Tension and Cervicogenic Headaches:

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ABSTRACT: A thorough history and physical examination can establish the diagnosis of tension headache; further evaluation is generally unnecessary. In contrast, the workup of cervicogenic headache includes standard radiographs, 3-dimensional CT, MRI, and possibly electromyography; nerve blocks may also be used to confirm the diagnosis. Episodic tension headache can be treated effectively by trigger avoidance, behavioral modalities, and structured use of analgesics. Reserve opioids for patients with intractable headaches. Chronic tension headache is treated primarily by prophylactic measures, such as antidepressants and anticonvulsants, and behavioral and physical therapy. Treatment options for cervicogenic headache include analgesics; invasive procedures, such as trigger point injections, greater or lesser occipital nerve blocks, facet joint blocks, segmental nerve root blocks, and diskography; spinal manipulation; and behavioral approaches.

The staggering variety of headaches—the International Headache Society has identified 13 broad categories and 128 distinct disorders—and the interpatient variability can make diagnosis difficult. Fortunately, most headaches can be identified and treated effectively if you know what to look for. The history and the pattern of pain often point to the correct diagnosis.

In this article, we focus on 2 of the most common types that physicians encounter: tension-type headache—both episodic and chronic—and cervicogenic headache. We examine the diagnostic features of each, as well as characteristics that may cause confusion with other types of headache, such as migraine and chronic daily headache. We then provide management guidelines.

TENSION HEADACHE
Episodic versus chronic types. Tension-type headache (or simply tension headache) is the most common type of primary headache and is widely prevalent in the general population. It ranges from mild to fairly disabling, with significant socioeconomic impact. Tension headache has been subclassified into 2 main categories: episodic tension-type headache (ETTH) and chronic tension-type headache (CTTH). Rasmussen and colleagues reported a lifetime prevalence of tension headache of 69% in men and 88% in women. ETTH appears to be more common than CTTH; in a recent review, the overall prevalence in a 1-year period was 38.3% for ETTH and 2.2% for CTTH. For either type of tension headache, a thorough history and physical examination can establish the diagnosis and further evaluation is generally unnecessary.

Diagnostic features. There is a tremendous degree of interpatient variability in the natural course that tension headache—either episodic or chronic—may take. Presenting features pertain equally to both types of headache. The difference is primarily in the frequency of headaches and the presence of associated symptoms. In addition, patients with CTTH may have a positive family history. In both ETTH and CTTH, the pain is usually bilateral and typically described as dull, bandlike, aching, pressing, or tightening in the frontal, temporal, or occipital regions. It may be associated with neck symptoms. The intensity of tension headache may range from mild to severe and varies throughout the day. Tension headache is sometimes difficult to differentiate from migraine: both types of headaches may be associated with a throbbing pain, unilateral location, accompanying neck pain and muscle spasm, and sleep disturbance, as well as a positive family history. As with migraine, CTTH—often a disabling syndrome—may be associated with nausea (although without emesis) or with phonophobia or photophobia. ETTH does not involve these symptoms. Episodes of tension headache—both chronic and episodic types—may last anywhere from 30 minutes to 7 days, but the frequency of CTTH episodes is much greater. Diagnostic criteria for ETTH and CTTH are listed in Table 1. Chronic daily headache is not the same as CTTH and should not be confused with it (Box).

Although tension headaches—as the name suggests—are frequently triggered or aggravated by stress, they can also stem from poor nutrition, fatigue, insufficient sleep, temporomandibular joint dysfunction, alcohol use, hormonal fluctuations, and weather changes. A detailed patient history is...
essential for noting these or any other factors that may be contributing to the problem. With the psychological or stress component of tension headaches, it is difficult to establish cause and effect. Psychological comorbidities, such as anxiety and depression, may contribute to tension headaches, or they may themselves be caused or aggravated by the unrelenting pain. In some patients, other psychiatric conditions may coexist without any causal relationship to tension headaches.

It is important to rule out potentially dangerous causes of headache, such as brain tumor, meningitis, hemorrhage, and stroke. The following signs or symptoms suggest the need for further workup:

- Onset of new headache or report that the headache is the worst ever experienced.
- Sudden change in intensity, frequency, or characteristics of the headache.
- Headache associated with neurologic findings on examination, such as stiff neck, papilledema, mental status changes, persistent neurologic deficits, seizure, or electroencephalographic evidence of a lesion.
- New onset of daily headache, or progressively increasing headaches.
- New onset of headaches with exertion.

**Pathophysiology.** The pathophysiology of tension headache is unclear. Muscle tension, the CNS, and vascular causes all may play roles. ETTH may be driven mainly by a peripheral myofascial mechanism. Patients who have ETTH have a normal pain threshold in the presence of muscle tenderness.

**CTTH** is believed to result in part from a CNS disorder. In addition to muscle tenderness, the patient has a decreased pain threshold, which suggests a central sensitization process. There is probable sensitization of second-order trigeminal neurons, in addition to some peripheral component. Nitric oxide generation resulting from prolonged nociceptive input from the pericranial muscle tissue may play a role in CNS sensitization.

Like migraine, CTTH is also associated with abnormal platelet serotonin levels and low cerebrospinal fluid β-endorphin levels. These observations will help guide research on the treatment of CTTH.

**Treatment.** Treatment involves establishing realistic goals with the patient and following a clearly structured protocol. In general, the therapies for episodic and chronic tension headaches are similar. **Table 2** details the preventative, prophylactic, and acute treatment options for both types of tension headache.

Briefly, ETTH (occurring 1 to 3 times per month) may be treated adequately by:

- Avoidance of triggers.
- Behavioral modalities, such as relaxation therapies and biofeedback.
- Simple, structured use of analgesics, such as NSAIDs, aspirin, caffeine and, on occasion, opioids.

Treatment of CTTH consists primarily of such prophylactic measures as antidepressants and anticonvulsants and behavioral and physical therapy. Further randomized controlled trials are needed to demonstrate the efficacy of the various treatments.

**Opioid therapy.** Although it is better to avoid opioid analgesics, they may be necessary for some patients with intractable headaches. Combination opioids, such as hydrocodone/acetaminophen or butalbital/acetaminophen/caffeine, are not generally recommended for long-term use, because they may produce rebound headache. Episodic headaches may be treated adequately with short-term opioid therapy. Monitor the frequency of medication use and the effectiveness of treatment. Patients who continue to experience daily headache and regularly take these medications may be at risk for rebound headache, tolerance, or physical dependence.

**Nondrug strategies.** Various relaxation therapies can decrease muscle tension and associated anxiety and pain. Progressive muscle relaxation, deep breathing exercises, or use of imagery may be effective in achieving the relaxation response. A behavioral psychologist may use biofeedback to measure and feed back to the patient electrical activity/contractility of the frontalis and trapezius muscles to assist patients in practicing these techniques and acquiring this skill.

**Invasive modalities.** Several invasive modalities have been used to treat refractory tension...
headache. These treatments are somewhat controversial, because the outcomes have not been documented by randomized controlled trials. Cervical epidural corticosteroid injections have been reported to be effective in treating tension headache; these injections may break the pain cycle in some patients for whom other treatments have been unsuccessful. Injections of botulinum toxin may be helpful for patients with excessively increased muscle tension of the forehead or glabellar, occipital, cervical, or thoracic areas, who may experience disabling headaches. Botulinum toxin is still a highly controversial treatment for headache, however, and should be considered only if more conservative treatments have failed.

Alternative therapies. Alternative means of treating headache have sparked growing interest among patients. Many of these treatments are not widely studied, however, and reports of their effectiveness vary. Topical application of peppermint oil to the temple has been recommended, and the lack of adverse effects makes this a safe option. The herb feverfew has been used to treat some headaches, particularly migraines, but potential interference with clotting factors needs to be kept in mind. Osteopathic manipulation of the spine has also been suggested in the treatment of both tension and migraine headaches. Although the research that supports the efficacy of these therapies is limited, anecdotal reports attest to their usefulness.

CERVICOGENIC HEADACHE

Overview and pathophysiology. Cervicogenic headache is recognized as a distinct entity by the International Association for the Study of Pain. In principle, cervicogenic headache is any headache that originates in either the neck or the back of the head at different segmental levels. One or more structures may be involved, including the dorsal roots from C1 to C7, the intervertebral disks, the cervical facets C2-3 down to C6-7, the peripheral nerves in the head and neck area, and the vertebral artery and its sympathetic plexus. The pathogenesis of cervicogenic headache is not clear.

Diagnostic features. The pain of cervicogenic headache is usually unilateral; it originates in the neck and then spreads to the oculofrontal-temporal areas of the head. The headache initially presents as intermittent episodes and then progresses to an almost continuous pain. Pain may be triggered or exacerbated by neck movement or a particular neck position; it can also be triggered by applying pressure over the ipsilateral upper part of the back of the neck or the ipsilateral occipital region. In rare cases, cervicogenic headache may be associated with nausea, vomiting, ipsilateral edema, facial flushing, dizziness, phonophobia or photophobia, ipsilateral blurring of vision, and difficulty in swallowing-features that make it easy to confuse with migraine or cluster headaches. To help differentiate cervicogenic headache from other headache types, the following points are useful:

- In migraine headaches, the dominant pain location frequently shifts sides, whereas in cervicogenic headaches it does not.
- Migraine headaches are not abated by local anesthetic blocks, whereas cervicogenic headaches may be.
- Cluster headaches are associated with autonomic symptoms, whereas cervicogenic headaches are not.

Hemicrania continua is similar to migraine in presentation. Patients may experience unilateral headache-often described as throbbing or pulsing-with intermittent sharp, stabbing pain. Nausea, photophobia, and sleep disturbance are also common. Physical exertion may cause an increase in pain for both headache types. The main differentiating feature is that 4 of 5 patients with hemicrania continua obtain relief with the use of indomethacin. The presentation of cervicogenic headache is similar to that of whiplash injury, fracture, instability or dislocation of cervical vertebrae, degenerative pathology (from cervical spondylosis or disk herniation), congenital anomalies at the cranial-spinal junction (Arnold-Chiari malformation), or spondylitis (related to rheumatoid arthritis at the upper cervical tract). Sjaastad and Fredriksen have described the diagnostic features, which are outlined in Table 3.

To rule out organic causes, perform a careful history taking and physical examination and order appropriate diagnostic studies (standard radiographs, 3-dimensional CT, MRI, and possibly electromyography). Invasive methods such as nerve blocks may also be appropriate to confirm the diagnosis, in which case the patient should be referred to a pain specialist who can perform and evaluate the diagnostic (and, if necessary, therapeutic) procedures.

Treatment of cervicogenic headache. Pharmacologic management of cervicogenic headache usually starts with simple analgesics, such as NSAIDs, aspirin, and acetaminophen; the response
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varies from patient to patient. Combination products (eg, hydrocodone/acetaminophen and butalbital/acetaminophen/caffeine) often are prescribed but cannot be recommended, given the potential for residual and rebound effects. If all other treatment fails, judicious use of an opioid can be tried, using a sustained-release medication on an around-the-clock basis for persistent headaches to avoid a rebound effect.

Invasive procedures may include trigger point injections, greater or lesser occipital nerve blocks, facet joint blocks, segmental nerve root blocks, and diskography. It is important to evaluate the response to any invasive procedure to assess the possibility of a placebo response or of a false-positive response caused by psychosocial factors. Conversely, a negative response should not automatically be dismissed, because a false-negative response can result from incorrect technique, pending litigation, or other secondary reinforcers.

A positive response to procedures such as nerve blocks may also be highly variable. Some patients may have a brief respite from pain, whereas others may have prolonged relief through use of a local anesthetic with or without a corticosteroid. These procedures can safely be repeated every 4 to 6 months as needed. Radiofrequency or cryoablation procedures (especially those involving the dorsal branch of the median nerve for cervical facet involvement and the occipital nerve) can be performed for longer-term relief.

Aside from invasive methods, spinal manipulation is frequently attempted to alleviate discomfort. Manipulation under a physician's guidance—such as cervical traction applied by a qualified physical therapist or osteopathic physician—is a reasonable option in the treatment of cervicogenic headache. This approach may be contraindicated in the presence of stenosis or instability of the cervical spine. A behavioral psychologist may also be a valuable resource for helping patients pace their activities and learn alternative coping strategies for episodic or chronic pain.

References:
REFERENCES:


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