

# CASE STUDIES 1



# THE MAN WITH FREQUENT HEADACHES

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## Case History

A 39-year-old man had begun having occasional headaches at the age of 10 years. His mother and her brother had daily headaches without any specific accompanying symptoms, but there was no family history of migraine. Aside from periods of abdominal pain and frequent diarrhea during the last 10 years, the patient has otherwise been healthy. He had a university degree in economics, and worked as a manager in a medium-sized automobile company. He was unmarried but has had a girlfriend for 4 years. There were no economic or social problems in his life. He was a nonsmoker and rarely drank alcohol due to the headaches.

The patient's headaches increased in frequency and intensity in his second decennium, and at the age of 19 years they had become daily and have remained daily since. The headaches were constant, pressing of quality, bilateral, and often involved the whole head, although sometimes they could be more pronounced bifrontotemporally or bioccipitally. The pain intensity was moderate and not influenced by physical activity. On the contrary, pain was occasionally better after a soccer game or high impact spinning, but the improvement lasted only a few hours and was inconsistent.

A constant phonophobia for high intensity and some specific sounds had always been present, whereas normal or low-intensity noises such as normal voices and music had no influence on the headache. In the first 10 to 15 years, the headaches had not been accompanied by nausea or photophobia, but the frequency of these symptoms and the headache intensity had increased during the past

2 to 3 years. It was also during these last years that the patient had occasionally needed to stay home from work, although he did not need bed rest. He had also noticed an increased sensitivity to passive smoking but was otherwise unable to identify any specific triggers. There was no change in headache during weekends or holidays and no influence of daily hassles or stress. The reason for the present referral was the attacks of incapacitating pain during the last 2 to 3 years, which worried both the patient and his doctor.

During the preceding 10 years, the patient had been in contact with his general practitioner once or twice a year, simply to confirm that nothing new could be done for his headache. He had been examined by a neurologist once before and was informed that his condition was merely the common headache for which there were no specific treatment possibilities. The patient was offered the tricyclic antidepressant amitriptyline, which he tried for 3 or 4 months but was never really comfortable with because of the side effects of dry mouth and a weight gain of 4 to 5 kg. He especially did not like the fact that the drug was an antidepressant, given that he did not feel depressed. He had never received specific information about amitriptyline's side effects nor had it been explained to him that the drug was not being prescribed for its antidepressant activity. The drug had no significant effect on the headache, but he did not remember the dose. As far as he could recall, most simple or mixed analgesics had no effect at all. He had spent between €1,000 and €3,000 (equivalent to \$1,200 to \$3,600 US) per year on various physical therapists, massages, and chiropractors without any significant improvement.

The examination revealed the patient to be in good health, moderate in height and weight, with normal funduscopy result and blood pressure of 123/82 mm Hg. The pericranial muscles, especially the trapezius and splenius muscles, were very tender, and their consistency was significantly increased. No trigger points could be identified, and there was no sign of temporomandibular dysfunction. Aside from a mild to moderate thoracolumbal scoliosis, the clinical and neurologic examinations were otherwise completely normal. The psychological profile was also completely normal, and there was no indication of depression or anxiety.

No further diagnostic tests were done. The diagnostic headache diary was completed for a 4-week period before the first consultation revealed a constant pressing headache of moderate to severe intensity with a constant slight phonophobia and mostly no other accompanying symptoms. Once or twice weekly, the headache would be accompanied for some hours by nausea and phonophobia. For the past 2 to 3 years, the patient had been taking 6 to 8 tablets per day of a combination analgesic containing codeine and acetaminophen.

## Questions on the Case

Please read the questions, try to answer them, and reflect on your answers before reading the authors' discussion.

- How would you diagnose this man's headache problem?
- Which diagnostic work-up is relevant in this case?
- Which treatment program would you offer this patient?
- What information is important to patients with chronic headaches?

## Case Discussion

The patient was very carefully informed that the daily analgesic consumption would have to be stopped as the first step of his treatment. He felt able to discontinue the analgesic without specific support and stayed absolutely free of analgesics for 2 months. At his next visit, the headache had returned to the well-known previous pattern; it was now daily, constant, mild to moderate, and without accompanying symptoms. Most importantly, the weekly attacks of incapacitating headache had disappeared completely.

This case represents a typical history from specialized headache centers, where patients with a long-lasting headache history that gradually worsens over a period of years are quite frequent. This patient started with an episodic tension-type headache (ETTHA) that, after a few years, changed into a typical chronic tension-type headache (CTTHA). He had never had migraine attacks.

In the 2 to 3 years prior to his consultation at the clinic, he had developed an additional medication-overuse headache, with the characteristics of migraine without aura, and a secondary abdominal dyspeptic syndrome due to overuse of acetylsalicylic acid.

Patients with ETTHA are rare in headache centers. In general practice, ETTHA is regarded as a nuisance and not as a disease. Only 16% of sufferers from the general population seek medical help due to tension-type headache (TTHA) and 3% seek specialized care. It is important therefore to realize that patients with TTHA are only a very small minority of the patients seen in specialized headache-care centers. These patients have lived with their chronic headache for years and have more or less adapted and gotten used to the constant pain. The sickness and absence from work or school are usually less for TTHA sufferers compared to migraine sufferers, whereas the impact on social life and quality of life is similar to that of migraine sufferers due to the high prevalence of TTHA and to the lack of acceptance of its serious nature by the patient's peers. Furthermore, most patients with chronic TTHA believe that there is no treatment for their headache, and they rarely seek medical advice for it. A change in headache pattern, accompanying symptoms, or concurrent medical disorders is the usual cause for medical contact, as occurred in the present case. Usually, further diagnostic tests such as neuroimaging or blood tests are not necessary for these patients. In case of recent changes in headache pattern, abnormal neurologic findings, weight loss, or personality or cognitive changes, however, relevant tests should be done. A detailed interview and use of a diagnostic diary for some weeks were sufficient in the present case.

After a 2-month drug-free period, the patient's headache was improved and the migraine-like attacks had gone. The patient received detailed verbal and written information about the risk of medication-overuse headache and about the background for treatment with amitriptyline. Prophylaxis with amitriptyline 10 mg per day, slowly increasing with 10 mg weekly to 70 mg per day, was started. A relaxation treatment program and instruction in an exercise program for head and neck by the physical therapist were also given. Although the headaches remained daily at 6 months follow-up, they had further improved and stabilized at a fairly low and acceptable intensity that did not influence daily life activities.

## Overview of Tension-type Headache

Tension-type headache is the most prevalent headache disorder and known by almost everyone. The disease was, however, not clearly defined until the criteria of the International Headache Classification were published in 1988. In the second edition of *International Classification of*

**Table 1-1. Diagnostic Criteria for Tension-type Headache**

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- A. At least 10 previous headache episodes fulfilling criteria B to D listed below.
- Number of days with such headache for at least 6 months period:
- Infrequent TTHA: < 12 days/year
  - Frequent TTHA: ≥ 12 days and < 180 days/year
  - Chronic TTHA: ≥ 180 days /year
- B. Headache lasting from 30 minutes to 7 days.
- C. At least two of the following pain characteristics:
1. Pressing/tightening (nonpulsating quality)
  2. Mild or moderate severity
  3. Bilateral location
  4. No aggravation by walking stairs or similar routine physical activity
- D. Both of the following:
1. No vomiting
  2. No more than one of the following in E
- E. At least one of the following:
1. History as well as physical and neurologic examinations do not suggest one of the disorders listed in groups 5 to 11 (symptomatic disorders).
  2. History as well as physical and neurologic examinations do suggest such disorder, but is ruled out by appropriate investigations.
  3. Such disorder is present, but tension-type does not occur for the first time in close temporal relation to the disorder.
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Adapted from Headache Classification Subcommittee of the International Headache Society, 2004

*Headache Disorders* (Table 1-1), TTHA has been subdivided into three subgroups: an infrequent form occurring less than 12 days per year, a frequent episodic form occurring between 12 and 179 days per year, and a chronic form occurring 180 days or more per year. Epidemiologic studies have revealed that the infrequent form is the most prevalent, but it should probably be regarded more as a nuisance than as a disease. Frequent ETTHA may be quite a burden in its more severe forms, whereas sufferers of CTTHA are quite seriously affected. Loss of workdays is higher than that caused by migraine, and disability pension may be necessary. These patients suffer not only from a bothersome disease but also often from neglect or rejection from the medical community. CTTHA is often erroneously diagnosed as chronic daily headache. CTTHA sufferers experience stronger pain and more accompanying symptoms than ETTHA sufferers and more often have medication overuse. They are less influenced by daily hassles and stress than ETTHA sufferers are. CTTHA most frequently develops from the episodic form over many years. The patient in the present case developed migrainous features such as severe pain intensity, nausea, photophobia, and aggravation by physical activity. Such a transition from ETTHA to CTTHA is quite typical with medication overuse. These symptoms disappeared when the medication overuse was terminated, which happens in most cases.

### Diagnosis

Tension-type headache is characterized by a mild to moderate pain occurring either in short episodes of variable

duration (infrequent or frequent episodic form) or continuously (chronic form). The headache is often bilateral, pressing or tightening, and has no typical migraine-associated features such as nausea, photophobia, and phonophobia (see Table 1-1). Only one of these accompanying symptoms is allowed in the definition of TTHA, usually of mild to moderate intensity. A diagnosis of a primary headache such as TTHA requires exclusion of other causal disorders. The absence of specific and distinguishing features of TTHA may explain why some physicians, and subsequently patients, question the diagnosis. In severely affected patients from pain centers, it can be very difficult to give a precise diagnosis at the initial consultation as most patients with daily headaches may have symptoms that mimic migraine, TTHA, or medication-overuse headache. Therefore, a prospective follow-up for 1 or 2 months, using a diagnostic headache diary with registration of all consumed drugs, is very useful.

Diagnostic tests are widely used in patients with TTHA, but are seldom indicated unless atypical features such as marked treatment resistance are present. In addition to the primary diagnosis, a careful history is also important to uncover coexisting diseases such as depression or anxiety. If an intracranial lesion is suspected on the basis of history and/or examination, then neuroimaging should be performed. At present, there are no other reliable paraclinical tests that are useful in the differential diagnosis. A thorough manual palpation of the pericranial muscles and tender insertions can be recommended. This will demonstrate any peripheral muscular factor to the patient and help in the choice of treatment strategy, particularly whether physical training and relaxation therapy are indicated.

### Epidemiology and Impact of Tension-type Headache

Tension-type headaches vary considerably in frequency, duration, and severity. They range from rare short-lasting episodes of discomfort to frequent, long-lasting, or even continuous and disabling headaches. Unlike migraine, there is a clear and positive correlation between frequency and severity of TTHA. In its infrequent mild form, TTHA may be a nuisance but is not regarded as a disease by the affected persons or their doctors. In its frequent severe forms, it becomes distressing and socially disturbing, surpassing in this respect migraine and cluster headache. Considering all patients with TTHA together may therefore be misleading. In a population-based study in Denmark, the lifetime prevalence of TTHA was as high as 78%, but 59% had infrequent ETTHA (< 1 headache day per month) and were not in need of medical care. On average, 24 to 37% of the population have TTHA once a month or more, 10% have it weekly, and 2 to 3% have CTTHA, usually for the greater part of their lifetime.

The male:female ratio of TTHA is 4:5, indicating that, unlike migraine, females are only slightly more affected. In both sexes, the prevalence seems to peak in the fourth decennium between the ages of 30 to 39 years and then decline slowly with increasing age. In cross-sectional epidemiologic studies, the average age at onset of TTHA (ie, 25 to 30 years) was found to be higher than in migraine. In a German population study, the mean duration of TTHA was reported to be 10.3 years, while that in a clinical study was 19.9 years, illustrating the long duration and considerable referral bias in this disorder.

Due to its high prevalence and high frequency of headache days, TTHA has a greater socioeconomic impact than any other type of headache. The total loss of workdays per year due to TTHA was 820 days per 1,000 employed, compared to 270 days per 1,000 employed due to migraine. Thereby, TTHA accounted for more than 10% of total disease-related absenteeism from work. In an American study, migraineurs were more likely to report absenteeism from work, whereas TTHA sufferers accounted for a larger proportion of decreased work effectiveness. Even though TTHA is not the most visible of diseases, it is one of the most costly to society.

TTHA patients seek less medical help than migraineurs. In a population-based study, only 16% of patients with TTHA had been in contact with their general practitioner because of the headache, in contrast to 56% of migraineurs, but when data were corrected for the much higher prevalence of TTHA, the total use of medical contacts was 54% higher for TTHA than for migraine. Severely affected TTHA patients usually seek many doctors and spend large sums of money on so-called alternative treatments, but they basically have to live for decades without effective pain relief.

The individual impact of TTHA encompasses physical suffering, loss of quality of life, and economic effects, but this is more difficult to quantify than the impact on society. In the recent study by Holroyd and colleagues, it was demonstrated that CTTHA had a profound negative effect on the emotional life of the affected persons, as they were seven times more likely than controls to be classified as impaired.

In conclusion, the substantial societal and individual burdens associated with TTHA constitute a major public health issue that has been previously overlooked.

## Strategies in Management

An accurate diagnosis, in which the individual headache episode is distinguished from migraine and from a secondary headache, is essential. The use of a diagnostic

headache diary is mandatory before treatment planning. The prevention of headache consists of the elimination of any possible triggers such as dental pathology, sinus disease, unhealthy working conditions, posture, neck and shoulder problems, unbalanced meals, and inadequate sleep. Stress management and an analysis of any psychological triggers or depressive disorders are also valuable.

### The Acute Episode

Pharmacologic treatment of the acute episode can be divided into treatment with simple analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), or muscle relaxants. Systematic, well-designed studies using current methodology with properly classified patients, using a placebo-controlled, double-blinded design, have been extremely rare, but more are now available.

### Simple Analgesics

A study of the effect of acetaminophen versus aspirin and placebo reported an effect superior to placebo but no difference between active drugs. However, as the gastric side-effect profile with acetaminophen is much better than that with aspirin, acetaminophen may be recommended as the drug of first choice for mild or moderate headache episodes. The recommended treatment strategies are summarized in Table 1-2. Although over-the-counter drugs are the most commonly used drugs, excessive and frequent use of these drugs (often combined with caffeine or sedatives) should clearly be avoided because of the high risk of medication-overuse headache. Therefore, thorough information and a monthly limit of less than 15 days of drugs intake are essential.

### Nonsteroidal Anti-inflammatory Drugs

The widespread use of NSAIDs has now become better substantiated (see Table 1-2). Some comparative studies indicate that various doses of ibuprofen are significantly more effective than placebo, and at least as effective as aspirin and acetaminophen. In a former crossover study, only 50 mg, but not 25 mg, ketoprofen or acetaminophen was more effective than placebo, whereas others found 25 mg to be effective or equally effective. In the most recent study, ketorolac showed only a very early and modest effect compared with placebo. Muscle relaxants and migraine-specific drugs have only limited, if any, effect and cannot be recommended.

### Pharmacologic Prophylaxis

Most pharmacologic prophylactics act via central mechanisms, and the drug of first choice in the prophylaxis of CTTHA is still amitriptyline. The most frequently used prophylactics are listed in Table 1-3.

**Table 1-2. Acute Treatment of Tension-type Headache**

| Drug                  | Clinical Efficacy | Scientific Proof for Efficacy | Side Effect Potential | Examples of Side Effects      |
|-----------------------|-------------------|-------------------------------|-----------------------|-------------------------------|
| ASA                   | ++++              | ++++                          | +++                   | Dyspepsia, gastric ulcers     |
| Paracetamol           | +++               | +++                           | ++                    | Liver enzymes ↑, intoxication |
| NSAIDs                |                   |                               |                       |                               |
| Ibuprofen             | +++               | +++                           | ++                    | Dyspepsia; gastric ulcers     |
| Ketoprofen            | +++               | +++                           | ++                    | Dyspepsia; gastric ulcers     |
| Diclofenac            | ++                | ++                            | ++                    | Dyspepsia; gastric ulcers     |
| Combinations          |                   |                               |                       |                               |
| Paracetamol + codeine | ++                | +                             | ++                    | As above, obstipation, MOHA   |
| ASA + caffeine        | ++                | +                             | ++                    | As above, MOHA                |

Clinical efficacy, scientific proof of efficacy, and potential for side effects are rated on a scale from + to ++++ for drugs used in the acute treatment of tension-type headache.

ASA = acetylsalicylic acid; NSAIDs= nonsteroidal anti-inflammatory drugs; MOHA: medication-overuse headache.

In recent years, the effect of amitriptyline has been confirmed by well-designed placebo-controlled, double-blind studies, whereas the more specific serotonin reuptake inhibitor, citalopram, has been shown to have no significant effect. As in most other pain conditions, the effect of amitriptyline in TTHA is independent of its antidepressant effect and of its ability to block serotonin reuptake. The effective dosage in headache is lower than that used in the treatment of depression; namely, 10 to 75 mg per day. A few other tricyclic antidepressants have also been reported to have a prophylactic effect in CTTHA, but unfortunately those studies have never been replicated. Botulinum toxin, valproate, and NSAIDs have also been widely used in the prophylaxis of TTHA, but scientific evidence is poor and their use as yet cannot be recommended.

### Nonpharmacologic Prophylaxis

The most widespread nonpharmacologic treatment of TTHA is physical therapy, including hot and cold packs, ultrasound and electrical stimulation, the improvement of posture, relaxation, and exercise programs, but the majority of these modalities have not been properly eval-

uated. Many studies have investigated various forms of muscle relaxation with or without electromyographic biofeedback. Although there are methodologic shortcomings, pain intensity and frequency are generally reduced. An extensive meta-analysis concluded that treatment outcome was more affected by patient characteristics than by treatment characteristics, and a better outcome was most pronounced in younger patients with a short disease duration.

In conclusion, the mainstay in the acute treatment of TTHA is simple analgesics and NSAIDs, although physical exercise or relaxation programs, in combination with analgesics or alone, can also be recommended. Combined drugs consisting of analgesics, tranquilizers, and sedatives should be avoided, as should in particular morphinomimetics, due to the risk of medication-overuse headache. The mainstay in pharmacologic prophylaxis is still amitriptyline, and no new drugs with a better side-effect profile can presently be recommended. An increased acceptance of this widespread pain disorder will hopefully lead to better and highly necessary treatment strategies. In the meantime, most patients can get some help by judicious use of existing therapies.

**Table 1-3. Prophylactic Treatment of Tension-type Headache**

| Drug                         | Clinical Efficacy | Scientific Proof for Efficacy | Side Effect Potential | Examples of Side Effects  |
|------------------------------|-------------------|-------------------------------|-----------------------|---|
| Amitriptyline                | +++               | +++                           | +++                   | Weight gain, dry mouth, sedation                                      |
| Nortriptyline                | ++                | +                             | +++                   | Weight gain, dry mouth, sedation                                      |
| Antiepileptics               |                   |                               |                       |   |
| Sodium valproate, divalproex | +                 | (+)                           | +++                   | Weight gain, tremor, hair loss<br>thrombocytopenia, liver<br>enzyme ↑ |
| NSAIDs                       |                   |                               |                       |   |
| Naproxen                     | ++                | +                             | ++                    | Dyspepsia, peptic ulcer   |
| Tolfenamic acid              | ++                | +                             | ++                    | Dyspepsia, peptic ulcer   |

Clinical efficacy, scientific proof of efficacy, and potential for side effects are rated on a scale from + to ++++ for drugs used in prophylaxis of tension-type headache.

NSAIDs = nonsteroidal anti-inflammatory drugs.



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## Editorial Comments

Drs. Jensen and Olesen have provided an excellent overview of TTHA, an entity that turns out to be a complex and at times controversial disorder in terms of its

pathophysiology and diagnosis/classification. Although TTHA is practically ubiquitous (ETTHA/CTTHA) in the general population, its origins and relationship or lack of relationship to migraine continues to be debated amongst experts. As the authors point out, one must be careful in regard to generalizing from observations of patients in specialty clinics versus the general population. This chapter also provides useful clinical information on the management of TTHA, of value to the readers and their patients.

### FINAL DIAGNOSIS:

Tension-type headache

