its roots in a shallow understanding of dizziness / vertigo on the part of working doctors. Intractable dizziness / vertigo may also involve psychological pain such as anxiety neurosis and depression. Too many doctors fail to understand that dizziness / vertigo is also a form of pain.

Cephalic hypersensitivity syndrome-associated dizziness / vertigo is a major component of my proposed disease concept of cephalic hypersensitivity syndrome. This type of dizziness / vertigo exhibits good improvement when treated according to the treatment algorithm for cephalic hypersensitivity syndrome. Over a decade ago, I was mocked by an ENT doctor who said that he had never heard a conference presentation supporting my contention of what is now known as migraine-associated vertigo: that if headache predominates, the patient is suffering from "headache vertigo," whereas if vertigo and dizziness predominate, the condition is "vertigo headache." Some ENTs still state publically today that they do not accept the existence of cephalic hypersensitivity syndrome.

Globally, although progress in research and treatment has been slow, a number of discoveries have been made that support my theory. With respect to the association between migraine and dizziness / vertigo in particular, Cutrer *et al*.'s study from 1992 and Dieterich *et al*.'s 1999 investigation described a variety of forms of migraine with dizziness / vertigo that did not meet the ICHD-2 criteria for basilar migraine, exhibiting aura symptoms such as phobia toward light, sound, and smell (I prefer the term "sensitivity" to "phobia") in addition to headache and dizziness / vertigo [4 5]. A paper co-authored by Brandt-Daroff and Lempert in 2009, who developed a method of treatment for dizziness / vertigo that will be described later, gave dizziness / vertigo as a symptom of migraine the name "vestibular migraine," and also showed that a certain percentage of migraine patients with dizziness / vertigo who are clearly suffering from migraine complicated by dizziness / vertigo despite not meeting the ICHD criteria for vestibular migraine, have never suffered from headache [6]. While making it clear that any explanation of the mechanism for migraine and dizziness / vertigo was only theoretical, both papers attempted to explain it as a phenomenon whereby hypersensitivity is induced in migraine patients by, for example, the asymmetrical release of neurotransmitters, hypersensitivity of the peripheral nerves due to an abnormal gene associated with Ca^{2+} channels (calcitonin gene-related peptide), or the occurrence of crosstalk in the peripheral or central nervous system. They further asserted that the effectiveness of medication for migraine such as β-blockers and Ca^{2+} antagonists as treatments for dizziness / vertigo associated with migraine constitutes evidence to back up this theory.

Migraine-associated vertigo is an internationally recognized condition

The term "migraine-associated vertigo" is not yet generally recognized among Japanese medical associations. In clinical terms, however, an association between migraine and dizziness / vertigo was identified in the 19th century.

Nevertheless, similar to scintillating scotoma, its mechanism has proven difficult to verify, and migraine and dizziness / vertigo have continued to be treated as separate conditions, and in extreme cases, patients seek treatment and are prescribed medication by specialists in different departments. People who suffer from severe nausea and vomiting, which frequently occur in conjunction with dizziness / vertigo, may also be treated by a gastroenterologist. I see patients whose symptoms have not only failed to improve, but who then also suffer from the side effects of medication, making their condition even more intractable.

In fact, when I investigated the patients in my clinic who were suffering from both headache and dizziness / vertigo, about 20–30% of those with dizziness also suffered from migraine. About 30–40% of patients with chronic migraine also suffer from dizziness [7]. Migraine and dizziness are closely related to each other, and dizziness improves if they are regarded as migraine-associated vertigo and treated in the same way as migraine.

As I described earlier, despite numerous reports of the connection between migraine and dizziness / vertigo, for a long time, this was not recognized internationally in terms of terminology, and there were no criteria for its classification. The phraseology "migraine-associated vertigo (vestibular migraine)" was first included as an addendum (appendix) in the revised International Classification of Headache Disorders (ICHD-3 β) published in July 2013.

The criteria for the classification of vestibular migraine in the ICHD are supposed to have been formulated by the International Headache Society with the support of the Bárány Society. This is the first time for the use of the term "headache vertigo" or "vertigo headache." These terms have been used by practicing doctors on the front line for many years and have gained international recognition, and for the time being, a provisional standard has been set out.

Benign paroxysmal positional vertigo (BPPV)

The Bárány Society is a society formed to commemorate Robert Bárány, who received the Nobel Prize in 1914 and was a distinguished researcher in the field of the neurology of equilibrium. In 1912, Bárány noticed that the BPPV experienced by the majority of patients who attended his dizziness / vertigo clinics constituted peripheral dizziness / vertigo triggered by disordered otoliths [8].

BPPV is present in more than half the cases seen in dizziness / vertigo clinics. It commonly occurs when getting up out of the bed, going to bed, rolling over, taking things down from a shelf, or pointing the head downward (such as during hair-washing). It most often consists of rotational vertigo lasting for only a few seconds, ten seconds at most. In a very few cases, rotational vertigo may continue for several minutes. There is no effective medication, and most people do not need to rest. Special maneuvers to improve vertigo are effective, but surprisingly few medical institutions explain these to patients or instruct them on how to perform them.

In-depth medical interviews of patients with BPPV, however, uncover the presence of headache or low-frequency hearing loss in an unexpectedly large number of cases. I believe that the cause is not just disordered otoliths, but that some sort of sensitivity in the epithelial cells within the cochlea or of the nerves is involved. The evidence is that medications to treat cephalic hypersensitivity syndrome are effective for patients of this type.

Psychogenic vertigo

There are two types of psychogenic vertigo. Some patients suffer from underlying organic or functional dizziness / vertigo of which concomitant psychogenic reaction is a complication, whereas in other cases, no particular signs of a nonpsychogenic cause are evident. Diverse chronic illness syndromes may be present, but hearing loss is minor in most cases. Psychogenic vertigo may be psychosomatic or be caused by anxiety neurosis/hypochondria, masked depression, hysteria, or other conditions [9]. These require proper treatment by a psychiatrist or a specialist in psychosomatic medicine. If treated inappropriately, they will aggravate and become intractable.

Orthostatic disturbance

In regular English, this means dizziness on standing up. It may rarely result in loss of consciousness. Children are often referred to a specialist. Orthostatic disturbance is caused by dysfunction of the autonomic nerves, particularly the sympathetic nerves. Most cases of orthostatic dizziness / vertigo are actually orthostatic disturbance. Dizziness and loss of consciousness on standing are mostly due to autonomic nerve dysregulation. Older people who are taking multiple drugs for heart disease and hypertension must adjust or reduce their medication. A tilt table can be used to test blood pressure and autonomic nerve dysfunction. Most households can also carry out the following simple orthostatic tests on the basis of blood pressure, pulse rate, and the patient's symptoms.

① Measure blood pressure and pulse rate in the supine position at rest.
② Measure blood pressure and pulse rate 1, 2, and 3 minutes after standing up.
③ Assessment: Orthostatic disturbance is suspected if systolic blood pressure (the higher number) drops by at least 21 mmHg, the pulse rate increases by at least 21 beats per minute, or at least three major symptoms occur.

Oota's simple test for orthostatic disturbance

ID		Name	
Test date		Name of examiner	

Blood pressure drops immediately after standing up	(dizziness / vertigo / low blood pressure occurs immediately after standing up)
Postural tachycardia syndrome	(no drop in blood pressure, but heart rate increased by standing up)
Neurally mediated syncope	(drop in blood pressure causes diminished consciousness or loss of consciousness)
Delayed orthostatic hypotension	(blood pressure drops 3–30 minutes after standing up)

Blood pressure at rest in the supine position	Blood pressure				Pulse rate	Subjective symptoms / comments
	1st	2nd	3rd	Average		

		Blood pressure	Pulse rate	Subjective symptoms	Dizziness / vertigo	Recovery time	
Standing blood pressure	Within 30 seconds immediately after standing up				Yes/No		Orthostatic hypotension
	1 minute after				Yes/No		
	3 minutes after				Yes/No		
	3 minutes after				Yes/No		Delayed orthostatic hypotension
	30 minutes after				Yes/No		

Note 1) Dizziness / vertigo within 30 seconds immediately after standing up are more common in children, and require further investigation.

Note 2) Dizziness / vertigo / hypotension within 3 minutes of standing up indicate classic orthostatic hypotension and classic autonomic nerve dysfunction.

Note 3) Dizziness / vertigo / loss of consciousness after standing up are common in older people. Delayed onset in particular can be the result of using multiple cardiovascular medications.

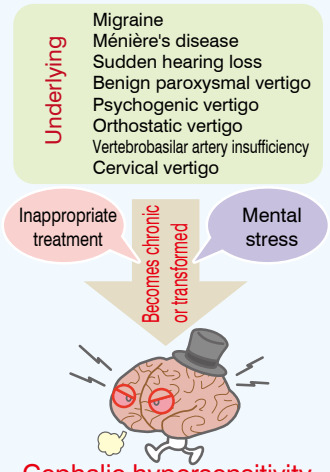
Note 4) Lie down flat immediately if nausea, dizziness / vertigo, feeling faint, and other symptoms that precede loss of consciousness or orthostatic hypotension occur.

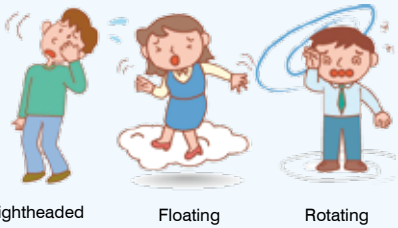
Diagnostic criteria for orthostatic disturbance,

divided into major and minor symptoms

Major symptoms	☐ Dizziness on standing, or prone to dizziness / vertigo	Minor symptoms	☐ Pulse pressure stenosis of at least 16 mmHg during orthostatic test
	☐ Feeling sick when standing, in the worst case falling over		☐ Drop in systolic blood pressure of at least 21 mmHg during orthostatic test
	☐ Feeling sick in the bath, or when seeing or hearing about something unpleasant		☐ Increase in pulse rate of at least 21 beats per minute during orthostatic test
	☐ A little movement causes palpitations or shortness of breath		☐ TII attenuation of at least 0.2 mV on standing ECG during orthostatic test or other changes
	☐ Difficulty in getting up in the morning, feeling unwell during the morning		
Minor symptoms	☐ Facial pallor	Assessment	1: At least 3 major symptoms
	☐ Loss of appetite		2: 2 major symptoms and at least 1 minor symptom
	☐ Intermittent complaints of abdominal colicky pain		3: 1 major symptom and at least 3 minor symptoms
	☐ Malaise or prone to tiredness		Exclusion of underlying conditions
	☐ Headache		
	☐ Prone to motion sickness in vehicles		

Kosuke Oota





Reproduced from Kosuke Oota, Increasing incidence of cephalic sensitivity dizziness / vertigo at my dizziness / vertigo outpatient clinic. 2nd edition.

Medical interviews for dizziness / vertigo

An experienced doctor can reach an approximate diagnosis by using a medical interview form for dizziness / vertigo. Simply accepting what the patient says and regarding the patient's description of their vertigo as rotational vertigo often leads to the wrong diagnosis. It is important to check whether or not it is associated with specific positions of the head and neck, if the patient is currently or has previously been prone to headaches, or if they are sensitive to light, sound, or smell.

Another point to note is that symptoms of dizziness / vertigo cannot be neatly filed away as diseases of either the ear or brain. They may also occur as a consequence of bradyarrhythmia in the heart. It is thus vital to monitor blood pressure, pulse rate, and arrhythmias in cephalic hypersensitivity syndrome clinics. If the pulse rate is slow or arrhythmia is suspected, the patient must be referred to a cardiologist. Focusing solely on the ear and brain in the search for the cause of dizziness / vertigo is dangerous. Caution is required, as in some cases dizziness / vertigo can be dramatically improved by pacemaker implantation.

Oota Medical Interview for Dizziness / vertigo

Please tick all those that apply.

☐ Feels more like floating	☐ Feels more like rotating
☐ Difficult to tell when it started	☐ Came on suddenly
☐ Persistent dizziness / vertigo	☐ Repeated dizziness / vertigo
☐ Not associated with hearing loss, tinnitus, or feeling that the ears are blocked	☐ Associated with hearing loss, tinnitus, or feeling that the ears are blocked
☐ Not related to changes in posture	☐ Related to changes in posture
☐ Not related to particular positions of the head and neck	☐ Related to particular positions of the head and neck
☐ Episodes are of comparatively long duration Around a few minutes	☐ Episodes are of comparatively short duration From a few seconds to less than a few minutes
☐ Previous history of transient ischemic attacks or cerebral infarction	☐ No previous history of transient ischemic attacks or cerebral infarction
☐ No previous history of a blow to the head, traumatic head injury, bleeding from the ears, or skull fracture	☐ Previous history of a blow to the head, traumatic head injury, bleeding from the ears, or skull fracture
☐ Currently suffering from hypertension ☐ Currently suffering from low blood pressure ☐ Dizziness on standing	☐ Not currently suffering from hypertension ☐ Not currently suffering from low blood pressure ☐ No dizziness on standing
☐ Currently suffering from heart disease ☐ Currently suffering from arrhythmia	☐ Not currently suffering from heart disease ☐ Not currently suffering from arrhythmia
☐ Currently prone to headaches ☐ Formerly prone to headaches ☐ Currently suffering from stiff shoulders	☐ Not prone to headaches ☐ Not currently suffering from stiff shoulders
☐ Bothered by light, noise, or smell	☐ Not bothered by light, noise, or smell
☐ Currently suffering from insomnia	☐ Sleeping well
☐ Previous history of psychiatric treatment	☐ No previous history of treatment

Kosuke Oota

Special maneuvers to improve vertigo for use at home

The Epley maneuver to treat dizziness / vertigo caused by otoliths

1

Starting posture

2

Look to the right.

3

Lie back, still looking to the right.
Hold that position for 30 seconds.

4

Look to the left.
Hold that position for 30 seconds.

5

Lie on your left side.
Hold that position for 30 seconds.

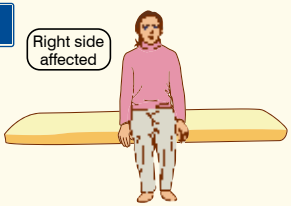
6

Get up on your left side.
Tip your head slightly forward.

Special maneuvers to improve vertigo for use at home

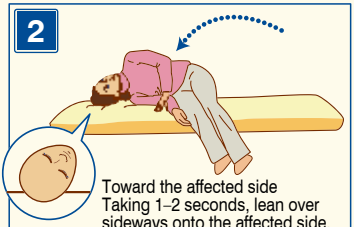
The Brandt-Daroff maneuver to treat dizziness / vertigo caused by otoliths

1



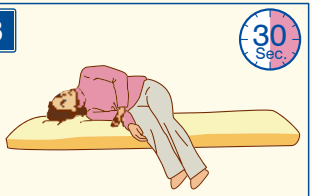
Do this somewhere where you will not be hurt if you fall over.
Sit straight upright, facing forward.

2



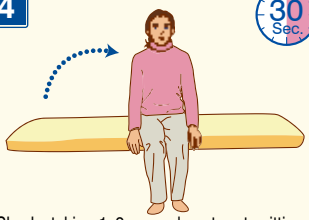
Toward the affected side
Taking 1–2 seconds, lean over sideways onto the affected side.
Look up at an angle of 45 degrees.

3



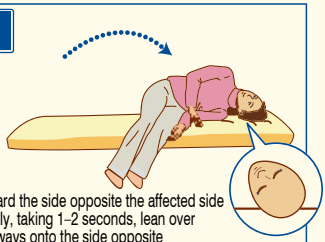
Hold that position for 30 seconds or until any dizziness or vertigo passes.

4



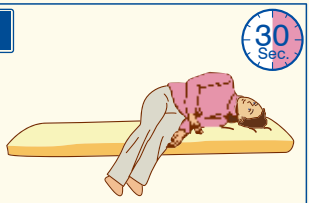
Slowly, taking 1–2 seconds, return to sitting upright and hold that position for 30 seconds.

5



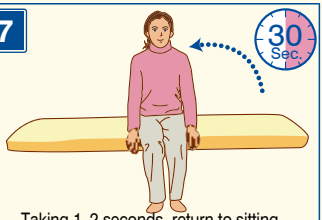
Toward the side opposite the affected side
Slowly, taking 1–2 seconds, lean over sideways onto the side opposite the affected side. Look up at an angle of 45 degrees.

6



Hold that position for 30 seconds or until any dizziness or vertigo passes.

7



Taking 1–2 seconds, return to sitting upright and hold that position for 30 seconds.

- **Repeat steps 1 ～ 7 five times each in a single session.**
  (Approximately 10 minutes)
- **Perform the maneuvers once each in the morning, in the daytime, and in the evening.**

In almost all cases, carrying out these maneuvers for 3–14 days continuously results in calculi being expelled from the semicircular canals, improving dizziness / vertigo.

Approximately 30% of patients, however, experience recurrence within a year.

If recurrence is repeated, continue performing these maneuvers once a day.

Try using special maneuvers to improve vertigo

Conditions related to dizziness / vertigo originating in the inner ear such as sudden hearing loss, BPPV, and Ménière's disease may become aggravated and intractable, and eventually cephalic hypersensitivity syndrome-associated dizziness / vertigo may develop. There are a large number of people suffering from dizziness / vertigo severe enough to cause them difficulties in everyday life and for which no treatment is effective. These special maneuvers to improve vertigo are simple movements that can be used at home. Some people complain that they actually make them feel worse to start with, but it does not cause harm and is worth trying, and if continued they can be surprisingly effective. Various different maneuvers for improving vertigo can be used: they include the Epley, Semont, Brandt-Daroff, and Lempert maneuvers, and which one is recommended depends on which semicircular canal or condition is causing the dizziness / vertigo. The Semont maneuver is a variation on the Brandt-Daroff maneuver, and I therefore recommend the latter as it is simple and easily continued, although it is not a universal remedy. Today, special maneuvers to improve vertigo are becoming popular, and more simple movements than those recommended by hospitals are coming into general use. An episode of the NHK television program Tameshite Gatten (which means "Try it and you'll understand") was broadcast on September 4, 2013 with the title "Solve dizziness / vertigo at home! A newly discovered maneuver for dramatic improvement" described special maneuvers to improve vertigo that resulted in improvements in nearly half of cases.

3 Tinnitus: Characteristics of tinnitus associated with cephalic hypersensitivity syndrome

In the medical interviews I carry out in cephalic hypersensitivity syndrome clinics, I always ask about tinnitus. Of course, no one sets out to have tinnitus treated by a neurosurgeon, but a surprising number of patients with cephalic hypersensitivity syndrome who visit a doctor complaining of dizziness / vertigo also have tinnitus. Although it is not subjectively severe enough to interfere with daily life, on questioning, they will confess that they do experience tinnitus along with their symptoms of headache and dizziness / vertigo. In this type of patient, tinnitus generally improves when the patient is treated for cephalic hypersensitivity syndrome. This treatment is particularly effective in patients with tinnitus associated with mild hearing loss of which they are unaware. However, many middle-aged and older patients with age-related hearing loss feel that some degree of tinnitus still persists even after their other symptoms have resolved in response to treatment. As I describe in the case studies, I have to tell such patients that tinnitus is generated within the brain and is something that they will need to live with for the rest of their lives. I tell them that as long as it does not interfere with daily life, they don't need to worry about it. Most of them are fine with this, and go on living their lives as normal. However, if severe hearing loss is present, the hearing aid treatment described below is required.

Recent research has identified the mechanism whereby tinnitus is generated as "phantom sounds generated by the brain." This encompasses a wide variety of factors, ranging from levels that are imperceptible on an everyday level to those that interfere with daily life, and its treatment is therefore far from straightforward. According to Seiichi Shinden et al., 90% of tinnitus is associated with hearing loss and is the result of the brain compensating for the absence of sound-related electrical signals that no longer reach it due to hearing loss by activating those areas and amplifying the resulting signals [10]. At this point, this hypothesis is persuasive, but actually verifying the specific changes that occur in brain cells in tinnitus is no easy matter [11]. That is, another factor emphasized by Shinden *et al*. is that anxiety, discomfort, and concentration, which are aggravating factors for tinnitus, vary greatly between individuals, making the cause difficult to identify even by investigating brain changes. However, they do state that tinnitus can be

improved in most cases by training by using a hearing aid to transmit signals to the brain from sounds that can no longer be heard unaided [10]. Eggermont *et al*. also proposed a slightly different method of treatment. They found that noninvasively stimulating and modulating the neural circuits for the auditory signals mistakenly generated by the brain from outside the brain resulted in long-term improvement. On the basis of these results, they developed an "acoustic coordinated reset neuromodulation device," an auditory modulation device that is now in the final stages of practical application testing in Europe [12]. Eggermont *et al*.'s modulation technique is a therapy for tuning the brain cells, and it is possible that this method may also be useful as a treatment for cephalic hypersensitivity syndrome in the future. Repetitive transcranial magnetic stimulation (rTMS), which is similarly being tried as a treatment for tinnitus mainly overseas [13], may also have a role to play in the future in the treatment of cephalic hypersensitivity syndrome.

Medical Interview for Tinnitus

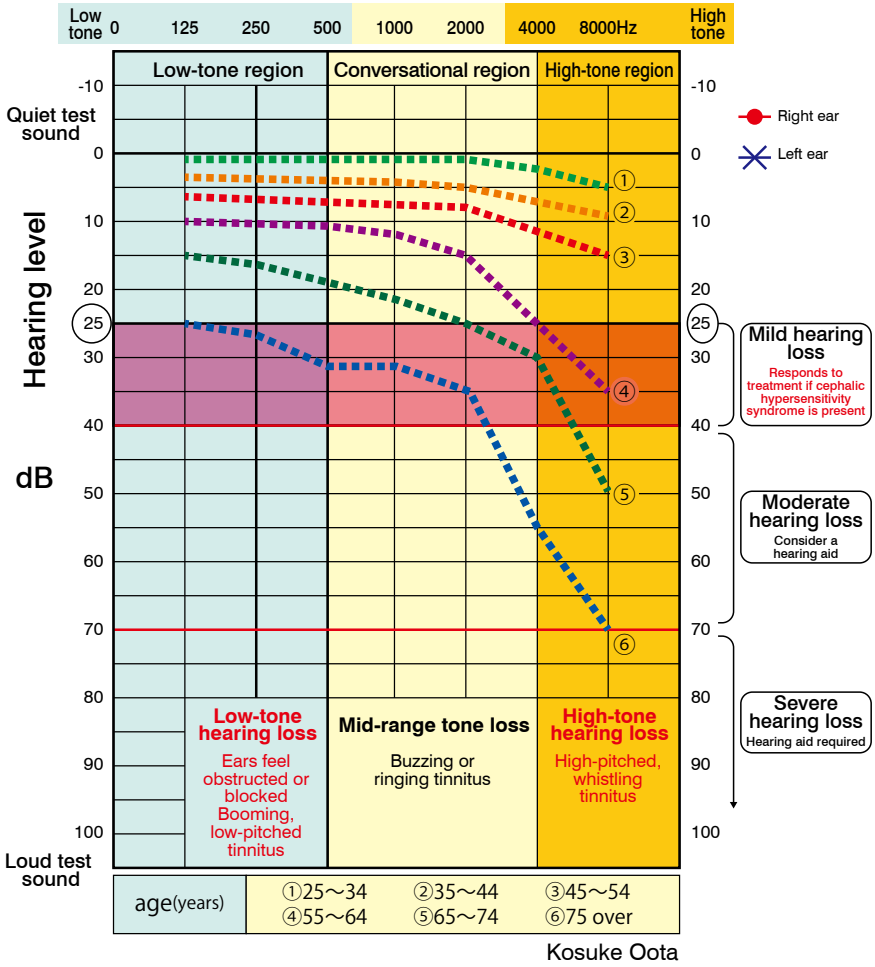
As described above, tinnitus is a sound *perceived* by the patient, and it is vital to ask carefully about their subjective symptoms while also carrying out objective hearing tests. These hearing tests are basically the same as those performed in regular health checkups. I always carry out hearing tests for patients who complain of dizziness / vertigo. They are helpful in identifying those tinnitus patients who will respond to cephalic hypersensitivity syndrome treatment. Tinnitus that improves in response to cephalic hypersensitivity syndrome treatment is almost always mild hearing loss in the range of around 25–40-decibels, represented by the pink band in the figure.

Audiogram: Tinnitus

No. Date

Name (age) M / F Investigator

Hidden hearing loss is present in most cases of tinnitus.
Tinnitus associated with low-tone hearing loss is treated with medication.
Tinnitus associated with high-tone hearing loss also requires hearing-aid treatment



Tinnitus treatment

I treat tinnitus associated with dizziness / vertigo in the same way as I do cephalic hypersensitivity syndrome, first assessing the patient's lifestyle habits, medications, and concerns by means of medical interviews before embarking on comprehensive treatment. Patients with a personality that makes them susceptible to cephalic hypersensitivity syndrome also often tend to suffer from chronic, aggravated tinnitus. They are also frequently hypersensitive to sound. Of the three arrows of cephalic hypersensitivity syndrome treatment – improving lifestyle, improving thinking, and night therapy – particularly important for tinnitus is improving thinking. The key to not allowing it to aggravate further is to be forward-looking, taking each slight improvement in symptoms as a plus and understanding that it will never disappear completely. The goal of treatment is thus not to eliminate tinnitus entirely, but to improve it to a level at which it does not interfere with daily life. A tinnitus questionnaire is useful in helping patients to visualize this and experience it for themselves [10].

In my clinical experience, patients who feel that their ears are blocked, hear a low-pitched booming sound, and have difficulty in perceiving low tones (low-tone hearing loss), as well as those who hear a high-pitched whistling sound and have difficulty in perceiving high tones (high-tone hearing loss) are more likely to notice a subjective improvement in symptoms as a result of treatment. Those who hear buzzing or ringing sounds and have difficulty in discerning mid-range tones find it somewhat more difficult to recognize improvements.

Some patients experience tinnitus even when hearing tests do not reveal any hearing loss. Such patients characteristically cannot identify their tinnitus as occurring particularly in one ear or the other, but perceive it as ringing inside their heads. Treatment for cephalic hypersensitivity syndrome is highly effective in such cases. The tinnitus resolves imperceptibly as the other symptoms of cephalic hypersensitivity syndrome also improve.

Headache, Dizziness / Vertigo, and Tinnitus: The Spectrum of Symptoms

When patients visit a doctor because they sense that something is physically wrong with them, they choose a clinic that specializes in the symptom about which they are most concerned. As described above, the two most important

symptoms of cephalic hypersensitivity syndrome are headache and dizziness / vertigo. Tinnitus is a symptom that is often associated with dizziness / vertigo.

These symptoms have been treated and studied in different departments for many years, but clinical studies have now been published in the fields concerned that show they should be understood as a single spectrum. A clinical study of dizziness / vertigo found that Meniere's disease and vestibular vertigo frequently overlap, and that some patients experience migraine headache, photophobia, phonophobia, and tinnitus during attacks of vestibular migraine [14]. An analytical study of the principal complaints of patients visiting an ENT outpatient clinic also found that in addition to the typical migraine symptoms of headache and dizziness / vertigo, other common subtypes of migraine symptoms included blocked ears, tinnitus, pain, and blocked nose, and that some patients were not receiving appropriate treatment under the current migraine classification system [15]. I am convinced that epilepsy represents the summit of cephalic hypersensitivity syndrome, and studies are now elucidating the shared mechanisms of the onset of migraine and epilepsy [16]. If headache, dizziness / vertigo, and associated tinnitus are understood as a spectrum of symptoms that share the same mechanism of onset, it is understandable that the treatment for cephalic hypersensitivity syndrome will be effective.

4 Headache, dizziness / vertigo, and stiff shoulders caused by straight neck

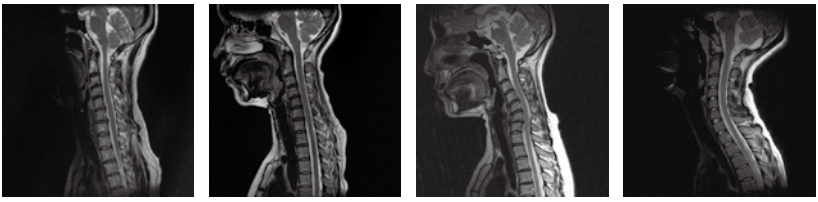
Bad posture

Recent years have seen an increasing number of patients suffering from symptoms including headache, stiff shoulders, dizziness / vertigo, and numbness of the arms. This may be because more and more people are now sitting at a desk for long hours using computers and smartphones. One of the conditions patients suffering from headache and stiff shoulders have is straight neck. This can be diagnosed from three X-rays scanned from the side with the neck bent forward, in an intermediate position, and bent backward. Straight neck is caused by abnormal contraction of the muscles that support the head.

From my own clinical experience, familial factors are present for over 30% of patients troubled by the symptoms of straight neck. In some families, you find that a grandfather, parent, and child are all suffering from straight neck. It is thus important to involve the whole family in its prevention.

Once straight neck has developed, if left untreated, it may cause intractable headache, stiff shoulders, nausea, dizziness / vertigo, and numbness of the hands that is sufficiently severe to hinder work. As there is no reliably effective treatment, doctors struggle with how to deal with these symptoms. In addition

Straight neck

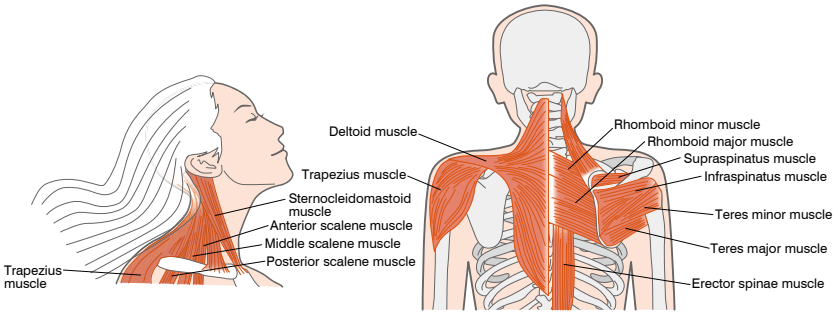


Straight neck　　Healthy

to congenital factors, the cause is believed to lie in abnormal contraction of the musculature supporting the head. As well as the medication I prescribe to treat cephalic hypersensitivity syndrome, I also proactively use treatments to ease the symptoms, including nerve block, thermal therapy, and acupuncture massage. At the same time, I also advise patients to sit well back in the chair, adjust the height of their computer to a height that comfortably matches their line of sight, tilt the monitor like an easel, and use a thin pillow. I tell them that while working, they should roll their head around, rotate their shoulders, and stretch their back. However, these instructions presuppose that atlantoaxial instability has been ruled out.

The atlantoaxial vertebrae are the first (atlas) and second (axis) cervical vertebrae, and are the site of a high concentration of the nerve ganglia that govern the autonomic nerves. If there is too much movement between the occipital and the cervical spine, the joint becomes unstable, resulting in disturbance of the autonomic nerves, particularly the sympathetic nerves. The latter become excited, causing a variety of symptoms including palpitations, nausea, and gastrointestinal symptoms. Distortion of the first cervical vertebra may also compress the vertebral artery, causing cerebrovascular disturbance with resulting symptoms such as headache, tinnitus, and dizziness / vertigo.

Returning the first cervical vertebra to its correct position alleviates any compression of the basal ganglia, relieves the state of tension of the sympathetic nerves, restores the balance of the parasympathetic and autonomic nerves, and relieves the patient from their various symptoms. In this condition, a problem at one location causes problems throughout the body.



Column

Stiff shoulders are a type of chronic pain

Although stiff shoulders are not usually described as "painful," this is actually just as much a type of chronic pain as lower back pain, although many people do not regard it as such simply because the word "pain" is not normally used to describe it in either Japanese or English.

Both lower back pain and stiff shoulders are the result of maintaining the same posture for a long time, which reduces the flow of blood and stiffens the muscles. If left unresolved, this can develop into chronic pain. When this happens, pain also occurs at sites other than the original location, initiating a vicious cycle. At this stage, it is difficult to treat with exercises alone. It rarely deteriorates to this stage in people who enjoy exercise but fail to perform enough. People who dislike exercise, however, are vulnerable to developing chronic pain. People who dislike exercise should not assume that they have to do something that involves "exercising." Rather, they should think in terms of taking breaks, and when switching between tasks, they should carry out the Oota Computer Exercises: rolling the head around, rotating the shoulders, and stretching out both arms, which takes less than a minute and can be done while sitting down.

Roll your eyes

Roll your head around your neck

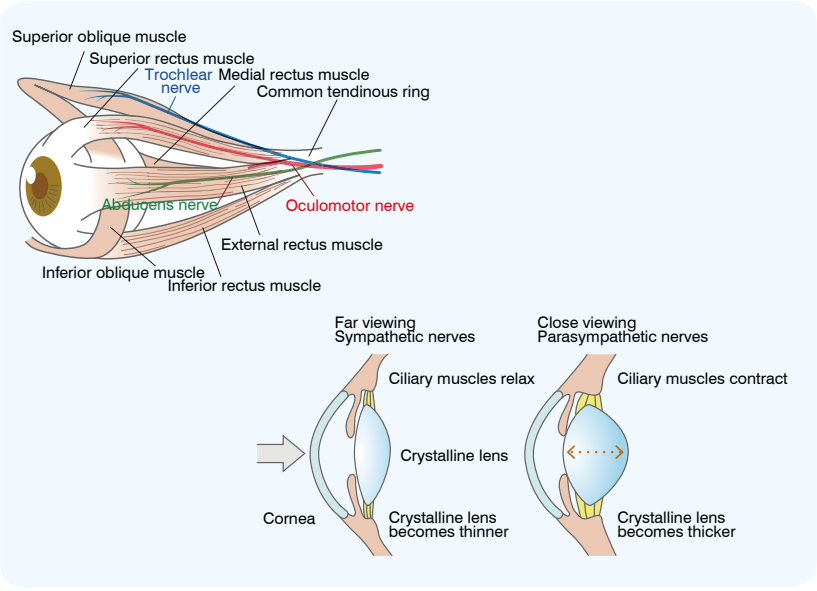
Rotate your shoulders and arms

See the Myojin-kan Neurosurgery Clinic website (headache and stiff shoulders): http://www.myojin-kan.jp/ill_zutu/

5 Headache and stiff shoulders caused by eyestrain

Eyestrain is the progression of eye fatigue. The movements of the eyeball are controlled by the oculomotor, trochlear, and abducens nerves. The movements of the pupil are controlled by autonomic nerves that branch off from the oculomotor nerve. Pupil dilation is controlled by sympathetic nerves, and contraction by parasympathetic nerves.

Working at a computer is also tiring for the parasympathetic nerves. As these regulate muscle relaxation and the tear glands, the result is eye muscle stiffness and decreased tears. In eyestrain, focusing at a nearby computer screen or other device for long periods activates the parasympathetic nerves. Meanwhile, the fact that the body is working activates the sympathetic nerves. Normally, the eyes and body must work in coordination to activate the parasympathetic and sympathetic nerves, but computer work forces them into a situation in which they are in opposition. Working at a computer is thus a task that tends to cause autonomic nerve disturbance.



Computer vision syndrome

Use glasses designed for computer work

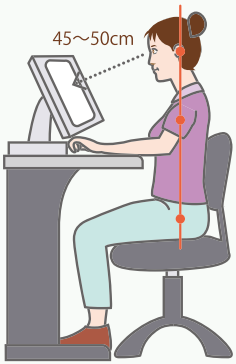
In Japan, this is also known as VDT (visual display terminal) syndrome [17]. Display screens are now an inescapable aspect of daily life, whether at work or at home. Using a device such as a computer, TV, mobile phone, or smartphone for long periods, however, leads to a range of problems for the eyes, body, and mind. Ocular symptoms include eyestrain, dry eye, cloudy vision, double vision, and diminished visual acuity. Bodily symptoms include stiffness and pain in the neck, shoulders, and arms, as well as headache, while mental issues include fatigue, depressed state, and irritability. They are of particular issue for people who spend long periods in front of the computer.

The cause is operating a computer for long periods of time. Words on a computer screen are not read as easily as those printed on paper. The printed word does not move, but the computer screen is constantly fluctuating. Attempting to focus on the screen means that the eye muscles must be in a state of permanent contraction. Contraction of the eye muscles, and especially of the medial rectus muscle, pulls both eyes inward. The ciliary muscles contract, overstimulating the autonomic nerves. Maintaining the same posture over long periods also imposes a static load on muscles. The bright blue light emitted by the display also affects the eyes. Bright blue light is very close to the ultraviolet region, and is the most energetic form of visible light. This means that it is not absorbed in the eye by the cornea or crystalline lens but reaches the retina, causing a decline in retinal function.

Low-intensity blue light, on the other hand, has a calming effect on the brain. Eye drops to ease eye fatigue and moisturize the eyes are available, as are special glasses to protect the eyes against the blue light emitted by liquid crystal monitors.

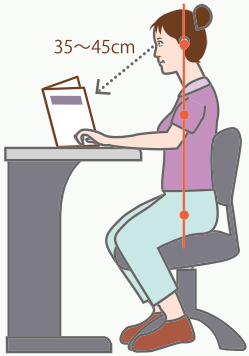
There are five preventive measures you can take.

1. As a corrective to long periods of work, look into the distance for 20 seconds after every 20 minutes of work.
2. Use computer glasses to protect your eyes from bright blue light and reflected light.
3. Use a different pair of glasses than your normal reading glasses, with the focal point set further away at the distance of the computer screen. Prescriptions for glasses must account for the need to maintain the eye's accommodatory function in a stable state for the distance between the eye and the computer screen. Have your prescription issued by an optometrist that uses a device called a visual function analyzer.
4. Sit on your chair in the correct posture, at right angles to the pelvic triangle.
5. Exercise by rolling your eyes, rolling your head around your neck, rotating your shoulders, and stretching your back.



Recommended sitting posture 1

Sit well back in the chair
Adjust the angle of the computer screen and the height of your chair to ensure a comfortable line of sight.



Recommended sitting posture 2

Sit with your legs apart, straddling the chair.

6 Sleep disorders: Can't sleep at night, but sleepy during the day

One-third of our lives is spent asleep. Healthy sleep provides the energy for the next day's activities, and sleep disorders have a major impact on everyday life. A variety of causes may be concealed behind sleep disorders, and my medical interview form for sleep disorders is helpful in discovering the correct way to treat them.

Sleep-related medical interview

From my 25-question medical interview concerning sleep, I have selected several questions concerning symptoms and their methods of treatment.

1&22. "Every night, I get so worried about whether or not I will be able to sleep, and sometimes the more I try to go to sleep, the less I am actually able to," and "I can't sleep in my own bedroom, but do sleep well elsewhere." The people who answer "Yes" to these questions are insomniac types who are frequently neurotic or psychologically unstable. They can be treated effectively with regular sleeping medication and anti-anxiety medication.

3. People who say that they "sometimes wake up more than 2 hours earlier than usual" can be treated far more effectively with antidepressants than with sleeping medication.

5&6. Snoring or apnea during sleep. These can easily be investigated in your own bedroom at home. You can also undergo testing (covered by health insurance) at the Myojin-kan Neurosurgery Clinic.

7&18. "I thrash around, shout, and grind my teeth (bruxism) while I'm asleep" and "Soon after falling asleep I experience sleep paralysis, and have nightmares and vivid, altered dreams. People who answer "Yes" to these two questions almost never respond to sleeping medication, but low doses of antiepileptic drugs are extremely effective.

8&9. "I stroke the wall with my hands and walk about, or I eat, open the refrigerator, or cook while I'm asleep. I don't remember this the next day." In extreme cases, some people may even cook a meal and eat it themselves. These symptoms are known as sleepwalking and sleep-related eating disorder (SRED), and can be treated with medication. In some cases, sleeping medication may not only be ineffective, but may actually aggravate the symptoms.

10&11. "My legs sometimes twitch convulsively while I'm asleep.," and "Soon after falling asleep my legs feel so hot and twitch or move restlessly, making it too uncomfortable to sleep." For these patients, too, sleeping medication is completely ineffective. Low doses of antiepileptic drugs and Parkinson's disease medication, however, are highly effective.

14&19. Symptoms such as "I feel unbearably sleepy during the day," and "I sometimes suddenly find myself going limp when I'm laughing or surprised" are specific to narcolepsy, also known as hypnolepsy and cataplexy. These patients require specialist investigation and treatment.

16. A patient who checks any of "If I wake up in the night, I have the following symptoms: palpitations, dizziness / vertigo, sweating, dry mouth, or headache" has tense sympathetic nerves in the autonomic nerve system, and is more effectively treated with α β-blockers or β-blockers than with sleeping medication.

20. People who check "Yes" to the question "I find it so difficult to get up in the mornings that I'm late for work or school" and feel heavy-headed when they wake up will find that their head is clearer on waking in the mornings if they take medication for migraine rather than sleeping medication.

Sleep-Related Medical interview 25

Please tick all the statements below that apply to your sleep and mental state in the past month.

1. ☐ Every night, I get so worried about whether or not I will be able to sleep, and sometimes the more I try to go to sleep, the less I am actually able to.
2. ☐ I wake up several times during the night.
3. ☐ I sometimes wake up more than 2 hours earlier than usual.
4. ☐ I sleep less than 4 hours a night.
5. ☐ I have been told that I snore while I'm asleep.
6. ☐ I have been told that I stop breathing while I'm asleep.
7. ☐ I thrash around, shout, and grind my teeth while I'm asleep.
8. ☐ I stroke the wall with my hands and walk about while I'm asleep. I don't remember this the next day.
9. ☐ I eat, open the refrigerator, or cook while I'm asleep. I don't remember it when I wake up.
10. ☐ My legs sometimes twitch convulsively while I'm asleep. Bedding at my feet moves around.
11. ☐ Soon after falling asleep, my legs feel so hot and twitch or move restlessly, making it too uncomfortable to sleep.
12. ☐ In the morning, I wake up with a headache.
13. ☐ In the morning, I don't feel that I have slept well.
14. ☐ I feel terribly sleepy during the day. I'm unbearably sleepy during meetings or classes.
15. ☐ I'm bothered by a loss of concentration or energy during the day.
16. ☐ If I wake up during the night, I have the following symptoms.
    ☐ Palpitations ☐ Dizziness / vertigo ☐ Sweating ☐ Dry mouth ☐ Headache
17. ☐ I feel down, have no motivation, and nothing feels worthwhile.
18. ☐ Soon after falling asleep, I experience sleep paralysis, and have nightmares and vivid, altered dreams.
19. ☐ I sometimes suddenly find myself going limp when I'm laughing or surprised.
20. ☐ I find it so difficult to get up in the mornings that I'm late for work or school.
21. ☐ I sometimes wake up so early in the morning that I can't stay up late at night.
22. ☐ I can't sleep in my own bedroom, but do sleep well elsewhere.
23. ☐ I'm stressed because of anxieties or worries about work, school, or family.
24. ☐ I can't give up drinking alcohol, smoking, drinking coffee, or using a computer or mobile phone before going to sleep.
25. ☐ I go to bed after midnight. I often use sleeping medication.

Please describe any other symptoms that concern you here.

Kosuke Oota

Oota Sleepiness Scale

Please answer the following questions to find out how severe your sleep disorder is.
A score of over 10 points indicates suspected sleep disorder.

Daytime sleepiness

How much do you feel like nodding off in the following situations?
Answer in terms of your recent daily life.

	Possibility of nodding off			
	None	A little	Possibly	Yes
1. While reading a newspaper, magazine, book, or other written material	0	1	2	3
2. While attending a meeting, seminar, or lecture	0	1	2	3
3. While watching a film in a cinema or a theatrical performance	0	1	2	3
4. While riding in the passenger seat of a car	0	1	2	3
5. During an afternoon break	0	1	2	3
6. While waiting for the traffic lights to change while driving	0	1	2	3
7. While talking to people	0	1	2	3
8. While watching TV at home	0	1	2	3
9. While relaxing after lunch or dinner	0	1	2	3
10. While filling in a household account book or writing a letter	0	1	2	3

Mild: 10 points or less
Moderate: 11–20 points
Severe: 21 points or more

Total points

Kosuke Oota

Your answers to these ten questions indicate the severity of your sleepiness. If it is moderate or severe, please see the 12 Pointers for Dealing with Sleep Disorders and the Sleep Guideline for Health Promotion 2014: 12 Messages for Sleep published on the Ministry of Health, Labour and Welfare website and described on the following page, and try and improve your sleeping habits.

Dealing with sleep disorders in everyday life

The following 12 Pointers for Dealing with Sleep Disorders are a revised version of the guidelines formulated by the Empirical Research Group for the Formulation of Guidelines for the Diagnosis and Treatment of Sleep Disorders Funded by a 2001 Ministry of Health, Labour and Welfare Intramural Research Grant for Neurological and Psychiatric Disorders. They perfectly summarize the key points for dealing with insomnia. Among these, "Get up at the same time every day" and "Rather than going to bed early to get up early, getting up early makes it easier to go to sleep early" are easy to understand and are more persuasive and effective than any sort of instruction. Getting up at the same time every morning, however, is a very difficult goal for single people to achieve. It becomes much easier with family cooperation. In 2014, "Sleep Guidelines for Health Promotion 2014: 12 Messages for Sleep" were issued by a Ministry of Health, Labour and Welfare Research Group [18]. They comprise concrete advice tailored to the lifestyle patterns of young people, the working generation, and the elderly, and other than the fact that the evidence for each of them is clearly set out, their content is broadly the same. They are published on the website, and this should be referred to in combination with this book.

12 Pointers for Dealing with Sleep Disorders (Revised Version)

(1) Go to bed once you start feeling sleepy, rather than sticking to a particular bedtime.
   - Determinedly attempting to go to sleep will sharpen your mind, making sleep more difficult.

(2) Get up at the same time every day.
   - Rather than going to bed early to get up early, getting up early makes it easier to go to sleep early.

(3) Instead, actively try and go to bed late and get up early.
   - If you stay in bed until late on a Sunday, Monday morning will be tough.
   - If you spend too long in bed, you will have less of a feeling that you slept well.

(4) If you nap during the day, do so for 20–30 minutes before 3 p.m.
   - Too long a nap will make you feel spaced out.
   - A nap in the late afternoon or after will adversely affect your sleep that night.

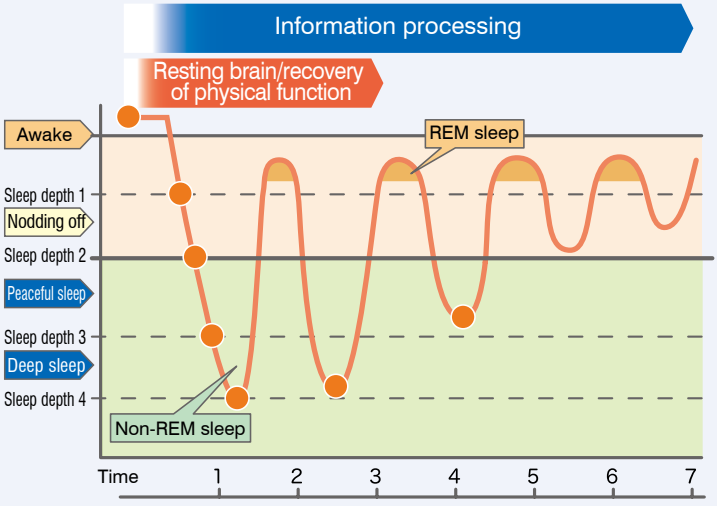
(5) Drinking alcohol before bed leads to insomnia.
  • Having a drink instead of taking sleeping medication diminishes deep sleep, and may cause you to wake during the night.
(6) People spend different amounts of time asleep, and it's enough if you are not troubled by sleepiness during the day.
(7) Avoid stimulants, and relax in whatever way best suits you before going to bed.
(8) Use the morning light to adjust your body's circadian rhythm for good sleep.
(9) Eat three meals a day at regular mealtimes, and acquire the habit of performing regular exercise.
(10) Caution is needed if you snore loudly or stop breathing, or if your legs twitch or feel restless during sleep.
(11) See a specialist if you still feel very sleepy during the day despite having slept well.
(12) Sleeping medication is safe if you take it correctly according to the doctor's instructions.

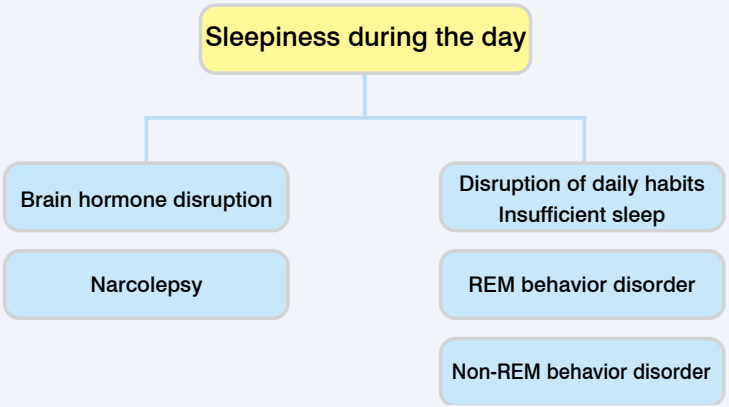
Parasomnia

Our sleeping pattern consists of a 90-minute cycle of non-REM sleep and REM sleep. This cycle is repeated 4–5 times a night. Parasomnia is a disorder that occurs when for some unknown reason, this switch does not go smoothly, and patients perform actions while still asleep or half-asleep. Parasomnia includes symptoms that appear during non-REM sleep, such as the somnambulism and night terrors common among children, and those that appear during REM sleep, such as severe sleep talking. Parasomnia should be suspected in patients who do not feel they have slept well when they wake up, those who are sleepy and cannot concentrate sufficiently during the day, and those who are easily tired. Although extreme cases are easily identified, bruxism, vivid, altered dreams, and nightmares are surprisingly easy to overlook. Bruxism that is sufficiently severe to prevent sleep can be diagnosed with a single glance in the mouth (see photograph). A low dose of Rivotril (clonazepam) is highly effective. From the first night it is used, nightmares, sleep paralysis, bruxism, and sleep talking simply disappear without a trace. Patients once again wake up refreshed in the morning. They immediately recover their spirits. Although parasomnia is frequently overlooked, it can be cured immediately. Narcolepsy is one distinctive form of parasomnia.

Patients with bruxism may develop visible bony prominences in the mouth.

Normal sleep





Causes of sleepiness: Parasomnia

Non-REM behavior disorder

- Feeling half-awake
- Somnambulism (sleepwalking)
- Sleep talking
- Nightmares
- Bruxism
- Restless legs syndrome (RLS)
- Periodic limb movement disorder (PLMD)
- Sleep-related eating disorder (SRED)

Occur due to disturbances of the autonomic nerves, motor system, and cognitive process during sleep or between sleeping and waking. Patients have no memory of their actions while they were asleep. SRED, in which patients eat and drink and may even cook a meal while asleep, is more common in women.
Effectively treated with Rivotril (clonazepam), Topina (topiramate), and Bl Sifrol (pramipexole hydrochloride).

REM behavior disorder

- Sleep apnea
- Vivid, altered dreams, nightmares
- Rapid movements of the arms and legs
- Violent behavior

Common in men aged over 50, this may be a precursor of Parkinson's disease or Lewy body disease. The elimination of causative substances such as drugs or alcohol is effective, as are Rivotril (clonazepam) and Bl Sifrol (pramipexole hydrochloride). These aggravate sleep apnea, however, and care must therefore be taken with the dosage.

Orexin and narcolepsy

From theory to the development of sleeping medication

Narcolepsy is a type of sleep disorder. Patients wake up repeatedly when they should be asleep, and go to sleep at times when they should not be feeling sleepy. In 1998, a group led by Takeshi Sakurai identified orexin, a substance that regulates sleep and waking that is associated with the onset of narcolepsy [19]. Orexin plays an important role in maintaining and controlling the normal pattern of sleep and waking, and narcolepsy has been shown to be a neurodegenerative condition that occurs specifically in orexinergic nerves. The projection regions of the orexinergic nervous system are the same as those of the serotonergic, dopaminergic, and other main nervous systems, and are also associated with emotion and the regulation of eating.

Insomnia medications include both non-benzodiazepines such as Myslee (zolpidem) and Lunesta (eszopiclone) and the melatonin receptor agonist Rozerem (ramelteon), and in November 2014, Belsomra (suvorexant) was also launched on the market as an orexin receptor agonist. All of these are examples of drugs developed on the basis of theories derived from hormone studies of sleeping and waking.

Oota Differential Diagnosis of Hypersomnia

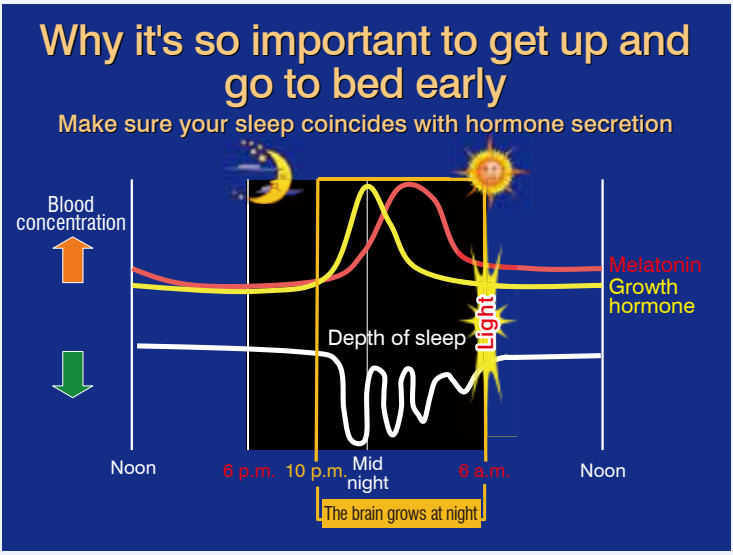
	Narcolepsy	Symptomatic hypersomnia	Hypersomnia of unknown origin
Main symptom	Sleepiness and episodes of falling asleep without warning during the day	Sleepiness and falling asleep during the day	Sleepiness and falling asleep during the day
Minor symptoms	Episodes of suddenly going limp induced by surprise or laughter	Headache, dizziness / vertigo	Headache, dizziness / vertigo, dizziness on standing
Length of naps	Short (less than 30 minutes)	Long (around 1 hour)	Long (around 1 hour)
Refreshed after sleep	Yes	No	No
Waking in the morning or after a nap	Easy	Often hard	Often hard
Time between going to bed and falling asleep	Short	Short to long	Short to long
Waking during the night	Yes	Yes	Infrequent
Total time spent sleeping	7–8 hours (normal range)	6–10 hours	6–10 hours
Cause	Diminished orexin (brain hormone)	Disruption of daily habits Short time spent asleep Vivid, altered dreams, nightmares, bruxism, sleep talking, restless legs syndrome, periodic leg movements, snoring, apnea	Unknown
Tests	Abnormalities revealed by oral inspection, Polysomnography (PSG), Multiple sleep latency test (MSLT), and Genetic screening	Abnormalities frequently revealed by oral inspection and PSG	No abnormalities revealed by oral inspection or PSG
Treatment	Improve daily habits, Central nervous system stimulants, Modiodal (modafinil) and Ritalin (methylphenidate) are effective	Improve daily habits, Rivotril (clonazepam) and other antiepileptics CPAP therapy	Improve daily habits, Central nervous system stimulants are usually ineffective

Kosuke Oota

Why it's so important to get up and go to bed early

Making sure that their children get enough sleep is an important task for parents. The Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Health, Labour and Welfare have both issued warnings on bedtimes for both children and adults. Rather than telling people to go to bed early, they advise them to get up earlier. Growth hormones, as their name suggests, act to increase height and weight during infancy, childhood, and youth, and are essential to the development of both primary and secondary sexual characteristics. Once adulthood has been reached, these hormones have a role to play in repairing and restoring the body. Melatonin is a hormone that is involved in the rhythm of sleeping and waking.

An examination of changes in the secretion of growth hormone and melatonin during the day reveals that these both increase at night. What used to be called the "witching hour" is the time when sleep is at its deepest. Mysteriously, this is almost exactly the time at which the secretion of growth hormone and melanin peaks. It is also a period of deep sleep. This cannot possibly be a coincidence.



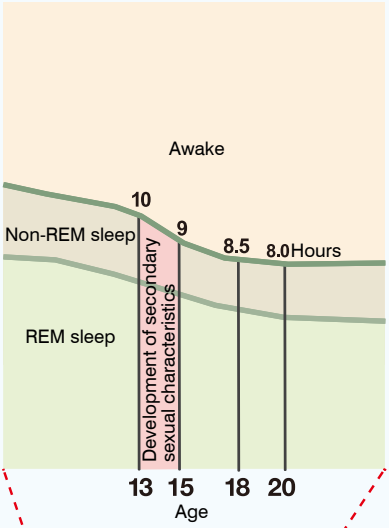
Just how harmful going to bed after midnight, when the date has already changed to the next morning, is to your health can be seen by the fact that it has been suggested that it diminishes sleep quality, decreases learning ability, does not enable recovery from fatigue, and leads to early aging.

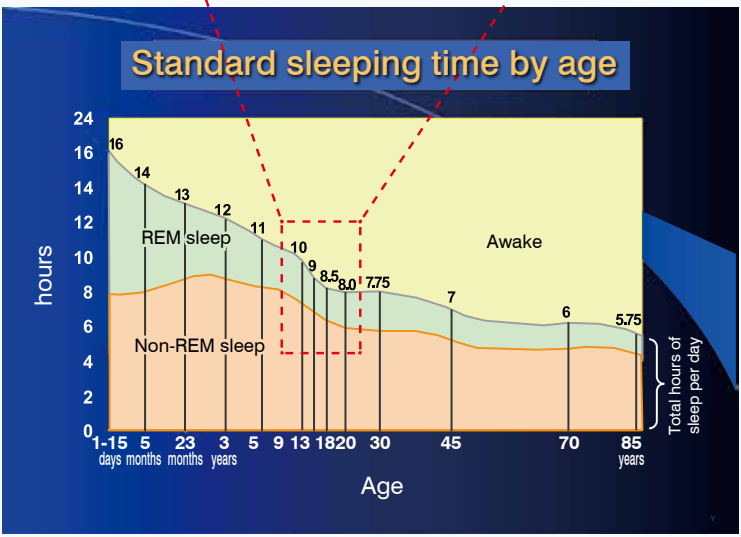
A rising number of children have cephalic hypersensitivity syndrome: The amount of time children spend sleeping is decreasing at a frightening rate

Children aged between around 3 and 9 years old need 11 hours of sleep a day, and older children and teenagers need around 10 hours. But how much do they actually get? An increasing number of children now sleep for fewer than 9 hours a night. They are growing up and maturing too early.

The brain organizes memories and learning during sleep. A well-known study found that subjects who were given a nine-digit finger-tapping test the same day and after a night of sleep scored significantly better on the test the following day. A study carried out outside Japan found that candidates accepted by leading universities slept an average of 8 hours a night during the examination period.

The conclusion is that parents must be educated to ensure that their children get the right amount of sleep for their age. If parents take the lead in staying up late, their children will follow them along this path. It is believed to be one reason for the rising number of emotionally disturbed children. Put simply, elementary schoolchildren should aim to sleep for 10 hours a night, junior and senior high school students for 9 hours, and university students for 8 hours [20].


Awake
10
9
8.5
8.0Hours
Non-REM sleep
REM sleep
Development of secondary sexual characteristics
13 15 18 20
Age


Standard sleeping time by age
hours
24
16
14
12
10
8
6
4
2
0
16
14
13
12
11
10
9
8.5
8.0
7.75
7
6
5.75
REM sleep
Non-REM sleep
Awake
1-15 days
5 months
23 months
3 years
5
9
13
18
20
30
45
70
85 years
Age
Total hours of sleep per day

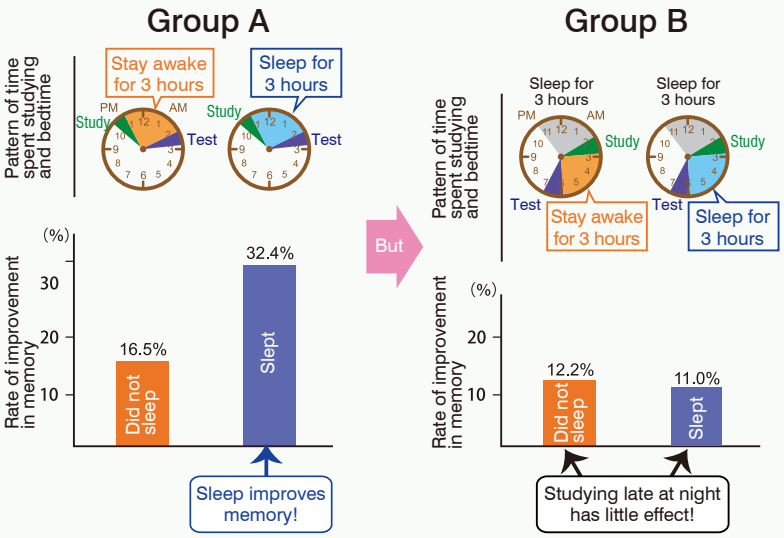
Column

●The trick to teaching children the importance of sleep

To deal with lack of sleep in children, providing a simple explanation of the relationship between school grades and sleep elicits a reaction not only from the parents, but from children too. The result is far more effective than any treatment.

Group A scored well on the test after only a short sleep (3 hours).

Group B also slept for the same amount of time, but staying up to study late at night meant that their test results did not improve.



Adapted from *Daikin no kangaeru omise* (The Daikin Thinking Shop)
https://www.daikin-labo.com/recent.php?r_id=626

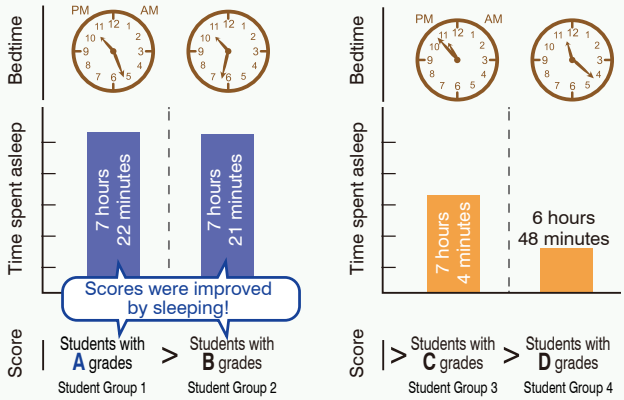
Human beings organize their memories during sleep. While we are sleeping, necessary experiences are stored in the memory and unnecessary ones are deleted, meaning that sleep is extremely important.

Going to bed after 11 p.m. resulted in lower test scores.

The best time to go to bed was by 10:30 p.m.

Ideally, turn the light out at 10 p.m.

Group A, which slept for 7 hours 22 minutes, had the best test scores.

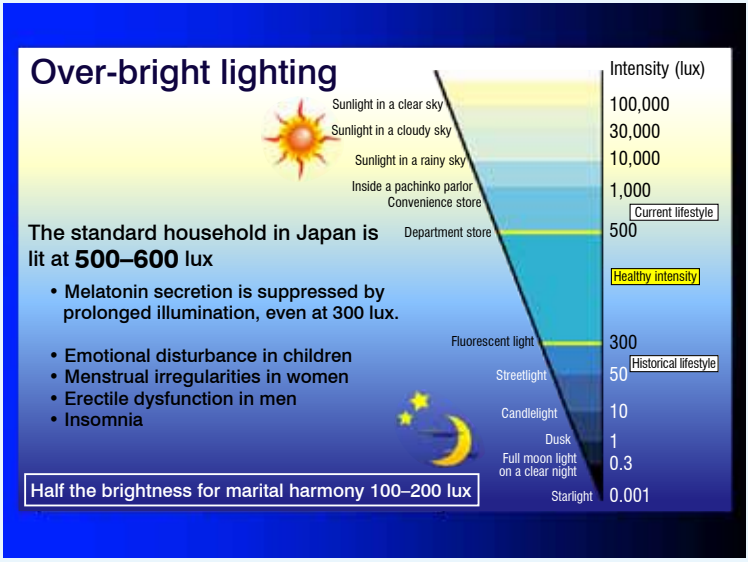


Adapted from *Daikin no kangaeru omise* (The Daikin Thinking Shop)
https://www.daikin-labo.com/recent.php?r_id=626

Source: Wolfson AR. & Carskadon MA. "Sleep schedules and Daytime Functioning in Adolescents" Child Development Vol. 69, No. 4, 875–887 (1998)

Children's rooms are frighteningly light

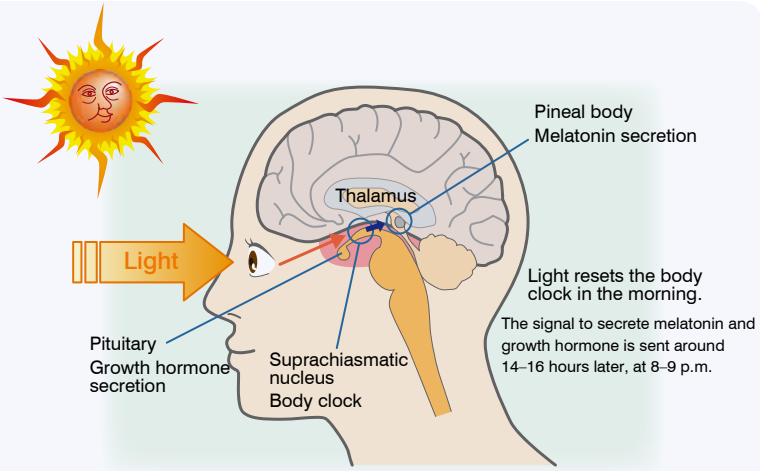
Something I have noticed is that many people with cephalic hypersensitivity syndrome are sensitive to light. Light intensity is measured in a unit called "lux." Before the era of fluorescent light, most households were lit at around 300 lux or below. Some time has now passed since fluorescent light fittings became popular, and in the intervening period, they have evolved. Today, thanks to these lights, our society is too brightly lit. The intensity of the light itself has increased. Moreover, many light fittings now use double bulbs. The standard household in Japan is now lit at 500–600 lux, meaning that children's rooms and dining rooms are now brighter than is actually necessary. Lights that are too bright are a chronic irritation to the brains of growing children. Their brains become tired, and they are at risk of developing emotional disturbance or cephalic hypersensitivity syndrome.



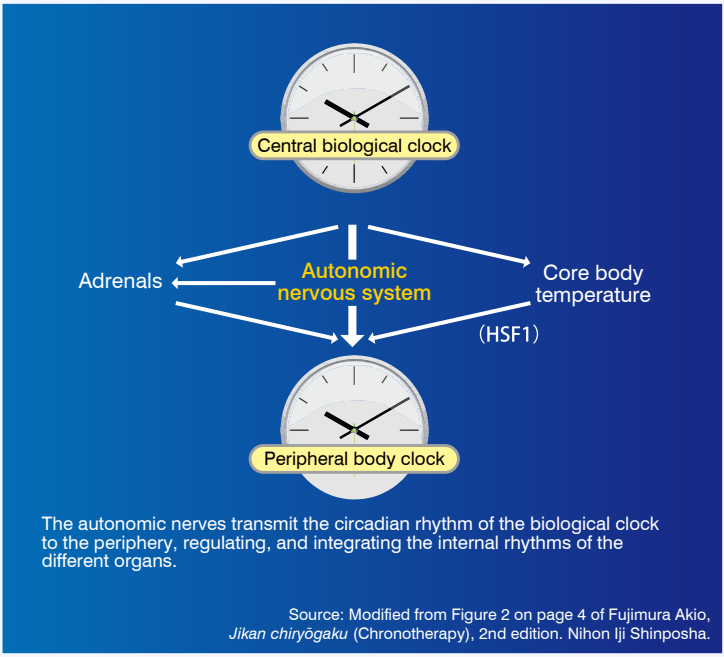
Bright lighting does not only affect children; it is also believed to cause menstrual irregularities in women, erectile dysfunction in men, and insomnia. Melatonin secretion is suppressed by prolonged exposure even at 300 lux. Around 300–500 lux is considered the appropriate level of household lighting. I have heard the happy news from one couple that lowering the lighting in the dining room to around 400 lux as a counterpoint to the kitchen and TV, and reducing it in the bedroom to indirect lighting at 100–200 lux, enabled them to resume their marital relations. I think there can be nothing worse than being exposed to bright, high-intensity light, paying expensive electricity bills, and putting up with children's irritability and a husband's impotence. The solution is incredibly simple. If you think I'm pulling your leg, try dimming the lights in your room and see what happens. You can use an illuminance meter to measure how bright your room is.

As a guideline, it should be under 500 lux. I have heard of children's bedrooms measuring 600–700 lux, and in extreme cases up to 800 or 900.

The Shibuya Longevity Health Foundation will carry test light levels and provide guidance on appropriate light levels on request.



The body clock commands the circadian variation in hormones



The autonomic nerves transmit the circadian rhythm of the biological clock to the periphery, regulating, and integrating the internal rhythms of the different organs.

Source: Modified from Figure 2 on page 4 of Fujimura Akio, *Jikan chiryōgaku* (Chronotherapy), 2nd edition. Nihon Iji Shinposha.

7 Restless Legs Syndrome (RLS)

Restless legs syndrome may sound like a somewhat unusual name, but it is actually a proper medical condition. When sufferers are resting or remaining still, their legs feel restless or irritated, and they have an irresistible urge to move them. They may also feel a variety of hot, painful, crawling, or bubbling sensations in addition to restlessness and irritation, and many sufferers say that the discomfort is completely indescribable.

In my medical interview form for restless legs, I am most interested in the answers to Questions 4 and 5: "Do you ever have a need to move around because of uncomfortable sensations?" and "Do these sensations improve when you move around?" Given that this is a "completely indescribable" condition, people deal with it in a very wide variety of ways, not just by shaking their legs around but by walking up and down the corridor or around the house even in the dead of night, sticking their legs outside the bedding even in midwinter to counter hot sensations, applying compresses or coolants to the soles of their feet or the backs of their calves, or having family members knead their feet for over an hour in some cases.

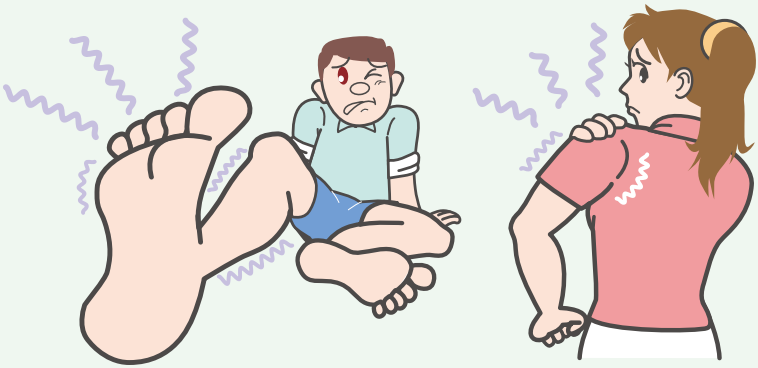
One characteristic of restless legs syndrome is that its symptoms appear while the sufferer is at rest, but older people or desk workers with low levels of activity also say that they appear during the day. An in-depth medical interview is necessary. Factors such as stress are associated with the exacerbation of symptoms, and it is also important to confirm the patient's background, including matters such as family structure and living environment.

The cause of restless legs syndrome is believed to be abnormal sensitivity of receptors for the brain hormone dopamine. Iron-deficiency anemia has also been cited as a cause, suggesting that there may be a relationship between iron metabolism and dopamine metabolism[21]. Restless legs syndrome is dramatically improved by a single medication, at just a low dose. This releases many people from their suffering, both in daily life and as a result of insomnia. What is required is the detection of restless legs syndrome via a careful medical interview, and its appropriate treatment.

When going to bed or while lying in bed, you have unbearably uncomfortable feelings of irritation or restlessness mainly in the feet, calves, or other parts of the leg that make it impossible to keep still. Shaking the leg around makes it feel better.

The 12 Pointers for Dealing with Sleep Disorders published by the Ministry of Health, Labour and Welfare also points out that "Caution is needed if you snore loudly or stop breathing, or if your legs twitch or feel restless during sleep," and this disorder can interfere with sleep and also affect daily life. Its exact cause is unknown, and some people worry about it without realizing that it is a disease, but in almost all cases it improves with the right treatment.

Although it is generally known as "restless legs syndrome," it can also affect areas other than the legs, with some patients complaining of uncomfortable symptoms in the arms and shoulders. At my hospital, we are provisionally terming this **"whole-body restless syndrome."** Sufferers complain of a wide variety of symptoms in addition to restlessness.

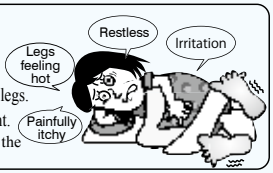


Oota Restless Legs Syndrome Severity Scale

What are "restless legs"?

- ☐ Your legs feel restless or irritated when you are resting or staying still.
- ☐ It feels so uncomfortable you have an unbearable urge to move your legs.
- ☐ The restlessness or irritation improves or disappears when you move your legs.
- ☐ The restlessness or irritation appears or worsens between evening and night.

*Restlessness and irritation are not restricted to the legs, but may occur in the arms or neck, or extend throughout the whole body.



▼Please circle the answer to each of the questions below that best applies to the state of the above symptoms during the past week.

1. **How severe were the uncomfortable sensations?**

4	Very uncomfortable	3	Uncomfortable	2	Somewhat uncomfortable	1	Slightly uncomfortable	0	Not at all

2. **How often did these sensations occur?**

4	Very frequently (6–7 days a week)	3	Frequently (4–5 days a week)	2	Sometimes (2–3 days a week)	1	Occasionally (once a week)	0	Never

3. **For how long did these sensations persist?**

4	A very long time (over 8 hours a day)	3	A long time (3-8 hours a day)	2	For some time (1–3 hours a day)	1	A short time (less than 1 hour a day)	0	Not at all

4. **Did you have the desire to move around because of these uncomfortable sensations?**

4	Very strongly	3	Strongly	2	Somewhat	1	Mildly	0	Not at all

5. **Did these sensations go away when you moved around?**

4	No improvement at all	3	A little improvement	2	About the same	1	Complete or almost complete improvement	0	No uncomfortable sensations

6. **How badly was your sleep impaired by these uncomfortable sensations?**

4	Very badly	3	Badly	2	Moderately	1	A little	0	No effect

7. **How bad was your tiredness or sleepiness during the day?**

4	Very bad	3	Bad	2	Moderate	1	Mild	0	None at all

8. **How badly was your daily life affected by these uncomfortable sensations?**
e.g., family life, housework, social activities, school, or work

4	Very badly	3	Badly	2	Moderately	1	A little	0	No effect

9. **How badly was your mood affected by these uncomfortable sensations?**
i.e., Did you become angry, depressed, sad, anxious, or irritated?

4	Very badly	3	Badly	2	Moderately	1	A little	0	No effect

10. **How severe do you think your restless legs syndrome is yourself?**

4	Very severe	3	Severe	2	Moderate	1	Mild	0	I don't have restless legs syndrome

Total	points

*For office use

Severity	Mild	Moderate	Severe	Very severe
	≤10 points	11–20 points	21–30 points	≥31 points

Name _____ Date _____

Produced with reference to the International Restless Legs Syndrome Study Group. Validation of the International Restless Legs Syndrome Study Group Rating Scale for restless legs syndrome. Sleep Med 2003;4(2):121–132.

8 Periodic Limb Movement Disorder (PLMD)

You should have slept well, but don't feel that you slept deeply, and feel sleepy during the day

This is a companion condition to restless legs syndrome. Periodic abnormal movements of the limbs occur repeatedly during sleep, causing waking and insomnia. These abnormal movements almost always occur in the legs and consist mainly of dorsiflexion of the big toe and ankle, and flexion of the knee for around 0.5–5 seconds at 20–60 second intervals. They are believed to occur in 1-4% of the population and become more common with age, reaching a prevalence of over 30% among those over 65 years [22]. In many cases, sufferers themselves are only aware of insomnia, and have no idea that their limbs are moving while they are asleep. They may see a doctor because their partner has been unexpectedly kicked during the night, or has noticed abnormal movements of their toes. Movements of the leg muscles can be assessed by means of all-night polysomnography, but this test is not covered by health insurance, and if family members are willing to cooperate, then interviews with them can provide a valuable source of information. Depending on the patient, it may be necessary to explain things carefully to them and carry out the test. These leg movements mainly occur during non-REM sleep, and if a patient is aware of spasms in their legs while they are awake then this by itself may be sufficient for diagnosis. Like restless legs syndrome, its etiology is also unknown, and the list of aggravating factors is also almost identical, including stress, alcohol, smoking, and iron-deficiency anemia. Depending on the patient's symptoms, the treatment for periodic limb movement disorder may comprise the antiepileptic drugs Rivotril (clonazepam) or Landsen (clonazepam) or the Parkinson's disease medications BI Sifrol (pramipexole hydrochloride) or Neodopaston (carbidopa/levodopa). Although these are fast-acting, long-term continued administration is required, and the minimum dose should therefore be prescribed.

Oota Periodic Leg Movements during Sleep (PLMS)/ Periodic Limb Movement Disorder (PLMD)

Medical Interview Form

	Question	Circle Yes or No
1)	Do you get sufficient sleep? From : to : _____ hours	Yes No
2)	Do you wake up feeling that you have slept well?	Yes No
3)	Do you wake up during the night? (about times)	Yes No
4)	When you wake up, is your comforter out of place or thrown off?	Yes No
5)	Are you ever aware of your arms or legs moving suddenly during sleep?	Yes No
6)	Do you ever hit out with your elbow during sleep?	Yes No
7)	Do you ever make kicking movements with your legs during sleep?	Yes No
8)	Have your family ever said anything about movements of your arms or legs during sleep?	Yes No

If your family has said anything about this, please specify it here.

Kosuke Oota

The mysterious relationship between restless legs syndrome and periodic limb movement disorder

I said above that restless legs syndrome and periodic limb movement disorder (also known as "periodic leg movements during sleep") are companion disorders. The legs are so restless that it is impossible to sleep, or their periodic movement prevents deep sleep. In both cases, the major worry for patients is insomnia. These are truly mysterious conditions. A decrease in the brain hormone dopamine is believed to be one cause.

Restless legs syndrome is believed to occur when neurotransmission is impeded by a decrease in dopamine levels and the wrong signals are sent to the brain, causing an uncomfortable restless sensation. BI Sifrol (pramipexole hydrochloride) is an effective treatment for moderate to severe cases. This is a medication used to treat Parkinson's disease that acts to increase dopamine levels. Mild cases can be effectively treated with Rivotril (clonazepam) or Gabapen (gabapentin). Around 70% of patients with restless legs syndrome also experience periodic leg movements during sleep [21]. In mild to moderate cases, this can be treated with Rivotril (clonazepam), and in severe cases, BI Sifrol (pramipexole hydrochloride) is effective. Despite the fact that these two conditions have the same cause and are treated with the same medications, their symptoms are completely different. They also differ in their time of onset. Restless legs occur before sleep when the sufferer is still awake, whereas periodic leg movements start once the sufferer has gone to sleep. They are an intriguing combination.

Restless legs syndrome is surprisingly little known, and almost no one has ever heard of periodic limb movement disorder. Even many doctors have no idea of its existence. Periodic limb movement disorder is also known as PLMS, which may stand for either "periodic limb movement in sleep" or "periodic limb movement syndrome." The terminology has yet to be made consistent. The Japanese translation of "periodic limb movement disorder" is somewhat pretentious, so when explaining it to patients, I use "periodic leg movements during sleep" as it is simpler to understand. Like restless legs, it may also occur in the arms, but is overwhelmingly more frequent in the legs. I have yet to see any diagnostic guidelines or dedicated medical interview form for the diagnosis of periodic limb movement disorder. Although the sleep disorder medical interview

form that I use to diagnose insomnia does come in handy, it is difficult to use for the diagnosis of periodic leg movements during sleep. At present, it can only be diagnosed by exclusion. When no other cause of insomnia can be identified, rather than simply filing it away as psychophysiological insomnia (see note), which is one type of physiological insomnia due to focusing too hard on going to sleep, it is important to suspect the possibility of periodic leg movements. If the patient has an understanding partner, their husband or wife can be asked to monitor their legs during sleep. A wide range of useful information can be gained in this way, ranging from snoring and rolling over to bruxism, sleep talking, arm and leg movements, and periodic limb movements. When there is no means of obtaining this information, it is important that patients be asked to stop taking any sleeping medication that has long ceased to work and be given a prescription for a low dose of Rivotril (clonazepam) or Landsen (clonazepam), so the effect can be observed. This may be highly effective in reducing the feeling of not having slept enough on waking up, the daytime sleepiness that is characteristic of periodic leg movements, and in restoring motivation.

Mr. Restless and Mr. Periodic

Mr. Restless
Restless Legs Syndrome

Mr. Periodic
Periodic Limb Movement Disorder

Symptoms	Mainly restlessness in the legs	Periodic sudden movements of the big toe, ankle, and other joints
Time of onset	While awake, before going to sleep	After going to sleep
Cause	Lack of the neurotransmitter dopamine, etc.	
Treatment	Antiepileptic drugs, Parkinson's disease medication	

A polysomnography test provides a score of the severity of periodic leg movements by showing how often they occur in a set time period. However, as it is not covered by health insurance for periodic leg movements during sleep, it is very rarely used in practice. I would like to emphasize that periodic leg movements during sleep should always be suspected in the case of insomnia of unknown origin.

As an aside, decreased dopamine production can be caused by a lack of iron in the central nervous system, meaning that iron-deficiency anemia may also be involved. I occasionally encounter anemic patients in my own clinics. It may be necessary to consider prescribing iron to some patients.

(Note) Psychophysiological insomnia: Chronic insomnia caused by becoming more tensed up the more you try and sleep, originally triggered by the experience of not having been able to go to sleep easily. This is a psychological form of insomnia that does not involve any other medical issue.

9 Allodynia unrelated to migraine

Doctors involved in outpatient care often have the impression that allodynia is a somewhat incomprehensible condition, but in fact, it is not uncommonly encountered in clinics. The pain of allodynia comprises uncomfortable numbness and painful sensations that are difficult to put into words. Patients may develop a headache merely by touching their hair, feel strange numbness or pain around their eyes, or have numbness only in their arms, and in many cases, they themselves are confused by their symptoms and unable to describe them adequately. It is easy for busy outpatient doctors to regard them as problem patients.

As I mentioned earlier, allodynia is frequently associated with migraine. In this case, it can be cured if properly diagnosed. For allodynia that is not associated with migraine, however, the situation is more complicated. For this reason, outpatient doctors tend to give it a wide berth.

Long-term pain following nerve damage due to a fracture or injury is termed "complex regional pain syndrome" (CRPS) by the International Association for

the Study of Pain, and its major symptoms include allodynia, skin discoloration, dyshidrosis, edema, restricted joint range of motion, and muscle atrophy. The Ministry of Health, Labour and Welfare has issued a Japanese version of the CRPS assessment index [23].

Complex regional pain syndrome includes causalgia, which is prolonged burning pain resulting from nerve damage due to a specific type of injury, namely a bullet wound. In shoulder-hand syndrome, intense pain and swelling occur in the fingers on the paralyzed side around 1 month after a stroke. If the edema extends throughout the entire arm and the paralyzed arm is left to hang down, it may cause subluxation or dislocation of the shoulder joint and damage to the ligaments, with patients complaining of a variety of types of pain from the shoulder to the fingers. Shoulder-hand syndrome is a progressive, intractable condition. Repeated, violent pain is treated with tricyclic antidepressants or antiepileptic drugs. Patients who do not respond to these may undergo spinal cord stimulation therapy with implantation of an epidural stimulus electrode.

Central nervous pain (thalamic pain) appears as abnormal numbness and pain in the arms and legs of the paralyzed side after a stroke. These are a unique form of discomfort and pain that are nothing like the numbness and pain experienced by healthy people. They are the result of the nerves that transmit sensation from the limbs and trunk to the brain being cut as the result of a stroke (normally a brain hemorrhage). The lack of transmission of normal sensations rattles the brain, causing it to become overexcited and hypersensitive. The sensitized brain then creates its own sensations of discomfort and pain. It is treated with tricyclic antidepressants or antiepileptics. The deep brain stimulation therapy used to treat Parkinson's disease may be used in intractable cases.

Allodynia may also appear as postoperative pain syndrome following thoracic or abdominal surgery. Many such cases of non-migraine-associated allodynia are intractable, and as the underlying conditions are also complicated, the reality is that outpatient doctors tend to steer clear of them.

Column

Pain transmission speeds

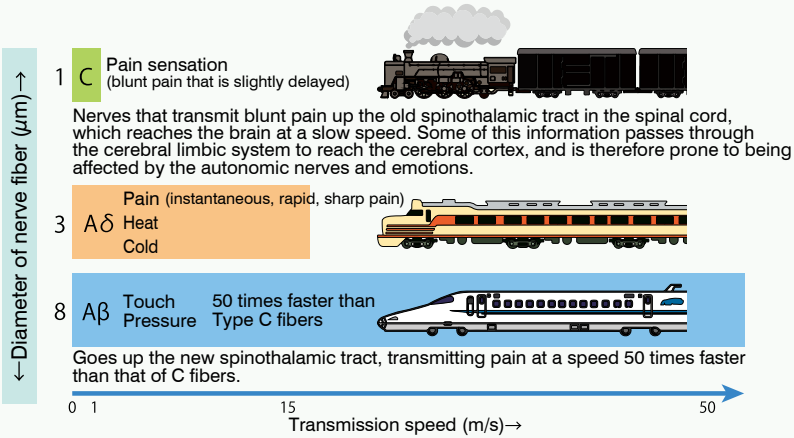
There are three types of nerve fibers that are responsible for the neurotransmission of skin sensations: Type A, Type B, and Type C fibers. Pain is mainly transmitted by Type Aδ and Type C fibers. Type Aβ fibers, which transmit sensations of touch and pressure, are also believed to be involved in allodynia of the sort in which just touching the hair brings on a headache, or when the legs prickle, feel hot, or tingle after going to bed.

In terms of the speed at which a pain stimulus is transmitted from the periphery, it is clear from the figure that Type C fibers, which simply transmit pain, have the slowest transmission speed. A comparison with trains makes this easy to understand. In the figure showing the thickness of nerves and transmission speed, the thickest of these three types of fibers with the fastest speed is Type Aβ, which is like a bullet train. Type Aδ, the next fastest, is like an express train, whereas Type C fibers are like the local train that stops at every station. Compared with the fibers that transmit touch and pressure sensations, those that transmit pain have

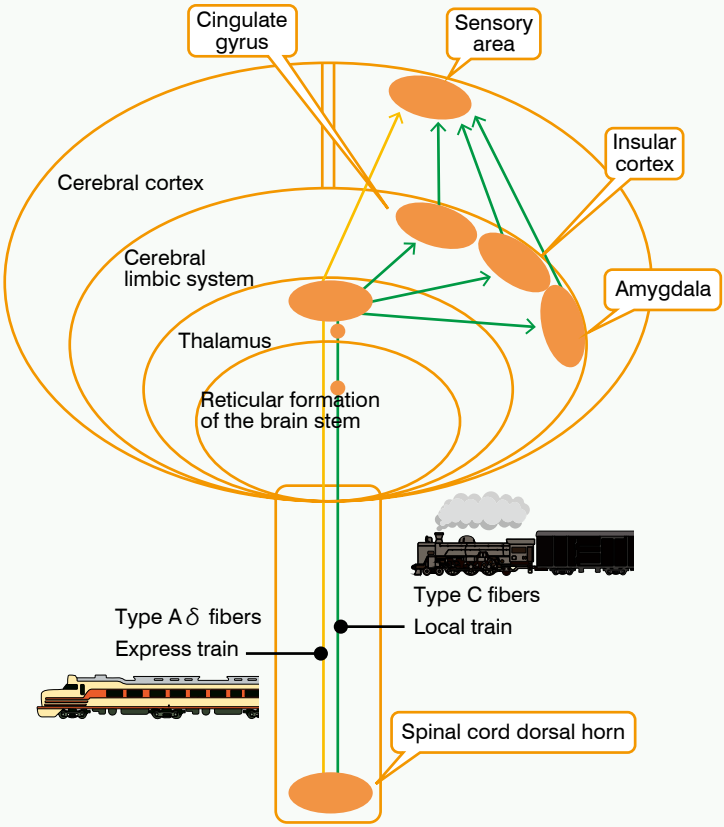
Types of nerve fibers and their roles

Type	Diameter (μm)	Myelinated	Transmission speed (m/s)	Function	Role
Aα	15	Yes	100	Motor afferent	Transmission of information about muscle contraction and relaxation, movement control of skeletal muscles
Aβ	8	Yes	50	Afferent	Transmission of information about skin touch and pressure sensation
Aγ	5	Yes	20	Motor	Transmission of information to muscle spindles
Aδ	3	Yes	15	Afferent	Rapid transmission of pain, hot, and cold sensations
B	3	Yes	7	Autonomic	Slow transmission of pain and itchiness. Autonomic nerve preganglionic fibers
C	1	No	1	Afferent autonomic	Autonomic nerve postganglionic fibers

an extremely slow transmission speed. Why is pain transmitted so slowly even though it is an important protective response? There must be some reason. These three different types of nerve fibers have different pathways leading to the central nervous system (illustrated in the route map). Type Aδ fibers take an almost direct route, passing through the thalamus to the sensory area. Type C fibers undergo various modifications before they reach the hypothalamus and reach different locations such as the cingulate gyrus, insular cortex, and amygdala. Type Aδ fibers are like the express train from Fukuyama that goes directly to Tokyo, stopping only at the major stations of Osaka, Kyoto, and Nagoya, whereas Type C fibers are like a local train that offloads freight at Okayama and takes it on at Kobe, as well as splitting into different sections going to Toyama, Nagano, and Tokyo while heading slowly to its destination. They are easily affected by what happens at each station, and the content of what they transmit is prone to being modified. This comparison of Type C fibers to a local train actually reflects the body's clever defense mechanisms.

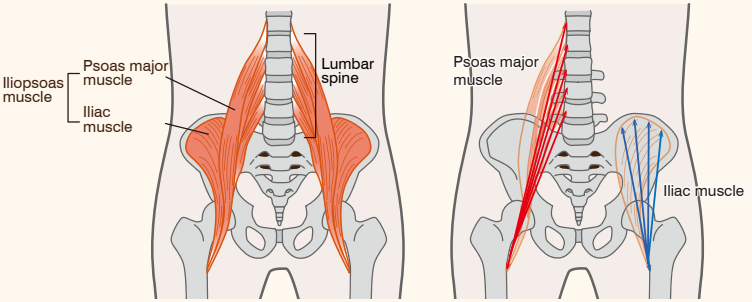


Column


Cingulate gyrus
Sensory area
Insular cortex
Cerebral cortex
Cerebral limbic system
Amygdala
Thalamus
Reticular formation of the brain stem
Type C fibers
Local train
Type A δ fibers
Express train
Spinal cord dorsal horn

10 Chronic lower back pain: Muscle stiffness due to static muscle load

Why does lower back pain become chronic? This is one of the most common forms of chronic pain. Often seen in people whose job means they spend long periods sitting or standing, it is the result of static muscle load generated by maintaining the same posture for long periods. When an unnatural posture becomes habitual, muscle stiffness develops into chronic pain. Sarcopenia (disuse atrophy) of the muscles that support the lower back due to lack of exercise is another cause of chronic lower back pain.



The main muscle that causes lower back pain is the iliopsoas muscle, which supports the lumbar spine and the pelvis. It is essential not to rest this muscle just because it is painful, or it will become stiff and hard. There is no need, however, to force yourself to engage in painful exercises or movements. The iliopsoas muscle is actually a large muscle group that is attached to the lumbar spine, pelvis, and femur, and walking is therefore the first step in treatment. The greatest risk factor for lower back pain is maintaining the same posture for long periods at work. It therefore affects more people who do not perform sufficient exercise or who don't walk because they dislike exercise. If you can find a moment to take some time for yourself, go for a walk. The anatomical diagram will give you a good idea of how the iliopsoas muscle supports the lumbar spine. Just 30 minutes of walking a day is highly effective for preventing lower back pain.

People who suffer from lower back pain often also complain of other symptoms such as headache, insomnia, and constipation, and require guidance on how to balance the rhythm of their daily lives.

11 Myofascial pain syndrome

Myofascial pain syndrome is a transformed form of the familiar pain generated by muscle stiffness. Many patients complain of pain in several different places. Palpation reveals localized taut bands in the muscles. Pressing on these hard with a finger causes pain to appear in a different area. This is known as "referred pain." Muscle stiffness and pain may range from discomfort to intense pain that restricts movement and interferes with daily life, but is a completely standard condition. In most cases, it spontaneously improves and disappears within a few days to 1–2 weeks. If it becomes aggravated, however, it can develop into myofascial pain syndrome. This becomes chronic in many cases, and in recent years the opinion has been expressed that it should more appropriately be known as chronic myofascial pain (CMP).

What causes the aggravation of muscle pain is either repeated dynamic or static muscle load or chronic action on the muscles. Repeated or continuous muscle contraction load disturbs the blood flow to the muscle involved. If this interference in blood flow continues, pain-producing substances such as prostaglandins and bradykinins are produced. This causes further muscle

contraction and spasms, damaging the muscle fibers and causing fibromyalgia. If fibromyalgia is not treated or dealt with properly, the resulting chronic pain, numbness, and aching can develop into cephalic hypersensitivity syndrome and indescribably uncomfortable and intense pain, allodynia. It is my conjecture that this mechanism may underlie the alteration and progression of myofascial pain syndrome into fibromyalgia. This pain does not show up as abnormalities in blood tests or on X-rays, CT, MRI, or other forms of diagnostic imaging.

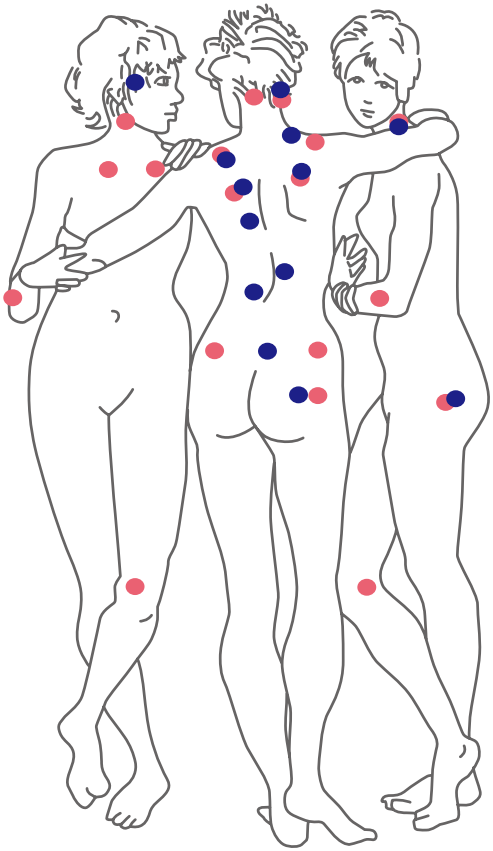
As reference, I am reproducing below the diagnostic criteria for myofascial pain syndrome published in *Myofascial Pain and Dysfunction: The Trigger Point Manual* (2nd Edition) by David Simons in 1999 [24].

- Palpable muscles contain palpable taut bands.
- The taut bands contain tender points (sites) where a sharp pain is felt.
- When a tender point is pressed, the patient feels that the current pain, including surrounding areas, comes from the tender point.
- Physical range of motion is restricted because of this pain.

Conditions such as migraine, stiff shoulders, dizziness / vertigo, and restless legs are often improved by improvements in daily habits and thinking and night therapy. If stubborn muscle stiffness and tender points are present, however, patients will not be cured by the treatment algorithm for cephalic hypersensitivity syndrome alone. If the patient meets the criteria set out in the diagnostic guidelines for the various rheumatic diseases, they may be referred to a specialist, but almost all those who come to me seeking treatment exhibit few objective medical signs despite complaining of intense pain.

Tender points

- Fibromyalgia
- Myofascial pain syndrome



The Three Graces, daughters of Zeus

In addition to myofascial pain syndrome and fibromyalgia, other disorders in which patients complain of pain throughout the body in the absence of any obvious abnormal test results or lesions and in which an inflammatory reaction eventually becomes evident as they progress include polymyalgia rheumatica syndrome and spondylarthritis (ankylosing spondylarthritis and serum-negative spondylarthritis). These disorders have many subtypes, and at the stage when a patient initially presents with a chronic illness syndrome, they are extremely difficult to distinguish. In all cases, symptomatic treatment takes center stage: the first-choice initial treatment is non-steroidal analgesics, and during long-term treatment with these, cephalic hypersensitivity syndrome may develop separately from the underlying condition. If these conditions progress and become severe, the resulting emotional disturbance and mental stress excite the sympathetic nerves, and the pain fibers in the muscles containing the taut bands also become excited, resulting in a vicious cycle of muscle contraction, reduced blood flow, spasms, and muscle fiber damage. It is worth trying all the different symptomatic treatments available, from nerve block to acupuncture massage.

I personally use *Tsumujikaze-kun* magnetic acupuncture needles to provide stimulation around the nails and cranial area. These magnetic needles are in the form of a ball pen and can be carried in a suit pocket for immediate use as and when required. When timed to coincide with breathing, this can also be used as breathing therapy.

I originally trained as an anesthesiologist, and used to administer nerve block as an outpatient treatment. In recent years, tender points and trigger points (points that induce pain when touched) have become the focus of attention in the clinical treatment of the diffuse pain seen in conditions such as fibromyalgia, polyenthesitis, and myofascial pain syndrome. In many cases, much remains unknown concerning the mechanism of onset of the underlying condition, and standard treatments have yet to be established. I had already focused on trigger points well before these disease concepts had become widely known in clinical institutions in Japan, and used nerve block at these trigger points in addition to medication in cases of stubborn pain, particularly persistent pain associated with stiffness, when it was clear that they could not be resolved solely with drug treatment.

Trigger points are a strange lot. Many myofascial pain syndrome and fibromyalgia trigger points seem to be located at the same sites as the acupuncture points used in oriental medicine. Actual painful points cannot be identified on CT or ultrasound, or described in such precise term as "X cm above the knee." You have to work out approximate locations from the patient's description of "somewhere around there" and episodes of pain, and search for the actual trigger points from the patient's reaction to the pain generated by pressing them with a finger. At that time, I would carry out nerve block of the trigger points I had identified with 2 cc of a 0.5% solution, the weakest available, of the local anesthetic xylocaine administered with a 27G needle, the finest available at that time. The combination of drug treatment and nerve block at tender points, with the addition of nerve block of the cervical sympathetic nerve ganglion (stellate ganglion) (see note) for stubborn pain, was sufficient to release patients from persistent pain. It is important in treatment to deal with the symptoms properly from the beginning. It is a good piece of clinical wisdom to provide the right initial treatment, thus preventing the pain from subsequently being transformed in complex ways.

The syringe I was using to carry out nerve block injections

(Note) Stellate ganglion block: The stellate ganglion in the neck gains its name from the fact that it is a star-shaped concentration of autonomic nerves, mainly sympathetic nerves. Nerve block of the sympathetic nerve ganglia in the neck and lower back is used to treat chronic pain.
Nerve block utilizes a weak local anesthetic or laser irradiation. The stellate ganglion controls the sympathetic nerves in the head, face, neck, shoulders, arms, lungs, and heart.

Column

●Acupuncture points and nerve block

Acupuncture points are said to be transit points for the meridians that form the pathways through which spirit flows. Many of them are located on tendons, attachments between tendons and bones, in the hollows between two muscles, and above nerves and blood vessels. The Iceman, a 5,300-year-old mummy discovered in an Alpine glacier, was reported to have tattoo-like marks at the sites of acupuncture points, indicating that he may have suffered from backache. The art of diagnosis and treatment on the basis of meridians and acupuncture points is said to have emerged a little more than 2000 years ago in China. If it was already known when the Iceman was still alive, the theory that ancient China was the birthplace of acupuncture treatment becomes a little shaky, and it may be inferred to have existed since the dawn of humanity in the Stone Age. The WHO produced a list of 361 standard acupuncture points in 2006. Today, acupuncture points are designated in both Chinese/Japanese characters and the international alphabetic notation. From the perspective of the venerable history of acupuncture treatment dating back to prehistoric times, the nerve block treatment practiced in pain clinics is in its mere youth, but one that may become the treatment of the future.

12 Chronic constipation: The retention of toxins in the body

As already described in Chapter 1, patients with a chronic illness syndrome often also suffer from chronic constipation. Various forms of stress can disrupt the autonomic nerves, creating susceptibility to constipation, and this has a negative effect on the homeostasis of the entire body, creating a vicious cycle. Chronic constipation cannot be cured unless this is resolved at the source. As I described earlier, most of the production of serotonin, the mother of all hormones that is important in the treatment and prevention of cephalic hypersensitivity syndrome, takes place in the intestines. Balancing the intestinal environment also helps strengthen immunity. To put it the other way around, cephalic hypersensitivity syndrome and chronic constipation tend to occur in combination with each other, and must thus also be treated at the same time. Among the three arrows of my treatment algorithm for cephalic hypersensitivity syndrome, the "four-wheel drive" of sleep, exercise, bowel function, and diet is particularly important for the treatment of chronic constipation.

Dealing with chronic constipation: The miraculous power of enemas

I recommend the following three-step process for dealing with stubborn chronic constipation.

(1) Fluid intake, magnesium oxide, and laxatives

The first step is to soften the stool inside the bowel to the point at which it can be expelled. If the bowel is packed with hard stool, it is no use administering an enema or using laxatives, as these will just make things more uncomfortable. The first point is to drink plenty of fluids. Avoid soft drinks, sports drinks, coffee, and tea, and instead drink water or non-caffeinated teas. Magnesium oxide increases the water content of stool, thereby softening it. Then, for the second step, using a laxative at this point makes bowel movements easier to pass. Unless the patient also makes an effort to start to review his or her diet, get enough sleep, and engage in the right sort of rhythmic movement, however, this will not resolve the root of the problem.

(2) The miraculous power of enemas

In most cases, the two steps described above are enough to improve

constipation, but for cases of intractable constipation that do not respond to this treatment I recommend warm-water enemas. This is the third step of the process. As described above, enemas are not effective on their own. As I mentioned in Chapter 1, coffee enemas are an important method of treatment in Gerson therapy alongside dietary therapy. Here, rather than the "medical" glycerin enema, I will describe how to administer an enema with warm water, which is non-irritating and can easily be carried out on an everyday basis. As an aside, the facilitators of the Miss Japan competition are among those promoting health through enemas. The condition for remaining beautiful over the years is not external appearance but rather to have beautiful intestines, autonomic nerves, and serotonin.

• Water (warm-water) enema

Water enemas have a long history. The Essene Gospel of Peace from the Dead Sea Scrolls, written 2000 years ago, is said to contain a detailed description of an enema. The excerpt below is quoted in The Gerson Therapy (definitive edition).

"I tell you truly, the angel of water shall cast out of your body all uncleannesses which defiled it without and within. And all unclean and evil-smelling things shall flow out of you, even as the uncleannesses of garments washed in water flow away and are lost in the stream of the river. I tell you truly, holy is the angel of water who cleanses all that is unclean and makes all evil-smelling things of a sweet odor....

Think not that it is sufficient that the angel of water embrace you outwards only. I tell you truly, the uncleanness within is greater by much than the uncleanness without. And he who cleanses himself without, but within remains unclean, is like to tombs that outwards are painted fair, but are within full of all manner of horrible uncleannesses and abominations.

So I tell you truly, suffer the angel of water to baptize you also within, that you may become free from all your past sins, and that within likewise you may become as pure as the river's foam sporting in the sunlight ....

Seek, therefore, a large trailing gourd, having a stalk the length of a man; take out its inwards and fill it with water from the river which the sun has warmed. Hang it upon the branch of a tree, and kneel upon the ground before the angel of water, and suffer the end of the stalk of the trailing gourd to enter your hinder parts, that the water may flow through all your bowels.

Afterwards, rest kneeling on the ground before the angel of water and pray to the living God that he will forgive you all of your past sins, and pray to the angel of water that he will free your body from every uncleanness and disease.

Then let the water run out from your body, that it may carry away from within it all the unclean and evil-smelling things of Satan. And you shall see with your eyes and smell with your nose all the abominations and uncleannesses which defiled the temple of your body; even all the sins which abode in your body, tormenting you with all manner of pains. I tell you truly, baptism with water frees you from all of these. Renew your baptizing with water on every day of your fast, till the day when you see that the water which flows out of you is as pure as the river's foam. Then betake your body to the coursing river, and there in the arms of the angel of water render thanks to the living God that he has freed you from your sins. And this holy baptizing by the angel of water is: Rebirth unto the new life." [25]

It is astonishing that even in ancient times people were aware of enemas as a way of becoming healthy. Of course, I do not recommend that you try and follow this technique word-for-word today. Fasting and bowel irrigation are ways of staying healthy that have been popular for thousands of years, and even more surprisingly, they have been known not only as ways of physically expelling unclean substances but also as means of achieving a calm mental state.

A wide variety of types of enema set are available on the market, but rather than high pressure enemas, one that shoots the water into you from high up in a single go, choose one that lets it flow in gently.

- **Coffee enema (chamomile enema, vegetable juice enema)**

In simple terms, coffee enemas detoxify the liver through the action of caffeine and palmitic acid salts. Physiological experiments have shown that this effect cannot be obtained by drinking it. Coffee enemas were accidentally discovered during the First World War, when anesthetics were unobtainable; a nurse poured the remains of a doctor's coffee into the warm water for an enema being administered to ease the pain of a wounded soldier, and found that it had a stronger analgesic effect. Gerson took this technique and incorporated

it into Gerson therapy, and since then, further studies have led to the present technique.

The action of palmitic acid salts in the rectum stimulates the visceral nervous system, encouraging intestinal peristalsis. It also promotes the secretion of bile, which has a detoxifying effect, enhancing the various detoxification functions that are performed within the liver. As a result of these actions, this method is effective in resolving constipation, providing analgesia and sedation, and improving the internal environment of the bowel. The procedure is described in detail in books on Gerson therapy.

In Gerson therapy, other recommended variations for fluids to be used instead of coffee, depending on the patient's state of health, include chamomile tea, coffee diluted with chamomile tea, and vegetable juice (with the fiber sieved out)[25].

(3) Repeated juice fasts lasting 3–5 days

Some patients with cephalic hypersensitivity syndrome have suffered from constipation for years and have become constitutionally prone to it. Long-drawn-out constipation is very difficult to resolve by three-step process alone. Even if they understand the importance of the four-wheel-drive lifestyle, they may not be able to put it into practice in their own lives. In this case, what I recommend is juice fasting. By "juice," I don't mean the cans or bottles sold in the shops, but fresh, unsalted fruit or vegetable juice. Using only fruit because of the taste is not a good idea. Combine carrots and green vegetables with fruit such as apples and oranges, and drink 1–2 liters a day. Drink a total of at least 2 liters of fluid per day. For people who find it impossible to make fresh juice, replacing it with commercially available (unsalted) vegetable juice is better than nothing. Carry on with this regimen for 3–5 days. After this, spend another few days eating easily digestible foods such as rice porridge and oatmeal before returning to a normal diet. Keep repeating this cycle.

13 Chronic fatigue: The accumulation of toxins in the mind

Fatigue is a red light to protect the body

Fatigue is a commonplace experience in daily life: "I'm tired because I haven't played tennis in such a long time," or "I'm tired after dealing with a difficult customer." Normally, tiredness is dissipated after a rest, a break, or sleep. This is what is known as "physiological fatigue." Normal tiredness is a temporary decrease in effectiveness when either body or mind is under strain, and it returns to normal after resting. Ordinarily, the sort of physical tiredness caused by playing tennis and the sort of mental tiredness caused by dealing with a difficult customer are regarded as different things, but the mechanism of fatigue is far from simple, and today it is believed that there is a complex interrelationship between muscle fatigue (peripheral fatigue) and brain fatigue (central fatigue).

Physical tiredness is mainly muscle fatigue. In this state, muscles no longer contract easily as a result of continued use, the energy source (glycogen) required for movement has been used up, and lactic acid levels have increased. In recent years, however, a theory has been gaining traction in which lactic acid is necessary for recovery from fatigue, and that the actual cause is a disturbance of the balance between potassium and sodium in muscle cells. If potassium leaks out of cells, the extracellular positive charge increases, causing muscle contraction, and if this continues to occur, potassium resorption will not happen in time, making it no longer possible for the muscle to contract[26]. This is the state of muscle fatigue. Recovery requires allowing the muscles to cool down and then relaxing the body by soaking in warm water or something similar, as well as taking in sufficient nutrition and rest.

Mental tiredness is an emotional state in which a person doesn't feel like doing anything and feels irritated, and is a form of tiredness induced by circumstances such as concentrating on a detailed task, going to a lot of trouble for someone, or feeling intense anxiety. The brain hormones serotonin, dopamine, and noradrenaline, which are part of monoamine neurotransmitter systems, are believed to be involved. However, the details are as yet not well understood. Good-quality sleep is essential for recovery, to calm down the excited brain and allow it to rest.

Physical and mental tiredness are not two different things, but are believed to happen together. For example, the level of tiredness differs depending on psychological state. If you play tennis because you enjoy it, both how tired you feel and your subsequent recovery will be different from if you had been reluctant to play. And when dealing with a difficult customer, the muscles throughout your body will unconsciously clench, unlike times when you are talking to a good friend. In this way, fatigue is one of the mechanisms whereby the motor nerves and autonomic nerves act in a balanced way to preserve the body in its "normal" state. Like fever and pain, "fatigue" is an important danger signal that helps to protect our bodies.

Cephalic hypersensitivity syndrome and chronic fatigue

Normal tiredness dissipates after rest, but if it is not possible to obtain the rest necessary for recovery and a situation of intense mental stress continues, fatigue accumulates and becomes chronic, meaning that a short break is no longer sufficient for recovery. This state is known as chronic fatigue, and in Japan, approximately 30% of workers are believed to suffer from it. Chronic fatigue that continues for several months or more without an identifiable cause can be thought of as a sign that cephalic hypersensitivity has developed as a result of the danger signal of fatigue arriving too strongly in the brain over a long period. As I mentioned earlier, there is a complex interrelationship between physical tiredness and mental tiredness. Both cause muscle clenching and stiffness as a result of impaired blood flow if the same stress continues for a long period. This appears in the form of symptoms such as stiff shoulders, headache, and lower back pain. I earlier described how normal tiredness, like pain, does not become a pathological condition if it is dealt with properly before it becomes too bad, but if it is treated improperly, for example by the overuse of painkillers or nutritional drinks, a vicious cycle can develop, with the result being cephalic hypersensitivity syndrome. The symptoms of cephalic hypersensitivity syndrome induced in this way by chronic fatigue can mostly be reversed by cautiously discontinuing drugs that have been overused, getting away from severely stressful situations, working on improving thinking, leading a balanced lifestyle with a good rhythm of eating, bowel evacuation, and sleep, and calming down the hypersensitized reactions of the brain. The Japanese Society of Fatigue Science has proposed

using the term "idiopathic chronic fatigue" to describe prolonged fatigue of unknown origin that does not meet the diagnostic criteria for chronic fatigue syndrome (described below), and some of those cases of idiopathic chronic fatigue may include cephalic hypersensitivity syndrome which have been triggered by chronic fatigue.

14 Disorders that are difficult to distinguish from cephalic hypersensitivity syndrome

There are some types of chronic illness syndrome that appear very similar to cephalic hypersensitivity syndrome, but that do not respond to treatment for the latter. In my view, although in these disorders some symptoms are fueled by cephalic hypersensitivity syndrome, the nature of the underlying disease must have a different pathology from that of cephalic hypersensitivity syndrome. There are no established methods of treatment for any of these conditions, but it is worth trying out Gerson therapy, not only the dietary therapy but also coffee enemas, as this is effective in treating degenerative conditions.

Fibromyalgia (FM)

It used to be that fibromyalgia was mainly treated in departments of rheumatology. Attitudes toward fibromyalgia have recently changed markedly, however, with an increasing tendency to involve specialists in other areas, such as neurology, psychosomatic medicine, and psychiatry in its care. In fibromyalgia, pain similar to muscle stiffness is evident at multiple locations (18 sites) throughout the body (see Page 198). It usually appears at the back of the head and in the neck, shoulders, and chest, with tender points also seen in the lower back and limb joints. Patients complain that the pain is severe enough to interfere with daily life, and in many cases, this pain cannot be left untreated. It is important to take account of concomitant conditions, age, and sex.

The appropriate treatment for fibromyalgia has yet to be discovered. It is necessary to determine whether or not spondylarthritis and other rheumatic disorders, as well as conditions that resemble them, such as polyenthesitis, are

also present. A detailed medical interview prior to examination is therefore essential.

Antidepressants and antiepileptics such as Tryptanol (amitriptyline), Depakene (sodium valproate), Gabapen (gabapentin), and Topina (topiramate) may be effective treatments for fibromyalgia in some cases. Lyrica (pregabalin) was approved for the treatment of fibromyalgia in June 2012. However, a survey of drug package inserts and conference presentations reveals that the dose of Lyrica (pregabalin) is 150–450 mg/day, taken twice a day, and at that dose, the incidence of side effects such as dizziness as well as drowsiness is high. There is a tendency to increase the dose in order to alleviate the pain. Lyrica (pregabalin) alone is ineffective, and as over 30% of patients also have a psychiatric disorder, many of them are already taking psychotropic drugs, meaning that they will be taking multiple medications.

Juvenile fibromyalgia (JFM) has been on the increase in recent years [27]. Treatment should start by reviewing patients' living environments and by trying non-drug therapies. Antidepressants and antiepileptics should not be carelessly prescribed. Fibromyalgia is more common in women. One factor that may underlie the increasing youth of patients and that should not be overlooked is stress arising from the mother-daughter relationship. In any case, fibromyalgia is difficult to diagnose and treat in a single department, and is a disorder that should be treated by a highly experienced doctor with wide-ranging knowledge in collaboration with rheumatologists, psychiatrists, and pain clinic doctors, among others.

Although many fibromyalgia patients also suffer from depression, to suggest that this is a psychogenic disorder is an extreme opinion. Fibromyalgia is regarded as a bizarre disease, in which abnormal, chronic pain occurs at 11–18 sites around the body, interfering with daily life. Guidelines for the clinical management of fibromyalgia were formulated in 2013, but these do not cover multidisciplinary treatment involving other professionals such as orthopedic surgeons, anesthesiologists, doctors of psychosomatic medicine, internists, clinical psychologists, and acupuncture massage practitioners. I believe that fibromyalgia was originally myofascial pain syndrome. Japan lags behind other

countries when it comes to the treatment of myofascial pain syndrome. Too many doctors have no idea of the significance of trigger points. The pain of this disorder cannot be cured by Loxonin (loxoprofen sodium hydrate) or compresses.

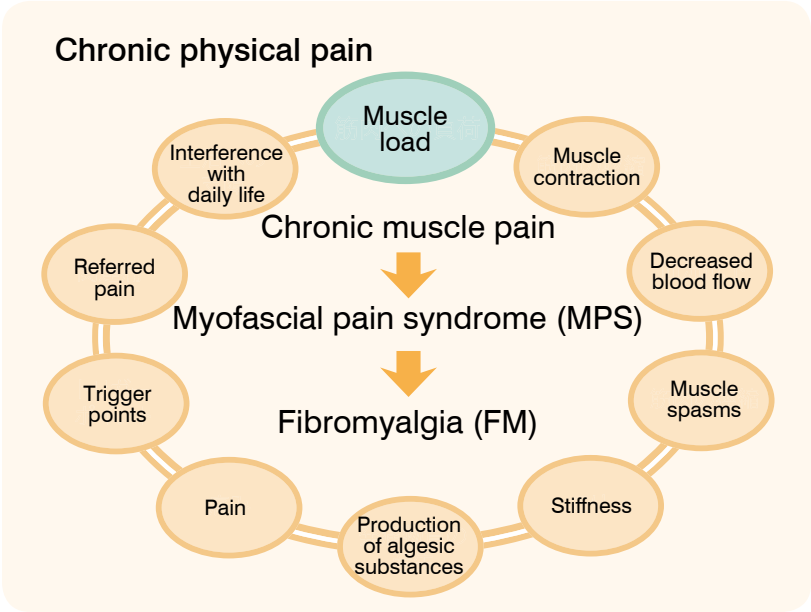
Trigger points have a long history, with S. Martyn being the first to use the term "referred pain" in 1864. In 1938, Jonas Kellgren described referred pain as a phenomenon observed when intramuscular injections of highly concentrated saline induced pain at distant sites unrelated to nerve courses. The problem is that if only this referred pain is treated, the trigger points themselves will become intractable. Even worse, referred pain can increase to more than 11 sites, just as cancer cells travel here and there around the body, with the trigger points getting lost as a result, and this can be said to be fibromyalgia. From my perspective, it is an iatrogenic condition caused by inappropriate treatment, and in this respect, it is a form of cephalic hypersensitivity syndrome. A study by Roland Staud *et al*. divided 62 women with fibromyalgia randomly into three groups that were treated with intramuscular injections of lidocaine, intramuscular injections of saline, and a placebo control, and found that for primary hyperalgesia of the shoulders and buttocks, lidocaine injections reduced pain significantly compared with saline injections. Fibromyalgia clinical pain decreased significantly after injections, but there was no difference between lidocaine and saline [28]. In my experience, lidocaine muscle block is also effective for fibromyalgia if trigger points can still be identified.

In any case, fibromyalgia fascinated Yunus so profoundly and led him to arrive at the concept of central sensitivity syndrome. I believe that half of its features can be described as cephalic hypersensitivity syndrome, while the other half cannot.

Chronic fatigue syndrome

No other disease is so impossible to resolve. To start with, its name is wrong. This is because it is actually a terrible condition that interferes with work and daily life to an extent that is hardly conveyed at all by the simple words "chronic fatigue." Problematically, conclusive diagnostic criteria do not yet exist. Neither the diagnostic criteria set out by the Ministry of Health, Labour and Welfare nor those of the Japanese Society of Fatigue Science are conclusive. In other words,

this condition can only be diagnosed by exclusion. Progress on elucidating its pathological mechanism is slow, and unlike menopausal syndrome, it cannot be identified through a blood test. One of my patients brought me a checklist used by Osaka City University, and the outcome measure used in that is the most comprehensible and convenient that I have yet seen. The main symptom is abnormal fatigue. Secondary symptoms vary widely, as shown in the figure. These symptoms resemble those of fibromyalgia, and are the reason that they are regarded as closely associated conditions.



The impossibility of objectively evaluating abnormal tiredness means that patients are regarded as slackers, both in the home and at work. The lack of objective signs also means that they are disliked by doctors, who prefer not to engage with them and in extreme cases may treat them as malingering. They are isolated from both society and the medical establishment. The most troubling problem is that as they are not recognized as suffering from an intractable disease or physical disability, and they are not eligible to receive welfare services even

if they require a wheelchair. At one point (1999), it did attract public attention with the production of diagnostic criteria by the Ministry of Health, Labour and Welfare (then the Ministry of Health and Welfare) and the documentary film Voices from the Shadows was taken up by the media, but it has yet to be officially designated as an intractable disease.

People need to realize that chronic fatigue is not the same thing as chronic fatigue syndrome. Its name is so misleading that I would like to propose that it be changed to "hyper-fatigue syndrome," with the focus on the abnormal nature of the fatigue rather than its duration. This would provide a better understanding of the nature of this condition, and make it easier for those around to be sympathetic.

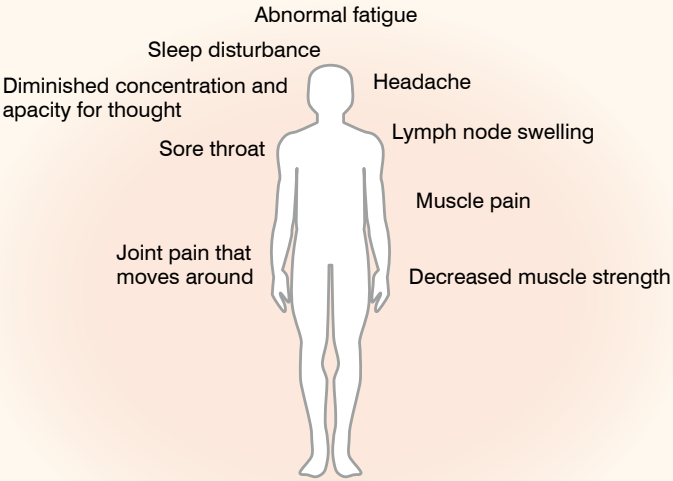
Like fibromyalgia, chronic fatigue syndrome is more common in women. I have the impression that many sufferers have experienced conditions such as atopic dermatitis, engaged in over-enthusiastic dieting, or suffered from menstrual irregularities, and that they tend to be either thin or overweight. Its medical nature is gradually becoming clearer, and I anticipate that its Japanese name will change in the near future. In fact, in the United Kingdom and Canada it is known as myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS)[29].

Two particularly interesting studies are currently underway. The first is based on the theory of abnormal ATP production[30] and is highly persuasive. ATP is an energy source that is synthesized in mitochondria within cells. Vitamin B complex and vitamin C and minerals such as magnesium are also involved. Anemia is more common in women, meaning that iron, which is involved in all sorts of metabolic processes, is also deficient. ATP is most efficiently produced from sugars, but is also often produced from fat. On this basis, it is my conjecture that the pathological condition underlying chronic fatigue syndrome may be sarcopenia (see note). One of the tests carried out in cases of chronic fatigue syndrome is a glucose challenge test. Chronic fatigue syndrome patients are believed to exhibit a low rise in blood sugar in the challenge test (non-reactive hypoglycemia). It appears that other substances such as insulin, free fatty acids, and potassium may also be involved. Another interesting study result is that brain positron emission tomography (PET) scans of patients with severe chronic fatigue syndrome have revealed the presence of inflammatory changes[31]. Issues

with the resolution of these images mean that they are not conclusive, but this research is hopeful.

In any event, this is an unknown condition that should not be treated in the same way as cephalic hypersensitivity syndrome. Yunus included it in his concept of central sensitivity syndrome, but I feel that their underlying pathological mechanisms may be different. In some cases, it is gradually progressive, but it often comes on suddenly or is triggered by some sort of infection, and compared with patients with cephalic hypersensitivity syndrome, in most cases, patients with chronic fatigue syndrome have a clearer memory of the initial episode. I think it is likely to represent some sort of infection or inflammatory disease. There is no known effective treatment whatsoever, although I recommend that chronic fatigue syndrome patients with infectious symptoms attempt Gerson therapy. Given its pathology, this can be anticipated to have some effect.

(Note) Sarcopenia: The practical definition is "A syndrome characterized by a progressive and generalized decrease in skeletal muscle mass and strength, associated with physical disability, reduced quality of life, and the risk of mortality or other adverse outcome." It is recommended that sarcopenia be diagnosed when a decline in muscle function (muscle strength or physical performance) is present in addition to decreased muscle mass.



Comparison of chronic fatigue and chronic fatigue syndrome

	Chronic fatigue	Chronic fatigue syndrome
Characteristics	A state in which fatigue accumulates under prolonged circumstances of being unable to obtain sufficient rest, and recovery is not immediate. Patients recover if stress is reduced and they get sufficient rest. Headache, severe stiff shoulders, and backache may also be present, but these improve with medication for cephalic hypersensitivity syndrome.	Unendurable generalized malaise and systemic pain result from even a small amount of movement. This may have been preceded by an infection, but the abnormal generalized malaise is of sudden onset. Frequently associated with a sore throat and lymph node swelling. Patients do not recover despite getting plenty of rest and changing their environment. Medication for cephalic hypersensitivity syndrome alleviates pain and stiffness, but does not improve the condition.
Medical diagnostic criteria	None. The Ministry of Health, Labour and Welfare has recommended checklists for avoiding death from overwork (karōshi): the Self-Diagnosis Checklist for Assessment of Workers' Accumulated Fatigue and the "Checklist for Assessment by Family Members of Workers' Accumulated Fatigue."	Exist. In Japan, they include the diagnostic criteria issued by the Japanese Society of Fatigue Science and the draft diagnostic criteria issued by the Ministry of Health, Labour and Welfare.
Genetic factors	May occur in anyone. Not genetically transmitted.	Genetic factors may be present.
Treatment	Reconsider rhythm of daily life, and identify and improve sources of stress. Reconsider diet, including eating more fresh vegetables and avoiding alcohol. Get plenty of rest and sleep.	There is currently no effective treatment, but as for chronic fatigue, reconsidering the rhythm of daily life and diet are important. Patients do not improve despite getting rest and sleep, and it is vital that their family and friends understand that they develop unendurable generalized malaise after doing even a small amount of movement, and provide them with emotional support.

Menopausal syndrome

Regular menopausal syndrome refers to symptoms due to diminished hormone levels that are overwhelmingly seen in women. These are both mental and physical symptoms caused by a rapid decrease in the hormone estrogen. It is diagnosed by a medical interview using an index such as the Kupperman Menopausal Index or the Simple Menopausal Index, and blood tests to measure estradiol (E2), follicle stimulating hormone (FSH) levels, and the balance of the two. Hormone imbalances can be treated with hormone replacement therapy, which is available in many obstetric and gynecology clinics. Its symptoms may be summed up in a single word: diverse. They may include headache, dizziness / vertigo, tinnitus, stiff shoulders, lower back pain, numbness, muscle pain, insomnia, hypersomnia, fatigue, polyhidrosis, dry mouth, nausea and vomiting, abdominal pain, diarrhea or constipation, slight fever, and depressed mood. Many doctors shrink from those patients who go on and on about their ailments with a gloomy face. Some of those women who do not seem to respond to any treatment and whose daily life is thrown into disarray, however, may respond well to the treatment for cephalic hypersensitivity syndrome. Although I do not dismiss their complaints completely out of hand, before sending them home I tell them that menopausal syndrome is a natural process for women and that they should not be impatient as they will definitely return to normal,.

In my experience, those women whose symptoms of menopausal syndrome have been aggravated by cephalic hypersensitivity syndrome may respond to treatment to some extent, but it does not work for those who have already gone over the edge.

The Kupperman Menopausal Index (Japanese version)

Calculation of the index: Total score for (sum of severity scores for each symptom × weighting)

Syndrome	Symptom					Weighting
	Type	Severity				
		Severe (3)	Moderate (2)	Mild (1)	Absent (0)	
Vasomotor neuropathy-like symptoms	Hot flashes	☐	☐	☐	☐	4
	Sweating	☐	☐	☐	☐	
	Chills in the lower back or hands and feet	☐	☐	☐	☐	
	Shortness of breath	☐	☐	☐	☐	
Paresthesia-like symptoms	Numbness of the hands and feet	☐	☐	☐	☐	2
	Decreased sensation in the hands and feet	☐	☐	☐	☐	
Insomnia	Difficulty in going to sleep at night	☐	☐	☐	☐	2
	Wake up easily during the night	☐	☐	☐	☐	
Neurosis	Easily agitated	☐	☐	☐	☐	2
	Neurotic	☐	☐	☐	☐	
Depression	Fret about insignificant matters (often become depressed)	☐	☐	☐	☐	1
Dizziness / vertigo	Feel dizziness / vertigo or nausea	☐	☐	☐	☐	1
Generalized malaise	Easily tired	☐	☐	☐	☐	1
Joint pain/ muscle pain	Stiff shoulders, lower back pain, pain in hand/arm/leg joints	☐	☐	☐	☐	1
Headache	Head hurts	☐	☐	☐	☐	1
Palpitations	Experience heart palpitations	☐	☐	☐	☐	1
Formication	Sensation like ants crawling over the skin	☐	☐	☐	☐	1

Formulated with reference to the Acta Obstetrica et Gynaecologica Japonica 61(7), 2009. N240 Table E-9-5)-1.

Conclusion: The chronic illness syndrome of cephalic hypersensitivity syndrome is a form of mental chronic pain

The autonomic nerves are a somewhat complicated subject, but in simple terms, just as the stomach and intestines are responsible for digesting and absorbing food, the autonomic nerves are responsible for digesting and absorbing what happens in the mind. Cephalic hypersensitivity syndrome is a pathological condition in which digestion and absorption by the autonomic nerves, the nerves of the mind, are impaired. As I have already mentioned, the sympathetic nerves are autonomic nerves that act in daylight, and the parasympathetic nerves are those that act at night. Although brain activity and the mind are related in terms of their cycles, the brain and the mind are not the same. Stress exerts a range of effects on both body and mind via the brain, and physical and mental states both affect the brain. Bodily stress and psychological stress both stimulate the autonomic nerves and are closely related to mood, appetite, and sleep.

There is a type of pain called "sympathetic nerve-dependent pain." This is a general term for pain to which the action of the sympathetic nerves contributes, such as nerve damage to the sympathetic nerves: not only physical stimuli but also psychological stress, as well as environmental factors such as low atmospheric pressure, can be felt as pain. Anger, fear, anxiety, interpersonal relationships and other sources of mental stress, prolonged work, and physical stress such as warm/cold stimuli all stimulate the sympathetic nerves, which physically transmit this stress to muscle. This means that a rise in stress is felt as muscle stiffness, hardening, or pain. Stress-induced pain also tends to relapse and intensify. The sympathetic nerves, which are controlled by the mind, generate muscle pain and exert a negative action in its exacerbation. Stress acts on the mind and is reflected in the autonomic nerves. Continued negative chronic stress causes mental fatigue, exhausts the autonomic nerves, and tires the muscles. This results in the development of a range of chronic illness syndromes that interfere with daily life, including depression, insomnia, chronic pain, and chronic fatigue. Of the various forms of mental fatigue, fatigue due to preoccupation is the most severe form of chronic pain. The mind can be released from preoccupation by the Magic Mirror method (see Page 76). Cephalic hypersensitivity syndrome is a disease created by the mysteries of the mind.

Chapter 2

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