Reductions in Migraine Frequency and Duration in Patients With Chronic Migraine Treated With Erenumab: Interim Results From a Real-world Multicenter Chart-review Study of US Headache Centers

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Background and Methods

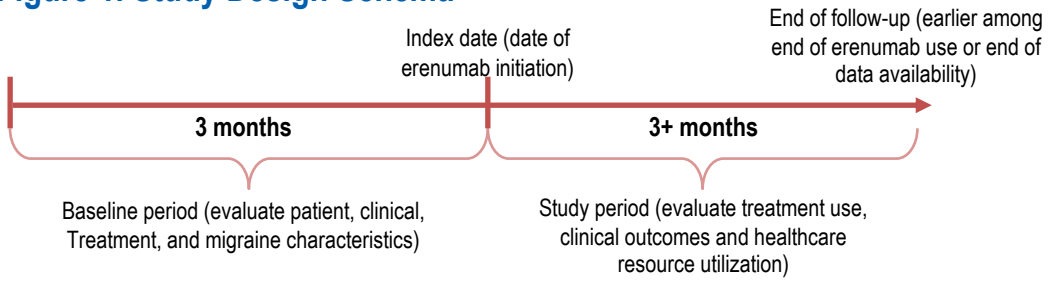
Background

- Migraine is a common, debilitating disease affecting 12% of the United States (U.S.) population.[1,2]
- The burden of migraine is high, consistently being ranked as the fourth or fifth most common cause of emergency room visits in the US.[3] Moreover, migraine is associated with reduced quality of life, functional impairment, as well as the use of multiple treatments in an effort to manage symptoms, highlighting the importance of having effective therapeutic strategies.[3-10]
- In May of 2018, erenumab (erenumab-aooe in US) received FDA approval, becoming the first-in-class monoclonal antibody targeting the CGRP pathway approved for the prevention of both chronic and episodic migraine in adults.[11] Erenumab was found to significantly decrease the number of monthly migraine days versus placebo in clinical trials.[12,13]
- However, real world evidence of the impact of erenumab is still limited.

Objectives

- To characterize the real-world treatment profiles and clinical outcomes of patients prescribed erenumab from select US headache centers.

Figure 1. Study Design Schema



Methods

- The study was a center-based, retrospective, chart review of patients with migraine at 5 major US headache centers.
- Charts collected between April and November of 2019 are presented here. Patient-level data, including patient and clinical characteristics as well as treatment and migraine characteristics, were collected from patient charts via an online data collection form.
- Adult patients were included in the study if they met the following inclusion criteria:
  - Aged at least 18 years old as of the date of erenumab initiation.
  - Diagnosed with chronic or episodic migraine.
  - Initiated erenumab after May 2018 and were treated with erenumab for at least 3 consecutive months.
  - Disease history, treatment and health care use available during the baseline and follow-up periods.
  - Did not participate in a clinical trial for erenumab or another anti-CGRP.
- For homogeneity of interpretation, this interim analysis is focused on only patients with chronic migraine.
- The baseline period was defined as the 3 months before erenumab initiation (i.e., the index date), and the follow-up period was defined as at least 3 months after erenumab initiation (**Figure 1**).
- Studied outcomes were evaluated and summarized across all patients.
  - Patient characteristics, including demographics and comorbidities.
  - Treatment characteristics including erenumab and concomitant medication use, specifically preventive and acute migraine treatments.
  - Migraine characteristics including number of migraine/headache days per month, duration of migraine/headache, physician-reported migraine severity, and other clinical characteristics.
- All statistical analyses were descriptive

Results

- We present data for 469 patients with chronic migraine for this interim review.

Patient Characteristics at Erenumab Initiation

- Patients were on average 49 years old; 86% were female and 74% were white.
- The two most common comorbidities were depression (27%) and anxiety (25%).

Table 1. Characteristics for Patients with Chronic Migraine as of Erenumab Initiation

	N = 469		
Age (years), mean ± SD [median]	48.6	± 12.7	[49]
Female, N (%)	402	(85.7%)	
Race/Ethnicity, N (%)			
White	347	(74.0%)	
Hispanic or Latino	17	(3.6%)	
Black or African American	8	(1.7%)	
Asian	4	(0.9%)	
American Indian or Alaska Native	1	(0.2%)	
Other	27	(5.8%)	
Unknown/not sure	70	(14.9%)	
Weight (pounds), mean ± SD [median][1]	172.5	± 49.0	[164]
Weight for females (pounds), mean ± SD [median][1]	166.0	± 46.1	[155]
Most commonly reported comorbidities, N (%)			
Depression	126	(26.9%)	
Anxiety	118	(25.2%)	
Seasonal allergy	103	(22.0%)	
Sleep disorder	94	(20.0%)	
Hypertension	61	(13.0%)	
Chronic pain disorders	57	(12.2%)	

SD: standard deviation

1. Mean, standard deviation, and median were reported out of non-missing data.

Erenumab Use

- Prior to erenumab initiation, patients averaged 9.2 years of disease duration and the majority of patients were treatment refractory, with a mean of 5 preventive treatment failures.
- At the end of the study period (mean follow-up 8.7 months), a majority of patients remained on erenumab (365 patients; 78%).

Table 2. Erenumab Use During the Follow-up Period

	N = 469		
Time from migraine diagnosis/onset to erenumab initiation (years), mean ± SD [median][1]	9.2	± 10.6	[6]
Number of preventive treatment failures at any time before erenumab initiation, mean ± SD [median][1]	5.0	± 4.1	[4]
Treatment duration (months), mean ± SD [median]	8.7	± 3.4	[9]
Dose used at initiation, N (%)			
70 mg	365	(77.8%)	
140 mg	104	(22.2%)	
Treatment patterns, N (%)			
Persistence at the end of the follow-up period	365	(77.8%)	
Dose escalation	223	(47.5%)	
Discontinuation	104	(22.2%)	
Reason for discontinuation,[2] N (%)			
Non-response or lack of effectiveness	51	(10.9%)	
Tolerability/adverse event	17	(3.6%)	
Insurance reimbursement	16	(3.4%)	

SD: standard deviation

1. Mean, standard deviation, and median were reported out of non-missing data.
2. Reasons for discontinuation are not mutually exclusive, so one patient may have more than one response.

Treatment Characteristics During the Baseline and Follow-up Periods

- The most commonly prescribed preventive treatments during the baseline period were antiepileptic agents (48%), followed by onabotulinumtoxin (47%) and antidepressants (42%).
- For acute treatments during the baseline period, the most commonly prescribed treatment types were triptans (69%) and non-steroidal anti-inflammatory drugs (34%).
- The aggregate treatment profile remained largely similar between baseline and study period; however, 39% of patients discontinued ≥1 baseline preventive treatment and 31% discontinued ≥1 baseline acute treatment.

Table 3. Preventive and Acute Treatment Characteristics

	N = 469			
	Baseline Period		Follow-up Period	
Discontinuation of preventive treatment from baseline, N (%)	NA	NA	161	(38.8%)
Discontinuation of acute treatments from baseline, N (%)	NA	NA	123	(30.8%)
Most commonly reported preventive treatment types, N (%)				
Antiepileptic agents	226	(48.2%)	216	(46.1%)
Botulinum toxin	222	(47.3%)	217	(46.3%)
Antidepressants	197	(42.0%)	184	(39.2%)
Antihypertensive agents	128	(27.3%)	124	(26.4%)
Anti-CGRP (excluding erenumab)	0	(0.00%)	13	(2.8%)
Most commonly reported acute treatment types, N (%)				
Triptans	324	(69.1%)	327	(69.7%)
Non-steroidal anti-inflammatory drugs	159	(33.9%)	170	(36.2%)
Muscle relaxants	90	(19.2%)	95	(20.3%)
Opioids	65	(13.9%)	56	(11.9%)
Ergotamines	13	(2.8%)	20	(4.3%)
Barbiturates	12	(2.6%)	14	(3.0%)

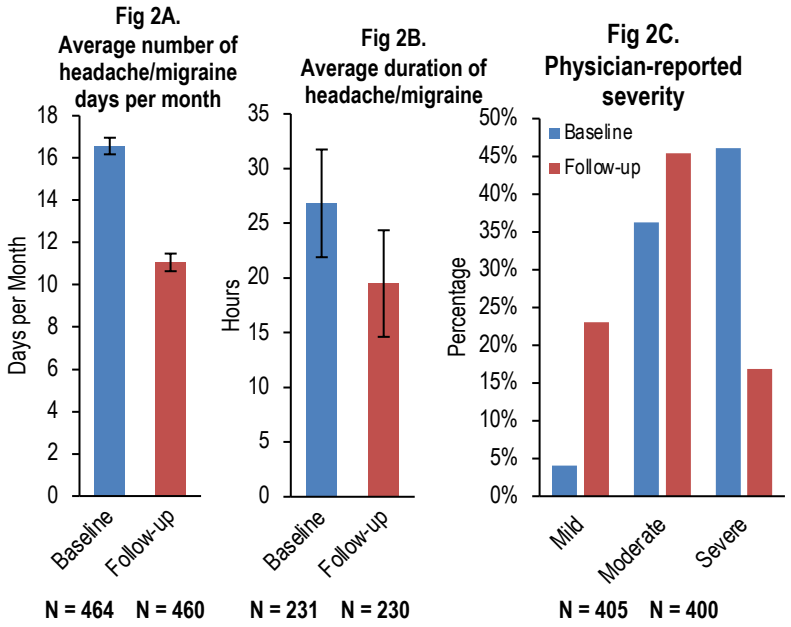
Results and Conclusions

Results (Continued)

Migraine Characteristics During Baseline and Follow-up Periods

- After treatment with erenumab, mean headache/migraine days per month decreased by 5.5 days, with 39% of patients having ≥50% reduction in the mean number of headache/migraine days per month.
- Headache/migraine duration per attack was reduced on average by 6.0 hours.
- At baseline, 46% had physician-assessed severe migraine, whereas it was 17% during the follow-up period.

Figure 2. Frequency, Duration, and Severity of Migraine at Baseline and Follow-up



* For this interim analysis, frequency was available for 464 charts in the baseline and 460 charts in the follow-up period. Duration was reported for 231 patient charts in the baseline and 230 patient charts in the follow-up period. Severity was reported for 405 patient charts in the baseline and 400 patient charts in the follow-up period.

Table 4. Effectiveness: Change from the Baseline to the Study Period

	N = 469		
Patients with information for headache/migraine days per month in the baseline and study period, N (%)	447	(95.3%)	
Change in average number of headache/migraine days per month, mean ± SD [median] [1]	-5.5	± 7.3	-[5]
Patients with at least 50% reduction in average number of headache/migraine days per month, N (%)	172	(38.5%)	
Patients with information for average headache/migraine duration in the baseline and study period, N (%)	178	(38.0%)	
Change in average headache/migraine duration (hours), mean ± SD [median] [1]	-6.0	± 33.5	-[2]
Patients with information for physician-reported severity in the baseline and study period, N (%)	384	(81.9%)	
Patients who improved between the baseline and study period, N (%)	179	(46.6%)	
Patients who had no change between the baseline and study period, N (%)	186	(48.4%)	
Patients who worsened between the baseline and study period, N (%)	19	(4.9%)	

SD: standard deviation
Mean, standard deviation, and median were reported out of non-missing data.

Table 5. Clinical Characteristics

	N = 469			
	Baseline Period		Follow-up Period	
Migraine triggers, N (%)				
Stress	134	(28.6%)	146	(31.1%)
Seasonal weather changes	116	(24.7%)	118	(25.2%)
Sensory stimuli	111	(23.7%)	110	(23.5%)
Changes in wake-sleep pattern	76	(16.2%)	74	(15.8%)
Skipping meals	58	(12.4%)	58	(12.4%)
Alcoholic drinks	57	(12.2%)	56	(11.9%)
Hormonal changes in women	47	(10.0%)	43	(9.2%)
Changes in environment	41	(8.7%)	41	(8.7%)
Intense physical exertion	39	(8.3%)	38	(8.1%)
Caffeinated drinks	28	(6.0%)	27	(5.8%)
Food (salty, processed)	18	(3.8%)	16	(3.4%)
Food additives	14	(3.0%)	12	(2.6%)
Medications	7	(1.5%)	6	(1.3%)
Migraine with aura, N (%)	49	(10.4%)	20	(4.3%)
History of menstrual-related migraine, N (%)	75	(16.0%)	52	(11.1%)

Limitations

- As with other chart review studies, there is the potential for missing or inaccurate data recorded in the patient charts. Additionally, physicians may only have access to data related to care provided at their center.
- Headache and migraine days were not assessed separately.
- Results may not be generalizable to all patients with migraine and to those with episodic migraine or patients treated in other settings, given this study focused on patients from select participating headache centers who were required to have been treated with erenumab for 3 months.
- To minimize the recency bias of physicians selecting charts from patients seen recently, centers were advised to select patient charts based on a method of random selection (e.g., reverse alphabetical order). In addition, centers were selected based on having a significant number of patients with migraine treated with erenumab and may not be representative of general U.S. treatment practices for patients with migraine.
- Given erenumab had been available for less than two years at the time of chart abstraction, results describe erenumab use for centers that can be considered as "early adopters" of anti-CGRPs.

Conclusion

- In patients with chronic migraine, many of whom were refractory to preventive therapies, erenumab reduced the mean number of headache/migraine days per month and the average duration of migraine/headache attacks.
- After erenumab initiation, patients treated in 5 US headache centers largely continued to be managed via a polypharmacy approach.

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