

Novel Strategies for Acute Relief and Prevention of Migraine

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ABSTRACT

Migraine is a debilitating disorder that is often under diagnosed in clinical practice. Early detection of migraine leads to outstanding improvements in patients' quality of life. New researchers had developed the central sensitization and cutaneous allodynia in chronic migraine which is helpful in early treatment approach with triptans and other agents in acute migraine episodes. Right now, five agents are accepted by US food and drug administration (FDA) for migraine prevention. They are namely Divalporex sodium, Propranolol, Timolol maleate, Topiramate and Methysergide. For so many years, other medications have been used to prevent migraine with not much more success rate. They are Tricyclic anti depressants, anti epileptic agents, Nonsteroidal anti-inflammatory drugs (NSAIDs), Selective serotonin reuptake inhibitors (SSRIS), Calcium channel blockers and muscle relaxants. Calcitonin gene related peptide antagonist, Ditans, Botulinum toxin type A, Orexin receptor antagonists etc were the recent novel agents in the treatment and management of migraine. These novel agents showed more affect than other medications in the acute and prophylactic management of migraines. They play a pivotal role in the standard care for migraine treatment that will improve the patient quality of life with better outcomes.

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Introduction

Migraine is a debilitating disorder that is often under diagnosed in clinical practice. Early detection of migraine leads to outstanding improvements in patients' quality of life. New researchers had developed the central sensitization and cutaneous allodynia in chronic migraine which is helpful in early treatment approach with triptans and other agents in acute migraine episodes [1,2].

Right now, five agents are accepted by US food and drug administration (FDA) for migraine prevention. They are namely Divalporex sodium, Propranolol, Timolol maleate, Topiramate and Methysergide. For so many years, other medications have been used to prevent migraine with not much more success rate. They are Tricyclic anti depressants, anti epileptic agents, Nonsteroidal anti-inflammatory drugs (NSAIDs), Selective serotonin reuptake inhibitors (SSRIS), Calcium channel blockers and muscle relaxants. The recently developed prophylactic agent accepted by FDA is Topiramate. This is an anti epileptic agent but was under non-labeled use in migraine prevention. This drug reduces 50% of migraine attacks and effectively tolerated. The dose of Topiramate is 100-200mg. The initial Topiramate therapy can be started with dose of 25 mg and gradually increases with 25 mg for every week to 10

days. Some adverse effects like transient peripheral paresthesia and acute glaucoma can be rarely observed. Patients found outstanding results with this agent and also some patients lost weight during Topiramate therapy [3,4].

Calcitonin gene related peptide antagonist (Gepants)

In migraine, the perivascular nerves in migraine become stiff by the release of substance p, neurokinin A, calcitonin producing peptide & nitric acid that follows to vasodilation and vascular inflammation. VIP (vasoactive intestinal peptide) are the first neuropeptides found to be a strong vasodilator that acts on cranial nerve-v. Recently, researchers had discovered CGRP, mRNA in the central and peripheral nervous system. It is a strong vasodilator of central arteries.

The new discoveries on CGRP helps researchers to do bottom line inspections on neuropeptide through preclinical and clinical trial that helped for the invention of first, second and third generation of CGRP receptors (Gepants). Research findings were found to be safe and well tolerated in preventing migraine especially in the patients with cardiovascular disorders. There is no evidence of serious adverse drug reactions with Gepants among the patients with cardiovascular disorders and these

CGRP antagonists are the first oral drugs that showed unremarkable results. If these drugs are given in the combination with monoclonal antibodies shows an alternative treatment approach for prophylactic migraine condition with both safe and excellent tolerability to lead a life without any recurrent migraine attacks.

Ditans

Ditans are one of the best and safer classes of drugs with minor cardiovascular adverse effects. They do not cause any vasoconstriction and therefore it is helpful in ischemic cardiovascular patients. But unfortunately, it shows central nervous system effects such as dizziness, nausea, fatigue etc.

Botulinum toxin type A (B_oNTA)

B_oNTA regulates the neurotransmitter release. It build ups the transmission and occurrence of variation in the surface expression of receptors and cytokinines. It shows the same effectiveness like Topiramate with good safety profiles [5,6].

Orexin receptor antagonists

There are two types of orexins namely orexin A and B which are observed to be neuropeptides. They are produced in the hypothalamus that plays a role in nociception. These drugs are designed for the treatment of insomnia but did not show the enough efficacy whereas in case of migraine prevention effective results were observed in the aspect of recurrent attacks [7].

Neurostimulation

Cefaly is a device with supra orbital transcutaneous active properties and is effective in migraine prevention. Research findings showed the patients with low migraine attacks without any pharmacological preventive therapies [8-10].

Conclusion

The novel agents showed more affect than other medications in the acute and prophylactic management of migraines. These novel agents will play a pivotal role in the standard care for migraine treatment that will improve the patient quality of life with better outcomes.

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