Chronic Headache

A Comprehensive Guide to Evaluation and Management

Mark W. Green
Robert Cowan
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Dedicated to many giants in the field of headache medicine:
Donald Dalessio
John Edmeads
Steven Graff-Radford
John Graham
Robert Kunkel
Marcia Wilkinson

Preface

Chronic daily headache occurs in 3 and 5% of the population worldwide. While not as common as many other primary headache disorders, the various chronic daily headaches are associated with greater healthcare utilization, loss of productivity, and relatively poor quality of life. In many forms of chronic daily headache, they represent the end stage of headache.

Chronic daily headache is not a diagnosis but a constellation of symptoms. The headache needs to be evaluated with a thorough understanding of the history, careful examination of the patient, appropriate diagnostic studies, consultation with colleagues, and ongoing assessment of the patient leading to the appropriate diagnosis and treatment.

This book hopes to clarify the diagnosis of chronic daily headache disorders, provide an understanding of the underlying biological substrates, provide guidance on the use of diagnostic testing and additional consultations, and develop treatment strategies with the greatest potential to alleviate the burden of these patients through the highest quality of care.

The book includes an examination of chronic daily headache, the role of behavioral medicine, and the important elements of the history. Following are the major forms of these disorders, the role of diagnostic testing and treatment. The underlying biology of these disorders is reviewed and the impact of these headaches in society is examined. The risk factors that lead patients to transform episodic primary headache disorders into the chronic form are examined. Invasive and neuromodulatory techniques are discussed. Somewhat by way of review and summary we close with a section on the classification of these disorders.

It is the belief of the authors that this logical approach to chronic daily headache will provide a greater understanding of these disorders leading to effective quality care for patients and reduces the burden they experience.

New York, NY — Mark W. Green
Stanford, CA — Robert Cowan
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Chronic Daily Headache: Do We Know It When We See It?

1

Shweta Teckchandani and Robert Cowan

Definition

According to Silberstein et al., Chronic daily headache (CDH) is a primary headache disorder, in which headaches occur at least 15 days out of the month for 3 months or more. This is further subdivided into short-duration (<4 h) headaches and long-duration (>4 h) headaches. The category includes chronic tension-type headache, chronic migraine, new daily persistent headache, chronic cluster headaches, and hemicrania continua. The vast majority of patients with CDH meet criteria for chronic migraine or chronic tension-type headache. More than half of these patients have associated medication overuse headache (MOH), which is a separate entity classified as a secondary headache, but commonly seen in patients with CDH [1].

Introduction

Supreme Court Justice Potter Stewart famously said (in another context) "I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description and perhaps I could never succeed in intelligibly doing so. But *I know it when I see it*…" Most doctors would agree that this statement is equally applicable to the topic of Chronic Daily Headache (CDH). However, in the International Headache Society's International Classification of Headache Disorders, CDH does not appear as a discrete primary or secondary headache disorder. Rather, for chronic migraine and tension-type headaches there exists an episodic presentation. This presumes that the episodic headaches precede their chronic presentation and that they share a common pathophysiology.

This chapter will explore the roles of treatment response, pathophysiology, epidemiology, comorbidity, and other factors in chronic daily headaches. This chapter is not intended to answer these questions. Other chapters in this book will look, in detail, at various aspects of CDH in headache practice. Here we will create a framework, a context, for this important discussion.

Epidemiology

The prevalence of CDH worldwide is approximately 3%, with a range in between 1 and 4% [2, 3]. In the United States, CDH is 33% more common in caucasions and in women [4]. CDH is more commonly found in patients with lower socioeconomic status, individuals with comorbid

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pain disorders, and patients who tend to overuse acute medications for headache management. According to Yancey et al., among patients with CDH, 63% use rescue medications for 14 days or more to treat headaches [5]. Patients with CDH are also more likely to have psychiatric comorbidities including depression, anxiety, and post-traumatic stress disorder (PTSD) [1, 6]. CDH is associated with poor quality of life and impaired functioning, as well as a decrease in work productivity. This results in an increased economic burden on society [6]. In the United States, direct and indirect costs from migraines are estimated to be $20 billion annually, most of which is due to chronic migraine [7]. As compared to an individual with episodic migraine, the yearly average cost per person with chronic migraine is more than four times greater [7].

Pathophysiology

The pathophysiology of CDH remains largely unknown but is likely multifactorial. The proposed mechanism involves genetic factors, in association with maladaptive neural plasticity of the nervous system that includes peripheral and central sensitization, defective pain modulation, and lack of habituation [1]. In addition, abuse of analgesics, significant comorbidity with psychiatric disorders (anxiety, depression, and panic), and sleep disorders may all be involved [8]. Epidemiological studies have identified several risk factors associated with chronification of headaches. These include medication overuse, obesity, female gender, caffeine overuse, psychiatric comorbidities (depression, anxiety, and somatization disorders), allodynia, high baseline headache frequency, old age and low socioeconomic status [9].

Diagnosis and Classification of Chronic Daily Headache

The first step in the evaluation of patients with chronic daily headache is to obtain a thorough history and physical examination to exclude a secondary cause. Diagnostic workup may include brain imaging and a laboratory evaluation, lumbar puncture, if indicated, physical examination to assess for postural dysfunction and muscle spasms, and a thorough psychiatric evaluation to discover underlying psychiatric comorbidities. In a study by Mercante et al., major depression was present in 58.7% of the patients with chronic migraine [8]. The prevalence of "some depression" was 85.8% in patients with CM, whereas it was only 28.1% in patients with episodic migraine [10]. It is also important to identify any underlying medication overuse, specifically if the patient takes barbiturates or opioid medications. The National Association of State Controlled Substances Authorities is working to provide a forum for the discussion and exchange of information and ideas to develop, implement, and monitor ongoing strategies to curtail the abuse, misuse, and diversion of controlled substances. The availability of such a report may help with the type of medication use, dosing, and timing of pharmacotherapy. Once a secondary cause is ruled out, treatment includes appropriate management therapy of the underlying primary headache with a multidisciplinary approach.

Chronic Migraine

As defined by the ICHD-3 criteria, chronic migraine is a headache occurring on 15 or more days per month for more than 3 months, with on at least 8 days per month, with features of episodic migraine with or without aura.

Diagnostic Criteria for Chronic Migraine

A. Headache (tension-type-like and/or migraine-like) on ≥15 days per month for >3 months [6] and fulfilling criteria B and C.
B. Occurring in a patient who has had at least five attacks fulfilling criteria B-D for 1.1 Migraine without aura and/or criteria B and C for 1.2 Migraine with aura.

C. On ≥8 days per month for >3 months, fulfilling any of the following [2]:
   1. Criteria C and D for 1.1 Migraine without aura.
   2. Criteria B and C for 1.2 Migraine with aura.
   3. Believed by the patient to be migraine at onset and relieved by a triptan or ergot derivative.
D. Not better accounted for by another ICHD-3 diagnosis.

Treatment

There is an attractive misconception in medicine that if treatment A is recommended for diagnosis X, then it follows that if the treatment is unsuccessful, the diagnosis is incorrect. Nowhere in medicine is treatment response less reliable as a diagnostic tool than in chronic daily headache diagnosed as Chronic Migraine. The best approach to treatment of chronic migraine is a combination of pharmacologic and non-pharmacologic therapies. Pharmacologic treatment typically involves daily preventative medication. It should be noted that only two agents (OnabotulinumtoxinA and topiramate) have strong evidence in chronic migraine [11], while a wide variety, with evidence only for episodic migraine, is commonly used.

First-line agents that have evidence of efficacy include medications from three broad classes: anti-epileptics, anti-depressants, and anti-hypertensives [12]. Medications that are commonly used in treating chronic migraine are listed in Table 1.1. In the United States only a few have FDA approval for migraine prophylaxis (propranolol, timolol, divalproex sodium, and topiramate) [13]. However, calcium-channel blockers including verapamil, flunarizine (not available in the United States), and some antidepressants (tricyclic antidepressants, serotonin reuptake inhibitors, serotonin norepinephrine reuptake inhibitors) are frequently used off-label [13]. Dosages should be increased gradually to avoid adverse effects

Table 1.1 Medications for the Treatment of Chronic Migraine

Drug	Daily dose range	Possible adverse effects
Beta blockers		
Propranolol	80–240 mg divided bid or tid	Hypotension, fatigue, asthma/COPD exacerbations
Timolol	10–50 mg bid or 20 mg daily	
Anti-epileptic drugs		
Valproate	250–500 mg bid	Alopecia, drowsiness, weight gain, tremors, liver abnormalities, fetal abnormalities
Valproate extended release	500–1000 mg daily	
Topiramate	50 mg bid	Paresthesias, word-finding difficulty, cognitive slowing, nephrolithiasis, acute angle-closure glaucoma
Gabapentin	300–3600 mg divided bid or tid	Edema, sedation, fatigue
Tricyclic antidepressants		
Nortriptyline	10–150 mg daily	Weight gain, dry mouth, drowsiness
Amitriptyline	30–150 mg daily	
Venlafaxine	75–150 mg daily	Nausea, vomiting
Calcium Channel blockers		
Verapamil	80–480 mg divided tid	Constipation, atrioventricular conduction disturbances
Extended-release-generic	240 mg daily	
Angiotensin–converting enzyme indicator		
Lisinopril, generic	5–40 mg daily	Hypotension
Angiotensin–Receptor blocker		
Candesartan	8–21 mg daily	Hypotension

Data from [58, 59]