

Pharmacotherapy of migraine prophylaxis: Effectiveness in reducing attack frequency

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Migraine is a very serious health issue prevailing not only in the old age people but in really small ages as well. Since it is very painful in the head and one cannot perform normally therefore, it's of utter importance to improve the prevailing condition of migraine and manage it properly. Now, when talking about migraine management it includes pharmacological therapies and medications. Pharmacological therapies can be subdivided into two parts acute or symptomatic treatment and preventive treatment called prophylaxis. We here would specifically be talking about the pharmacological prophylaxis. Pharmacological prophylaxis for migraine consists of a long list of drugs. The Beta blockers, antidepressants, antiepileptics, calcium channel blockers, pregabalin, levetiracetam, etc. The main drugs utilized for a long time and a number of studies have been conducted to investigate their efficacy in migraine prophylaxis. To assess the effectiveness of well-known drugs and some newer ones we searched last five year, original research articles on MEDLINE, Google Scholar and EMBASE on 15th February 2019. We selected randomized or quasi-randomized trials of drugs used in migraine prophylaxis. We didn't compare each of them but searched for their effectiveness individually. Percentage reduction in attack frequency was evaluated. We found 41 studies out of which we include 14 studies. We excluded animal studies, abstract with only papers and studies with missing data. Amitriptyline was found to be most effective ranging from 60% to 83%. Thought it has great amount of effectiveness but is has not been approved by the USA food and drug administration (FDA). Therefore it also requires a minimum time period of 4-6 weeks for it to show it's effectiveness. For Sodium valproate was the most studied drug with 60% to 78% reduction in attack frequency after two months. Sodium valproate had been established in for treatment of epilepsy. Hence it was considered to act by mimicking γ -aminobutyric acid. Though an evidence was also gained that valproate could prevent migraine attacks, especially in the adults and unlike pregabalin it is widely used for treating and conducting migraine management in the US and European countries. From sources it was told that, Hering and Kuritzk reported, that valproate had been really effective in preventing the dreadful migraine or even reducing the frequency, severity, and duration of attacks in 86.2% patients over a period of 8 weeks. Shaygannejad also came reporting for the same and further suggested, about treatment with valproate could significantly decreases the duration, monthly frequency,

and intensity of migraine probably after 8 weeks. Takeshima had reported that the efficacy treatment with valproate was 59.7% after 2 months after having the treatment. These all reports together indicate that apart from the majority some patients having migraine did not responded really well to treatment of it with valproate. Therefore if prophylactic treatment with a particular drug is unsuccessful, it can be substituted by a different prophylactic drug. Pregabalin showed 65% reduction in attack frequency after two months treatment. Pregabalin, is an anticonvulsant drug which binds to alpha2-delta subunit of voltage-gated calcium channels and inhibits neurotransmitter release which also has the glutamate, norepinephrine, serotonin, dopamine, substance P, and calcitonin gene-related peptide. All of these mechanisms are taken from the existing data which includes glutamatergic mechanisms in migraine pathophysiology. High plasma and cerebrospinal fluid levels of glutamate has also been seen in patients suffering from migraine. There is no available trial of pregabalin use in the migraine prophylaxis in adults. Levetiracetam found to be effective by 58% to 70% reduction in attack frequency. levetiracetam has excellent bioavailability, linear kinetics, minimal plasma protein binding and quick achievement of steady state concentrations. It has no clinically relevant drug-drug interactions. Its rapid onset of action, lack of drug-drug interactions and availability as an intravenous solution makes it an optimal drug to treat epilepsy associated with other medical conditions. Moreover, no serious idiosyncratic side effects have been reported for levetiracetam. thus making it an interesting option in the treatment of the migraine therapy. Mechanisms of action of this drug are quite very much unknown. Though recently, it has been seen to exert inhibitory effects on neuronal-type calcium channels. calcium channelopathy has also been seen as a factor which may be responsible for neuronal hyperexcitability in migraine. Though it is more likely to be believed that levetiracetam may be working its prophylactic effects via inhibiting these channels. Flunarizine effectiveness ranges from 46% to 76%. Flunarizine is a calcium channel blocker which has the tendency to reduces smooth muscle spasm. After studying it thoroughly it is heavily suggested that flunarizine is just the same as effective as propranolol or topiramate for reducing the frequency of migraines in adults. Though having only one drawback and it could be considered most common adverse effect of it is gaining of weight. Erenumab (a human

monoclonal antibody which blocks calcitonin gene related receptor) also showed 50% reduction in attack frequency. Fremanezumab (quarterly administration) is moderately effective with 40% reduction in attack frequency. Reduction in attack frequency was 63% by melatonin. Omega 3 polyunsaturated fatty acids showed 66% reduction in attack frequency. Long chains of omega-3 polyunsaturated fatty acids

were found to be associated with lower prevalence of many difficult headache in the US. People who have higher levels of long chain omega-3 polyunsaturated fatty acids (PUFAs) in their diet may have lower prevalence of severe headache, according to a recent study. We may conclude that in reducing migraine attack frequency, older drugs are more effective though newer one also seems to be promising.