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Dual Therapy With Anti-CGRP Monoclonal Antibodies and Botulinum Toxin for Migraine Prevention: Is There a Rationale?

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Abstract

Objective: To narratively review the pathophysiological rationale of dual therapy with anti-calcitonin gene-related peptide monoclonal antibodies and botulinum toxin type A in treatment-resistant chronic migraine prevention.

Background: For the prevention of chronic migraine, several pharmacological therapies are available, including oral medications, botulinum toxin type A, and the newly approved monoclonal antibodies targeting calcitonin gene-related peptide or its receptor. However, monotherapy does

not yield benefits in some affected individuals, which raises the question of whether dual therapy with monoclonal antibodies and botulinum toxin type A hold promise in patients with treatment-resistant chronic migraine.

Method: We searched MEDLINE for articles published from database inception to December 31st, 2019. Publications were largely selected from the past 10 years but commonly referenced and highly regarded older publications were not excluded.

Results: Preclinical data suggest that anti-calcitonin gene-related peptide monoclonal antibodies and botulinum toxin type A have synergistic effects within the trigeminovascular system. Of note, findings indicate that fremanezumab - an antibody targeting the calcitonin gene-related peptide - mainly prevents the activation of Aδ-fibers, whereas botulinum toxin type A prevents the activation of C-fibers.

Conclusion: There is currently only indirect preclinical evidence to support a rationale for dual therapy with anti-calcitonin gene-related peptide monoclonal antibodies and botulinum toxin type A for chronic migraine prevention. Rigorous studies evaluating clinical efficacy, safety, and cost-effectiveness are needed.

Keywords: antagonism; combined therapy; headache; neurotransmission; pain; pathophysiology.

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