Imploding or Exploding: Headache Direction May Help Select Treatment

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Knowing the direction of the headache's origin, while clinically difficult to ascertain on a consistent basis, has shown some predictive value for migraines.

Migraine is a prevalent and often debilitating condition with highly variable individual responses to prophylactic therapy. Selecting an effective prophylactic treatment for an individual patient often is a process of trial and error, without clear clinical factors to guide selection of effective therapy.

Several recent studies have examined whether patient description of headache “direction” may predict treatment response, specifically to onabotulinumtoxinA (Botox) injections. The association between headache directionality and response to Botox was first published in a triple-blinded prospective and retrospective study in 2006.¹ This study examined a variety of neurologic symptoms associated with migraine, in both episodic and chronic forms, in responders and nonresponders to 100 units of Botox given for migraine prophylaxis. In the prospective portion of the study, 27 of the 42 patients were categorized as either “clear responders” or “clear nonresponders” based on patient headache logs between weeks 4 and 12 after initial injection. Between these 2 groups, factors such as presence of aura, photophobia, phonophobia, nausea, vomiting, neck muscle tenderness, and presence of cutaneous allodynia were not correlated with response to onabotulinumtoxinA. However, the description of perceived direction of the origin of the headache was the sole characteristic studied that correlated strongly with response. Subjects with migraine who described their headache as exploding, or a perceived buildup of pressure “as if their skull was about to split open,” were much more likely to be nonresponders. None of the patients with exploding headache were described as responding to Botox in the prospective portion of the study, and those with exploding headaches comprised 89% of the nonresponders in the retrospective portion.

Subjects who reported their headache as imploding, or “assaulted by external forces, typically described as crushing, clamping or stubbing,” and ocular, or “eye popping pain,” were more likely to report response to Botox. Of the responders in the prospective and retrospective portions, 93% and 84%, respectively, described their headache as being either imploding or ocular.

A follow-up study confirmed the correlation with description of headache directionality and Botox response in a retrospective study of 82 patients with subjects meeting International Classification of Headache Disorders 2 (ICHD2) diagnostic criteria for migraine.² Patients who had received Botox for migraine prophylaxis were interviewed, and a number of clinical characteristics, including headache directionality, were recorded. Patients who had a self-reported drop in headache days by more than 66% were considered responders; less than 33%, nonresponders; and between 33% and 66%, questionable responders. Those who described their headaches as imploding or ocular accounted for the majority of responders (70%). Those who described their headache as exploding accounted for the majority of nonresponders (78%).

However, obtaining a consistent description of the direction of a patient’s headache may not be straightforward. In an attempt to standardize assessment of directionality, a recent study examined different methods of determining headache directionality in an outpatient women’s health clinic for patients who met ICHD2 criteria for migraine.³ The study compared 3 methods of determining headache direction: (1) a pictorial representation of their headache,(2) a standardized survey designed to allow the patient to express directionality, and (3) a clinician's blinded assessment using standardized questions.

Surprisingly, the study demonstrated poor concordance among the different methods, with descriptions of directionally varying widely within subjects when the different methods of assignment were used. The authors suggest that this may be the result of most patients’ unfamiliarity with the concept of headache directionality given that physicians question this infrequently. This represents a
potentially significant challenge in using the approach clinically. While the description of headache directionality may help clinicians better select patients with migraine who may respond to Botox or potentially other prophylactic therapies, the best way to determine this in a consistent manner is as of yet unclear. Furthermore, why the description of the direction from which the pain originates would be predictive in treatment response and what this tells us about the potential pathophysiology also are unknown. It’s hypothesized that those patients who describe their headaches as imploding may have more involvement of extracranial nociceptors and therefore may have more response to therapies that are directed at extracranial targets, such as Botox. While this cultivates many intriguing questions, further investigations are needed.

References:


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