Onabotulinumtoxin A versus Anti-CGRP Antibody Therapy for Chronic Migraine Management

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Introduction

Breakthroughs in migraine management have shown the benefit of neurotoxin onabotulinumtoxin A and, more recently, calcitonin gene-related peptide (CGRP) antibodies. Based on current literature, there is evidence that intramuscular injection of onabotulinumtoxin A[1-4] or subcutaneous administration of anti-CGRP monoclonal antibody (MAB)[5-8] will provide pain relief for chronic migraine headaches. The efficacy of onabotulinumtoxin A and anti-CGRP MAB have been studied separately, but there are very few studies comparing them directly. This retrospective study evaluates the effectiveness of onabotulinumtoxin A versus the anti-CGRP MAB drug Erenumab for chronic migraine treatment.

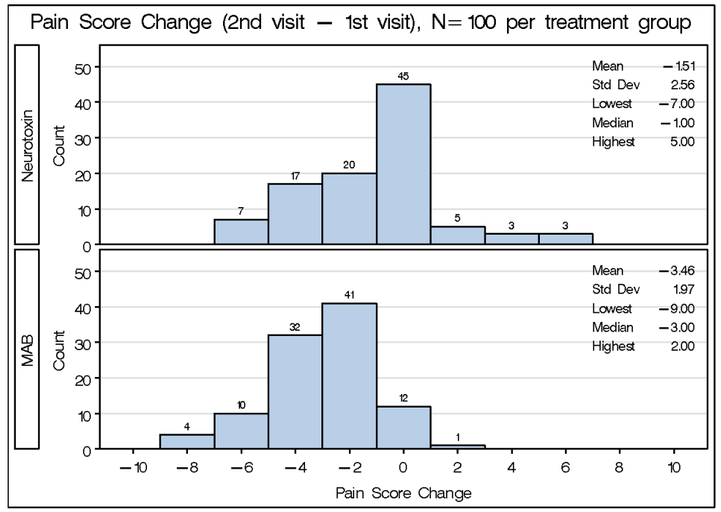
Methods

After Ochsner IRB approval, we reviewed the data of 200 patients who met inclusion criteria. 100 patients had received treatment with onabotulinumtoxin A, and 100 had received anti-CGRP MAB treatment with Erenumab. Subjects underwent onabotulinumtoxin A treatment from April 2016 to September 2019 or Erenumab treatment from May 2018 to September 2019. We analyzed pain scores before and after initiation of either the neurotoxin or MAB therapy. Pain scores were obtained using the numerical pain rating scale (NPRS).

Results

The mean pain score before neurotoxin treatment was 4.65, and the mean pain score after was 3.14. In comparison, the mean pain score before MAB therapy was 5.67, and the mean pain score after was 2.21. The median change in pain scores for the neurotoxin group was -1 while the median change in pain scores for the MAB group was -3 [p <.0001, 95% CI -2 (-3,-1)]. The average reduction in pain scores using the neurotoxin was 28.8% compared to 63.5% for MAB therapy. 55% of patients on MAB therapy had a reduction in pain scores greater than 50%, whereas 31% of patients on neurotoxin therapy had a reduction in pain scores greater than 50%. The median number of days between therapy initiation and pain score after initiation for the neurotoxin group was 92 compared to 116.5 for the MAB group [p=0.0002, 95% CI 22.5 (9,36)].

	Neurotoxin	MAB	P-value	95% CI for Median
Days Between Visits			0.0002	22.5 (9,36)
Mean (Std Dev)	102.14 (42.35)	138.96 (76.67)		
(Min, Median, Max)	(0, 92, 257)	(14, 116.5, 402)		
Pain Scores Before				
Mean (Std Dev)	4.65 (2.51)	5.67 (2.06)		
(Min, Median, Max)	(1, 4, 10)	(2, 5, 10)		
Pain Scores After				
Mean (Std Dev)	3.14 (2.78)	2.21 (2.14)		
(Min, Median, Max)	(0, 3, 10)	(0, 2, 7)		
Pain Scores Change			<.0001	-2 (-3,-1)
Mean (Std Dev)	-1.51 (2.56)	-3.46 (1.97)		
(Min, Median, Max)	(-7, -1, 5)	(-9, -3, 2)		



Conclusion

The majority of patients in both treatment groups had reduced pain scores; therefore, our findings support current literature that both neurotoxin and MAB therapy treat chronic migraine headaches. Furthermore, our study provides results to support the superiority of the anti-CGRP MAB drug Erenumab over onabotulinumtoxin A in terms of pain relief, which was statistically significant, over a longer duration of time, which was not statistically significant but could be clinically significant. MAB therapy may be recommended to patients with chronic migraines refractory to conservative treatment and who fail to improve with neurotoxin therapy. Further research is warranted to compare onabotulinumtoxin A with other anti-CGRP MAB drugs such as Galcanezumab and Fremanezumab.

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