Tension-type Headache in the Elderly

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Tension-type headache (TTH) is the most common type of headache in the general population, including individuals over the age of 65 years. Although the prevalence of migraine decreases markedly with age, TTH has a greater tendency to persist later in life. Less commonly, TTH can present for the first time after the age of 50 years. As the elderly population continues to grow, more patients will be presenting to physicians with headache. Special considerations in this population include the higher prevalence of secondary causes and multiple medical comorbidities. This article presents an update on the epidemiology and prognosis of TTH in the elderly.

Introduction

Although the preponderance of interest and research in headache has focused on migraine, perhaps because of the burden of disability associated with the disease, tension-type headache (TTH) has considerable socioeconomic impact. In fact, the vast majority of disability secondary to headache disorders is attributable to TTH, rather than migraine, due to its higher prevalence. In patients ≥ 55 years of age, TTH ranked first among all headache disorders with regard to impairment [1••]. Headache is a common complaint in the elderly, with TTH being the most common subtype. Although the average age at onset of TTH is between 20 and 30 years [2], TTH can sometimes present for the first time in the elderly. Because headaches that begin after the age of 65 years are more likely to be due to underlying pathology, careful investigation is required to exclude secondary causes of headache.

Diagnostic Criteria and Clinical Features

TTH is divided into three subtypes based on attack frequency: an *infrequent episodic* form in which headaches occur 1 day or less per month on average; a *frequent episodic* form in which headaches occur between 1 to 14 days per month for at least 3 months; and a *chronic* form, with 15 or more headache days per month (Table 1). Frequent episodic and chronic TTH are further subdivided based on the presence or absence of pericranial tenderness. Diagnostic criteria for all three subtypes include at least two of the following pain characteristics: bilateral location, nonpulsating quality, mild or moderate intensity, and lack of aggravation with routine physical activity. Infrequent and frequent TTH are both diagnoses of inclusion, as attacks may be accompanied by either photophobia or phonophobia, but not both, and diagnoses of exclusion in that nausea and vomiting must be absent. For chronic tension-type headache (CTTH), no more than one of three features of mild nausea, photophobia, and phonophobia may be present; moderate or severe nausea or vomiting precludes the diagnosis [3].

Clinically, patients with TTH describe their pain as a dull ache or a sensation of heaviness or pressure, often in a band-like distribution around the head. Although headaches are usually bilateral, the pain often changes location within attacks and may radiate to the posterior nuchal area and shoulders. The majority of patients with episodic tension-type headache (ETTH) experience mild or moderate pain; however, the intensity of pain may escalate with an increased attack frequency and with the presence of pericranial tenderness. In contrast to migraine, most patients with TTH lack associated features. In a large epidemiological study, associated symptoms were uncommon in TTH, with only 11% of subjects reporting photophobia, 12.8% reporting phonophobia, and 4% reporting nausea. Many of these features, however, were present in more than 80% of migraineurs. Anorexia is present in 18% of patients with TTH, compared with 82% of patients with migraine. Vomiting, reported by half of migraineurs, is very rare in TTH [4].

Differential Diagnosis

Because TTH lacks distinctive features, and its diagnosis is actually based on the absence of associated symptoms, other primary and secondary headache disorders must be identified or excluded. Primary headache disorders that may present similarly to ETTH include migraine without aura and probable migraine. Other high frequency, long duration headaches that should be considered in the differential diagnosis of CTTH include chronic migraine, new daily persistent headache, and hemicrania continua. Distinguishing between these primary headache disorders is essential for guiding therapy.

Table 1. The International Classification of Headache Disorders II diagnostic criteria for tension-type headache

Tension-type headache has three key forms:
1. Infrequent episodic: at least 10 episodes occurring on < 1 day per month
2. Frequent episodic: at least 10 episodes occurring on ≥ 1 but < 15 days per month for 3 months or more
3. Chronic: headaches occurring on 15 or more days per month for > 3 months
Tension-type headache must have each of the following:
A. At least 10 attacks fulfilling criteria B–E
B. Headache lasting from 30 minutes to 7 days (for infrequent and frequent episodic tension-type headache only) or from hours to continuous (for chronic tension-type headache only)
C. Headache has two or more of the following characteristics:
1. Bilateral location
2. Pressing/tightening (nonpulsating) quality
3. Mild or moderate intensity
4. Not aggravated by routine physical activity
D. Both of the following:
1. No nausea or vomiting*
2. No more than one of photophobia or phonophobia*
E. Not attributed to another disorder

*Diagnostic criteria for chronic tension-type headache allow for no more than one of three features of mild nausea, photophobia, or phonophobia.
(*Data from* the Headache Classification Subcommittee of the International Headache Society [3].)

Secondary headache disorders often mimic TTH; therefore, "red flags" should be sought in the history and on examination to help identify or exclude secondary disorders [5] (Table 2). Overlapping symptoms and the lack of distinctive features of TTH can present a diagnostic challenge. For example, headaches associated with brain tumors often present with bifrontal, pressure-like pain resembling CTTH [6]. Rarely, pericranial tenderness, which can occur with migraine, TTH, or cervicogenic headache, may signal underlying meningitis or subarachnoid hemorrhage.

The incidence of secondary headache disorders dramatically increases with advanced age. Pascual and Berciano [7] reported a series of 3578 patients presenting with headache as their main complaint, in which 193 (5.4%) experienced the symptom for the first time at age 65 or older. Among this subset, 38 (19.7%) had serious underlying conditions, including intracerebral hemorrhage (17 of 38), intracranial neoplasms (8 of 38), temporal arteritis (12 of 38), and glaucoma (1 of 38). In patients younger than age 65 who presented with headache, secondary etiologies were identified in only 1.6% of patients. Similarly, in another study of 312 subjects randomly selected from a large Italian elderly population (mean age, 73), 19 (6%) reported current headache [8]. Secondary headaches were present in more than one third of these subjects (7 of 19) and were classified into the following categories: vascular disorders (4 of 7), structural disorders (2 of 7), and hypoglycemia (1 of 7). In a study of elderly patients presenting with headache to the Cleveland Clinic, temporal arteritis was diagnosed as frequently as migraine, with each accounting for 15% of patients, whereas TTH accounted for 27% of patients [9]. Several other potentially treatable secondary causes in the elderly population include malignant hypertension, dental and sinus infection, and cervical spine disease [7,9].

Epidemiology

TTH is the most common primary headache disorder in the general population, with a lifetime prevalence of 78% [4]. It usually presents in the third and fourth decades of life, with a peak prevalence of 30 to 39 years of age for both sexes [2]. It is more frequent in women in all age, race, and education groups [2], with a female-to-male ratio reported between 1.16:1 and 3:1 [1••,2,10,11]. A study of younger adults in Denmark reported a 1-year prevalence of ETTH in 18% of men and 35% of women [11]. In the United States, the 1-year prevalence reported by Schwartz et al. [2] was 38.3%, which declined with advancing age. In a subset of older adults between age 60 and 65 years, the prevalence of ETTH was 25.6% for men and 27.1% for women. In comparison, the peak prevalence of ETTH in adults between the ages of 30 to 39 years was 42.3% in men and 46.9% in women. For CTTH, the overall 1-year period prevalence was 2.2%; the prevalence in women was twice that of men (2.8% vs 1.4%). In individuals ≥ 60 years of age, the 1-year prevalence of CTTH was 1.5% in men and 2.7% in women.

Despite a decline in prevalence with age, TTH continues to be relatively frequent in the elderly population. Prencipe et al. [12] studied the prevalence of primary headache disorders, including TTH, migraine, and chronic daily headache (CDH), in individuals ≥ 65 years

Table 2. "Red flags" for secondary headache disorders in the elderly

1. Systemic symptoms (eg, fever, weight loss, stiff neck, night sweats, loss of vision in one or both eyes, myalgias, jaw claudication)
2. Headache with syncope or seizures
3. Headache triggered by exertion, Valsalva maneuver, or sex
4. Recent or remote history of cancer, HIV, or immunosuppression
5. Focal neurologic symptoms or abnormal findings on general or neurological examination
6. First or worst headache
7. Abrupt onset of headache
8. New headache in those older than 50 years or a change in a preexisting headache pattern
9. Headache always on the same side
10. Progression or fundamental change in pattern of headache

(*Data from* Evans [5].)

of age in rural Italy. The 1-year prevalence rates were 44.5% for TTH, 11% for migraine headache, 2.2% for symptomatic headaches, and 0.7% for other types of headache. For TTH, prevalence was 55.1% in women and 30.9% in men. A study of the elderly in a low-income area in Brazil reported a 1-year prevalence of 45.6% for any headache type. The 1-year prevalence for TTH was 36.4% in women and 28.1% in men, whereas the 1-year prevalence for migraine was 14.1% in women and 5.1% in men [13].

Prencipe et al. [12] reported that the prevalence of ETTH declined with advancing age in individuals over the age of 65 years. Subjects were stratified into three age groups. Prevalence was 48.9% in patients aged 65 to 74, 40.3% in patients aged 75 to 84, and 23.9% in patients aged 85 to 96. In a study of the elderly population in Spain, Pascual and Berciano [7] similarly reported a decrease in incidence of headache with advancing age. In the Brazilian study of the elderly, which stratified subjects into four age groups, the prevalence of TTH and migraine did not significantly decrease with age [13]. Camarda and Monastero [14] studied recurrent headaches, defined as three or more attacks in the previous 12 months, in the Italian elderly population and found that although the prevalence of migraine headache significantly decreased with increasing age, this trend was not true for TTH and other headaches.

Unlike ETTH, which decreases in frequency with advancing age, CDH prevalence remains fairly constant throughout adulthood [15•] and may actually increase with age [10]. Most studies report a prevalence of 4% in both adult and elderly populations. In the general population, CTTH represents the majority of CDH, and transformed migraine is the most common type of CDH treated in specialty centers. CTTH affects 2% to 3% of both the general adult and elderly population [2,4,12,16,17].

Wang et al. [17] similarly suggested that CTTH persists even in those of advanced age. In their study, the 1-year prevalence of CDH in Chinese elderly was 3.9%, with CTTH accounting for 2.7% and chronic migraine for 1.6%. As in the Italian study, prevalence was reported for three separate age groups (ages 65–74, 75–84, and ≥ 85) and did not decrease with advancing age. Medication overuse was identified in 25% of this population. A community-based study of the elderly in Chile suggested that the prevalence of CTTH actually increases with age, from 2% in 30- to 39-year-old patients to 4.8% in individuals ≥ 60 years of age [10].

Risk factors for the development of CDH in the elderly are similar to those in the general adult population, including analgesic overuse, history of migraine, depression, and other pain syndromes [17]. Factors that are not significantly associated with developing CDH include hypertension, diabetes mellitus, and cardiovascular disease [17], although one study did report an association between TTH and myocardial ischemia [8].

Although most studies support a decrease in the prevalence of TTH with age, the decline is not nearly as precipitous as that of migraine. In a recent large prospective study of patients aged 55 to 94 years, Schwaiger et al. [1••] followed a random sample of inhabitants of Bruneck, Italy, over a 15-year period. In both men and women, the 1-year prevalence of migraine declined sharply between the youngest and oldest groups, whereas the frequency of TTH did not change considerably with advancing age. Most women with migraine experienced headache remission between the ages of 40 and 59; migraine attacks resolved during menopause or in the decade before or after in three fifths of women. In contrast, TTH persisted throughout life in the majority of subjects, with no gender differences. Another study reported a reversal in the ratio of migraine to TTH with age, from 1.5:1 in younger patients to 0.5:1 in older patients [9].

Occasionally, ETTH or CTTH can present for the first time in the elderly. Prencipe et al. [12] reported that 16.9% of patients were ≥ 65 years of age at the onset of headache. Of these patients, 80.6% were diagnosed with TTH. Castillo et al. [16] noted that 28% of individuals experienced the onset of CDH at ≥ 60 years of age,

with 75% meeting criteria for CTTH. The mean age at the time of diagnosis of CTTH was 52 years, while the onset as recalled by subjects was 44 years. For transformed migraine, the mean age at onset was significantly lower: 47 years at diagnosis, and 33 years as subjectively recalled. In the Bruneck Study, the mean age at onset of TTH was considerably higher than that of migraine (men, 49 years vs 23 years; women, 44 years vs 29 years) [1••]. In a study of patients presenting to a neurology service with the primary complaint of headache, 5.4% developed headaches for the first time after age 65 [7]. Of this 5.4%, 43% of patients were diagnosed with TTH. In a study of elderly nursing home patients, 25% presented with headaches for the first time between 70 and 80 years of age [18]. Half of these patients were diagnosed as having tension or "psychogenic" headache, while only 10.5% had migraine. One limitation of this study was the lack of uniform diagnostic criteria.

Prognosis

Although there is limited information available on the prognosis of TTH in the elderly, one study suggests that CDH tends to persist in this population. In a cohort of Chinese elderly with CDH, almost two thirds reported persistent CDH at 2- and 4-year follow-up [19••]. After 13 years of follow-up, 27% of patients still continued to experience CDH. At baseline, the majority of patients were diagnosed with CTTH; however, at 13-year follow-up, CDH with migrainous features was the most common subtype of CDH. All of the patients with persistent CDH at the end of the study were women, and none had medication overuse at baseline. In another population-based study of more than 1000 adults between 18 to 65 years of age with CDH, 13% had a remission to less than one headache per week at the 11-month follow-up time point. Remission was more likely to occur with increasing age in women, but not men [20].

Management and Comorbidities

Successful management of TTH combines pharmacologic and nonpharmacologic approaches. Pharmacologic treatment consists of acute and preventative medications. Nonpharmacologic treatments include lifestyle modification, behavioral interventions, and physical therapy.

Simple analgesics, including NSAIDs and cyclooxygenase-2 inhibitors, are the mainstay of acute treatment for TTH. Ketoprofen and ibuprofen are both effective agents. NSAIDs must be used with caution in the elderly population, as the risk of gastrointestinal ulceration and renal and hepatic impairment increases with age. Other factors to consider include the concomitant use of aspirin or antiplatelet agents, which further increases the risk of bleeding [21••]. Acute treatments should be limited to 2 days per week or less to decrease the risk of developing medication overuse headache [6].

Prophylactic therapy is generally advised for patients experiencing at least 2 to 3 headache days each week. There is limited evidence regarding effective agents for the prevention of CTTH. The tricyclic antidepressants amitriptyline and nortriptyline may be effective [22]. However, these agents should be used with caution in the elderly population due to the potential for anticholinergic side effects such as confusion, sedation, hypotension, and urinary retention. Other agents, such as gabapentin [23] and tizanidine [6], have also been used for the prophylaxis of TTH.

In addition, behavioral interventions such as relaxation training, cognitive behavioral therapy, and biofeedback training may be helpful as adjunctive treatments. These nonpharmacologic treatment modalities can be administered individually or in a group setting. Several meta-analyses of behavioral treatments for TTH found them to be efficacious, resulting in a reduction in headache frequency of at least 35%, similar to the improvement seen with amitriptyline [24].

Special considerations in prescribing medications in the elderly include impaired metabolism and excretion of drugs, comorbid conditions, and polypharmacy. Nonpharmacologic treatments may be especially advantageous in the elderly for these reasons.

Conclusions

TTH is a common complaint in the elderly and can cause significant impairment. Because headaches that begin after the age of 65 years are more likely to be due to underlying pathology, careful investigation is required to exclude secondary causes of headaches. Once secondary disorders are excluded, a combination of pharmacologic and nonpharmacologic approaches may be employed in the management of TTH in the elderly. Selection and dosing of acute and preventive therapies require careful consideration of existing comorbidities as well as impaired renal and hepatic function.

Disclosure

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