ABSTRACT

Headaches occur more frequently in the elderly than is commonly appreciated. This article discusses the challenges associated with diagnosing and managing headache disorders in the elderly and reviews the most common primary headache disorders (late-life migrainous accompaniments, tension-type headache, cluster headache, and hypnic headache) as well as secondary headache disorders (medication overuse headache, giant cell arteritis, exploding head syndrome, and lesional headaches). With a focus on the different presentations and etiologies of headache in patients older than 65 years, neurologists have many tools at their disposal for appropriate management.

Prevalence studies report that 53% of men and 64% of women aged 55 to 74 years experience headache, as well as 22% of men and 55% of women 75 years and older. Headache is reported to be the 10th most common symptom in elderly women and 14th most common in elderly men. The demographic landscape of headache etiology changes over time, from predominantly primary headaches in younger individuals to a greater incidence of secondary headaches in older individuals, regardless of sex. Yet, headache remains a significant health problem for the geriatric population. Consider also that the elderly (ie, those aged 65 years and older) are the fastest growing segment of the US population.

DIAGNOSIS AND MANAGEMENT CHALLENGES

Obtaining an accurate and detailed history is essential for any headache patient, but even more so with the elderly patient. A meticulous medication history is vital, because the potential clue to the headache source may lie in the medication(s) the patient is taking. The primary headache disorders, including migraine, may either attenuate over time (reduced frequency, severity and/or duration) or present in an atypical manner. Some patients no longer experience the positive visual display but may continue to experience the ensuing headache. Chronic daily headache may continue into older age. In addition, 5% to 10% of patients older than 65 years first develop chronic daily headache; however, in the authors' experience, many of these patients have a history of migraine.

Treatment of elderly patients with headaches is far more challenging than in their younger counterparts for several reasons, including the increased frequency of secondary headache, comorbid or coexisting conditions, and polypharmacy. A single diagnosis may no
longer link the signs and symptoms into a neat, unified headache classification; thus, excluding secondary or symptomatic causes of headache is absolutely essential. Coexisting diseases complicate treatment, both acute and preventive. Also, elderly patients have reduced tolerance to medications due to changes in hepatic and renal clearance. Polypharmacy is common; 12% of the population is older than 65 years, yet they consume more than one third of all prescription medications.\textsuperscript{5,6} It is helpful, therefore, to obtain assistance from the patient’s primary care physician and/or the pharmacist for a complete medication history. The advice to “start low and go slow” is especially true for the elderly patient.

Following is a summary of the major primary and secondary headache disorders in the elderly. The Figure provides an algorithm for differential diagnosis.

**Primary Headache Disorders**

**Migraine and Late-Life Migrainous Accompaniments**

Although the incidence of migraine peaks in midlife, approximately one third of migraine patients continue to experience migraine headaches into older age. The character of migraine attacks remains the same: unilateral or bilateral temporal throbbing frequently associated with photophobia, phonophobia, or nausea, occurring more frequently in women. A small percentage (2% to 3%) experience their first migraine after age 50 years.\textsuperscript{7}

Migraine attacks can occur with aura, yet without the ensuing headache. Late-life migrainous accompaniments, described in Table 1, are an important consideration for the elderly headache patient. The key feature is the positive visual display, often beginning in one part of the visual field, then slowly spreading to involve 1 or...
both eyes, and generally lasting 10 to 15 minutes.\(^8,9\) As the positive visual display abates, the patient may then experience positive sensory symptoms including tingling or prickling that may begin in the fingertips and spread to the palm or forearm, then move to the ipsilateral face and tongue, lasting several minutes. As the sensory symptoms resolve in the affected extremity, the patient may then experience heaviness or clumsiness that lasts several minutes. As the clumsiness abates, difficulty in word finding may occur.\(^8,9\)

Late-life migrainous accompaniments are often stereotypic attacks of short duration, lasting 20 to 30 minutes. The attacks may be identical, suggesting that the mechanism is not cardioembolic. Patients have normal neurological exams between attacks. Approximately one half of the patients may experience a mild, nonspecific headache.\(^8,9\)

The key to differentiating late-life migrainous accompaniments from vascular disease (eg, a transient ischemic attack) is the serial progression between one symptom or accompaniment to another. For example, an acute left middle cerebral artery ischemic infarct would produce abrupt onset of right hemibody weakness (a negative symptom), right-sided numbness (a negative symptom), and visual loss (a negative symptom)—all occurring simultaneously.\(^7\)

Late-life migrainous accompaniments represent a diagnosis of exclusion. Therefore, appropriate neuroimaging and neurovascular studies, blood work, and, where appropriate, cardiac studies should be pursued. Treatment of late-life migrainous accompaniments consists typically of a calcium channel blocker (eg, verapamil). Many physicians may also add an antiplatelet agent. Anticonvulsant medications may also be a viable option for some patients.

## Tension-Type Headache

Tension-type headache is more common in elderly than in younger populations, with a reported prevalence of 27% in patients older than 65 years compared with 20% in the entire population.\(^10\) However, it is difficult to ascertain the true epidemiology of tension-type headache in older persons because it can be confused with various disorders.

Tension-type headache can be considered a “featureless headache”—dull, bilateral, or diffuse headache of mild to moderate intensity. There is a relative paucity of accompanying migraine features (ie, nausea, photophobia, phonophobia, worsening with movement). Tension-type headache can easily be confused with structural or metabolic intracranial disease or depression, which are both more common in the elderly population, so careful examination for other potential causes is imperative.

Tension-type headache, like migraine, in the elderly should be treated with nonpharmacologic therapies, with judicious use of abortive and preventive antimigraine medications. Approximately 10% of individuals will develop tension-type headache after age 50 years; in these patients, an organic cause must first be ruled out.

## Cluster Headache

Cluster headaches, due to the excruciating pain they inflict, are unmistakable. Sometimes referred to as “suicide headaches,” cluster headaches are characterized by intense, severe pain in the orbital region, peaking about 5 minutes after onset, and lasting anywhere from 15 minutes to 2 hours. Robust autonomic symptoms (eg, lacrimation, nasal congestion, ptosis, miosis, rhinorrhea, or conjunctival injection) occur in the vast majority (97%) of patients.\(^7\)

Cluster headache is uncommon in the elderly but has been reported in patients as old as 80 years, accounting for 4% of elderly patients presenting to a hospital with headache.

### Table 1. Diagnostic Criteria for Late-Life Migrainous Accompaniments

- Positive visual displays (eg, scintillating scotoma, fortification spectrum)
- Slow or gradual buildup of either visual or sensory symptoms
- Serial progression from one migrainous accompaniment—visual to sensory to motor—with a delay from one symptom or accompaniment to another
- Occurrence of identical attacks
- Duration of 20 to 30 minutes
- Flurry of attacks in midlife (age 50 to 60 years) is common
- Complete resolution between attacks; a benign course without sequelae
- Headaches do not follow accompaniments in nearly 50% of cases
- Exclusion of symptomatic etiologies

Data from Fisher.\(^8,9\)
headache clinic. Cluster headache features in the elderly are stereotypic, but diagnosis warrants imaging studies to eliminate other possible causes, particularly with any unusual features at presentation.

Treatment is usually with nasal oxygen, barring any coexisting medical contraindication. Nasal oxygen is the safest treatment for those with comorbid cardiovascular disease. Subcutaneous sumatriptan, although typically very effective, should be avoided, especially in those with cardiovascular risk factors—a common subpopulation of cluster headache patients. Prophylactic drug therapy is the same as for younger populations, excluding methysergide.

**Hypnic Headache**

Hypnic headache appears to be a primary headache disorder distinctly of the geriatric population, with a mean age of onset of approximately 60 years. This rare type of headache, also known as “alarm clock” headache, has an estimated prevalence at the Mayo Clinic of only 0.07%. The key feature of hypnic headache is its nocturnal onset (Table 2). Hypnic headaches typically begin between 1:00 AM and 3:00 AM, occurring more than 4 times per week in two thirds of patients. Hypnic headaches are of short duration (<2 hours in 64% of cases) with a lack of associated migrainous and autonomic symptoms that would suggest an alternative primary headache disorder, such as cluster headache. The headaches are typically holocephalic and are of moderate severity. Approximately 58% of patients complain of a dull, nonpulsatile headache, but 42% have some throbbing quality to the pain. Although initially thought to be more common in men, as the full spectrum of the hypnic headache syndrome has evolved, it is apparent that women are more commonly affected.

Interestingly, resting in a supine position tends to exacerbate the pain, so many patients may pace to relieve the pain. Treatment options include lithium 300 mg daily, indomethacin, or caffeine. Lithium is often the most effective medication but, unfortunately, is not well tolerated in geriatric populations. Caffeine (40 mg to 60 mg) at bedtime can be helpful; our experience has been that caffeine at bedtime does not interrupt patients’ sleep patterns. Several studies have shown that indomethacin, taken with food at bedtime, is also useful.

**Secondary Headache Disorders**

**Medication Overuse**

As mentioned earlier, elderly patients consume one third of all prescription medications. Therefore, the possibility of medication overuse or rebound headache should be one of the first considerations in an elderly patient presenting with headache. As with younger patients, commonly overused medications by the elderly for headache include over-the-counter analgesics, combination medications, ergotamine-containing compounds, triptans, and narcotics. It is often prudent to taper and ultimately discontinue medications that are not absolutely necessary.

**Temporal (Giant Cell) Arteritis**

Like hypnic headache, giant cell arteritis (GCA) appears to be a geriatric headache disorder. Although the temporal artery is frequently involved, GCA is a systemic granulomatous inflammatory process (with multinuclear giant cells) affecting medium or large arteries. A necrotizing arteritis is present. Headache is the most common symptom and the main reason patients with GCA present to a neurologist. The prevalence of GCA in patients in their 50s is 6.8 per 100 000; prevalence is 73 per 100 000 in patients in their 80s. The average age of onset is 70 years, and GCA is 4 times more prevalent in women.

Because the most common symptom is headache, GCA should be considered in any elderly person with

<table>
<thead>
<tr>
<th>Table 2. Diagnostic Criteria for Hypnic (&quot;Alarm Clock&quot;) Headache</th>
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<tr>
<td>Occurs only in older or elderly populations (&gt;60 years)</td>
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<td>Headache awakens the patients from sleep at a consistent time, usually between 1:00 AM and 3:00 AM (63%)</td>
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<td>Identical headaches also can occur during daytime naps</td>
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<td>Headache frequency often occurring &gt;4 nights/week</td>
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<td>Headache resolution within 2 hours in most patients</td>
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<td>Neurologic examination, laboratory studies, and brain imaging are unrevealing</td>
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<tr>
<td>Headache severity remains unchanged or attenuates over time; frequency may vary in either direction</td>
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Data from Dodick et al.11
either new-onset headache or change in a previously stable headache pattern. There is no specific headache pattern or characteristic in GCA. In one study of GCA, the headache occurred outside the temporal region in 25% of cases. The headache may wax and wane in intensity but is usually dull, although throbbing may occur with bending or stooping. Scalp tenderness, especially near the temporal or occipital arteries, is sometimes present.

Polymyalgia rheumatica, malaise, and fatigue occur in more than one-half of GCA patients and may be the initial symptoms in 20% to 40% of patients. Visual symptoms, including amaurosis, diplopia, and permanent visual loss, are some of the most serious symptoms of GCA. Visual loss can be unilateral or bilateral; untreated unilateral vision loss can evolve into bilateral visual loss within 1 to 2 weeks. Visual loss is usually sudden, but Lipton et al have reported gradual visual loss with recovery after treatment. The incidence of visual loss ranges from 8% to 20%, approaching 40% in untreated patients.

On examination, the affected artery may be tender or nodular to palpation. The best screening test for GCA is the erythrocyte sedimentation rate; although admittedly nonspecific, sedimentation rates are elevated in the vast majority of cases. Typical values for GCA are greater than 50 mm/hour; normal values vary among laboratories but are typically less than 30 mm/hour. However, the sedimentation rate may be falsely low early in the disease course if the patient is taking corticosteroids or other anti-inflammatory medications; in patients with sickle cell or low fibrinogen states; and in patients in whom the blood work was not properly processed (ie, blood was allowed to sit for more than 2 hours after being drawn). Other laboratory abnormalities may include an anemia of chronic disease, elevated platelet counts, alkaline phosphatase, C-reactive protein, factor VIII/von Willebrand's factor, fibrinogen, alpha-2-globulin, and interleukin-6, as expected with vasculitis.

Temporal artery biopsy may not be technically necessary but prudent; on occasion, one may uncover an alternative diagnosis. Temporally, biopsies are performed unilaterally on the side of the tender or indurated blood vessel. An appropriate segment is 3 cm to 5 cm, multiply sectioned, given that GCA is a multifocal vasculitis with skip lesions.

The treatment of choice for this disorder is prednisone (40 mg-80 mg starting dose) and should be initiated immediately if GCA is suspected. Patients taking corticosteroids should be biopsied within 24 to 48 hours of the steroid dose, but a biopsy can be performed up to 2 weeks later. Once improvement is maintained for 2 weeks, the steroids can be tapered gradually over weeks to months. Any relapse is usually due to incomplete suppression of the inflammatory response, not an exacerbation. As with any long-term steroid use, patients should be monitored for potential complications, such as hypertension, osteoporosis, peptic ulcer disease, diabetes, and cataracts.

**Expanding Head Syndrome**

Expanding head syndrome is rare and occurs more commonly in women than in men. In general, patients with expanding head syndrome are older than 50 years, although no age group is spared. It is not a headache per se, but a cephalic sensation. As patients are falling asleep, they may awaken with the sensation of a loud noise or a bang in their head. These sensations may occur several times per night, and then may remit for several months. There are no associated autonomic symptoms that would suggest cluster headache. The mechanism is not understood but may represent a sleep-related disorder. Treatment, as suggested by Pearce, who characterized this syndrome, is reassurance.

**Lesional Headaches**

The incidence of lesional headaches increases with age as the incidence of intracranial disease increases. The elderly are more prone to the development of subdural hematomas because of the associated cerebral atrophy that puts the bridging veins at risk of tearing, even with trivial trauma.

Headaches caused by brain tumor are not easily identified because the classic cardinal features originally taught in medical school (ie, severe headache, worse in the morning with associated vomiting) do not hold true in the majority of patients with a brain tumor. In fact, many are mistaken for tension-type headache. Most are mild and nondescript.

The majority of patients with brain tumor and associated headache have a history of migraine in their younger years, underscoring the importance of following up on any slight change in the quality of headache or associated features, including slowed mentation. Signs or clues to brain tumor as the cause of headache include increased headache frequency, paroxysmal headaches (with sudden onset and peaking within seconds), and
associated neurologic signs and symptoms. Magnetic resonance imaging with gadolinium is the imaging method of choice.

CONCLUSION

Diagnosing and managing headache in the elderly presents numerous challenges unique to this population. Establishing the correct diagnosis is essential to implementing the appropriate treatment plan. Any change in the medication schedule should be reviewed with the referring primary care physician given the large number of prescription medications this population consumes.

REFERENCES


