Chapter 1

Introduction

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Headache is one of the most common presenting symptoms in the emergency department (ED). It has been found to be the fifth most common reason for visiting the ED in the United States [1] and a variety of studies have shown that it accounts for a significant percentage of ED visits [2–4]. Unsurprisingly, given its prevalence, the cost of headache care in the ED is substantial. It has been estimated that the cost of ED visits for headache amounts to $520 million per year in the United States [5].

Not only is it common, but the management of headache in the ED is also very complex. Headache is a relatively non-specific symptom and it is associated with myriad potential diagnoses. When approaching the differential diagnosis of headache, it is important to have an organized approach. The most crucial aspect of headache diagnosis is determining whether the patient has a primary or a secondary headache. Secondary headaches are those with recognized underlying causes, while primary headache disorders are neurological diseases unto themselves. The International Classification of Headache Disorders, currently in its third edition (beta version), provides an exhaustive list of both primary and secondary headaches [6]. Subsequent chapters will address the most common primary and secondary headaches presenting to the ED. As will be described in detail in Chapter 2, secondary headaches represent the majority of headaches in the pediatric ED, whereas primary headaches comprise the majority of headaches in the adult ED.

There are several important management issues that arise with headache in the ED, all of which will be addressed in detail throughout the next few chapters. The most critical issue is to make the correct diagnosis. In order to do so, one must obtain a targeted history and collect data from the physical exam that will allow for the generation of a focused differential diagnosis. The importance of the history and physical exam cannot be overstated. Without high-quality initial data, the clinician may be misled in their decision-making regarding investigations, consultations, and further management. Knowing the high-yield questions to ask and the physical exam maneuvers to perform in the common headache scenarios will result in more timely and accurate diagnoses, with fewer unnecessary investigations.

Once a list of potential diagnoses has been established, the judicious use of investigations for ED headache is very important. First, the clinician must consider all possible secondary headache diagnoses and collect information from the history and physical exam that hints at headache red flags – key indicators of an underlying serious secondary cause. If any red flags are present or if specific secondary headaches are being considered based on the history and physical exam, then the clinician must know the appropriate investigations to carry out. In many cases, there will be several investigation options at the clinician's disposal, but it is important, where possible, to adhere to evidence-based guidelines. For example, there are several guidelines [7–9] that prescribe a sequence of diagnostic tests for suspected subarachnoid hemorrhage. Patients with suspected subarachnoid hemorrhage are to be screened with a computed tomography (CT) scan of the head. Where the CT scan is negative, a lumbar puncture is often carried out in order to search for red blood cells or cerebrospinal fluid xanthochromia. The case of subarachnoid hemorrhage illustrates that, where evidence is available, a reasoned and evidence-based approach to the diagnostic work-up for headache is expected of the treating clinician. Throughout this book, the latest evidence-based strategies for headache diagnosis and investigations will be reviewed.

Once a diagnosis has been established, the optimal course of management may be unclear. This is especially true with primary headaches, given a

multitude of therapeutic options, a lack of high-quality evidence in the literature [10,11], and a lack of awareness and familiarity among clinicians regarding the use of evidence-based therapies. For example, studies have shown that evidence-based therapies are often not used first-line in patients presenting to the ED with migraine. Several US-based studies have found that patients commonly receive opioids rather than evidence-based therapies, and in many cases the majority of patients are not being treated in an evidence-based fashion [12,13]. This is also true in Canada [14,15]. Practice variation also appears to be a problem in the management of pediatric migraine, according to a multicenter study carried out in Canadian EDs [16]. Finally, there is evidence that patients presenting to the ED with headache may be undertreated. One US study found that just over one-third of patients visiting the emergency department for headache received neither an intravenous line nor any medication, and that only 21.8 percent of the patients were headache-free at discharge [17]. Thus, there is significant room for improvement on current headache management in the ED, especially as pertains to the management of primary headaches.

The lack of appropriate treatment for headache in the ED can have significant consequences not only for patients with secondary headaches, but also for those with primary headaches. The case of treating migraine with opioids, which is discouraged by the American Academy of Neurology in their Choosing Wisely recommendations [18], illustrates this well. The overuse of opioids to treat migraine in the ED appears to not only lead to worse short-term outcomes [14,19,20], but may have lasting long-term consequences for the patient. The ED may be the initial setting where the patient is exposed to opioids that may influence future opioid overuse. Additionally, patients using opioids tend to visit the ED more frequently for their headaches [21]. In the upcoming chapters, we will provide a review of the most appropriate evidence-based strategies for the management of the various headache disorders in the ED.

Patients presenting to the ED with headache have a variety of expectations and concerns. In many cases, if they have not already been diagnosed with a primary headache disorder, they may be concerned about the prospect of an underlying sinister cause for their head pain. There is often a significant amount of associated anxiety and it is imperative that the physician recognizes and acknowledges this as it can confound the clinical picture. Patients who are already aware of the fact that they have a primary headache disorder will often have different expectations and reasons for visiting the ED, although in one US study, one-third of patients visiting the ED for migraine were concerned about a life-threatening condition or had been referred to the ED by a physician [22]. One small study based in an ED in France found that the vast majority of patients presenting to the emergency headache service with migraine were visiting because of increasing headache frequency and/or severity. Only a small proportion of this selected patient group presented for diagnostic clarification [23]. Wherever possible, the emergency physician can best serve the patient by understanding the expectations and goals the patient has established for the visit.

This book aims to provide clinicians working in the ED with a comprehensive, accessible, and evidence-based review of essential topics pertaining to headaches in the ED. Given how common they are in the ED, an emphasis is placed on the approach to primary headaches in this setting. The book will begin with a review of headache epidemiology in the ED. Subsequently, a practical approach to the history, physical exam, and investigation of emergency headaches is described. Next, an overview of secondary headaches in the ED setting is provided. Several chapters are devoted to a detailed review of primary headaches in the ED, followed by chapters dealing with special populations presenting to the ED with headache. Finally, the book will conclude with a broader discussion on how to prevent ED visits for primary headaches and how to optimally treat primary headaches in this setting, with the goal of avoiding headache recurrence and return visits to the ED.

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