Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

ORIGINAL RESEARCH

Efficacy and safety of low-dose sodium valproate and low-dose propranolol sustained release in the prophylaxis of common migraine headache

Dr.Mohit Patnaik

Assistant Professor, Department of Pharmacology, National Capital Region Institute of Medical Science, Meerut, U. P., India

Correspondence:
Dr.Mohit Patnaik
Assistant Professor, Department of Pharmacology, National Capital Region Institute of Medical Science, Meerut, U. P., India

Received: 09 March, 2022 Accepted: 15 April, 2022

Abstract

Background: Migraine headache is a common neurological disorder with heterogeneous characteristics resulting in a range of symptom profiles, burden and disability. The present study was conducted to assess efficacy and safety of low‑dose sodium valproate and low‑dose propranolol sustained release (SR) in the prophylaxis of common migraine headache.

Materials & Methods: 70 patients of common migraine headaches of both genderswere divided into 2 groups of 35 each. Group I received sodium valproate 500 mg/day and group II received propranolol SR 40 mg/day. Parameters such as the decrease in mean headache frequency at the end of 12 weeks was recorded.

Results: Group I had 15 males and 20 females and group II had 14 males and 21 females. At 0 week, 4 weeks, 8 weeks and 12 weeks, headachefrequency in group I was 4.9, 3.6, 2.5 and 2.1 and in group II was 5.4, 3.0, 2.1and 2 respectively. Severity in group I found to be 2.9, 2.6, 1.4 and 1.1 and in group IIwas 2.8, 2.8, 1.6 and 1.3 respectively. Duration in group I was 10.5 hours, 7.3 hours, 7.1 hours and 5.6 hours and in group II was 10.4 hours, 9.4 hours, 7.3 hours and 3.2 hours respectively. The difference was significant ($P< 0.05$).

Conclusion: Both low-dose sodium valproate and low-dose SR formulation of propranolol significantly decreased the frequency, severity, and duration of migraine headache. Low-dose SR formulation of propranolol offers a significant decrease in the severity of migraine headache compared to low-dose sodium valproate.

Key words: sodium valproate, Migraine headache, propranolol

Introduction

Migraine headache is a commonneurological disorderwith heterogeneous characteristics resulting in a range of symptom profiles, burden and disability.The prevalence of migraine is about 18% in males and 6% in females.[1] Majority of the patients with migraine require medication for the acute attack. Patients with anincreased frequency of attacks (≥4/month, usually over 4–6 months) or with attacks that are either poorly responsive or unresponsive to acute treatments are ideal candidates for a prophylactic therapy, with the aim to reduce the frequency of attacks.[2,3]

Several types of drugs, including anti-epileptics, antidepressants, b-blockers and calcium blockers, are recommended by the Japanese Guidelines for the Management of Primary Headache 2006 for use in the prophylactic treatment of migraines.[4]Propranolol is one of the

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

most regularly used drugs for migraine prophylaxis with many clinical trials consistently proving its efficacy in reducing the frequency of migraine attacks. The prophylactically effective dose of propranolol ranges from 40 to 400 mg/day.[5]Efficacy of anticonvulsant drugs for migraine prophylaxis has been tested since long, with sodium valproate being the first drug approved from this group.The prophylactically effective dose of sodium valproate ranges from 500 to 1500 mg/day.[6]The present study was conducted to assess efficacy and safety of low‐ dose sodium valproateand low‐ dose propranolol sustained release (SR) in the prophylaxis of common migraine headache.

Materials & Methods

The present study comprised of 70 patients of common migraine headachesof both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 35 each. Group I received sodium valproate 500 mg/day and group II received propranolol SR 40 mg/day. Parameters such as the decrease in mean headache frequency at the end of 12 weeks was recorded. The patients were assessed at 0, 4, 8, and 12 weeks. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Groups	Group I	Group II
Drug	sodium valproate 500 mg/day	propranolol SR 40 mg/day
M:F	15:20	14:21

Table I shows that group I had 15 males and 20 females and group II had 14 males and 21 females.

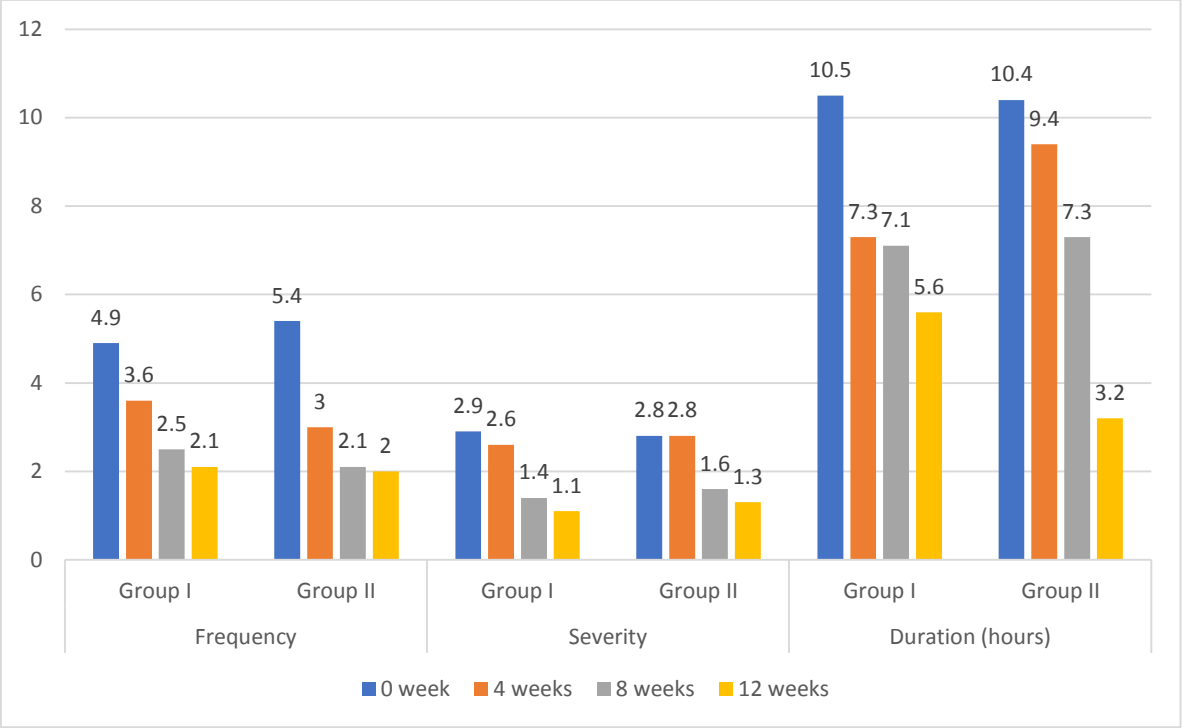
Table II Change in headache characteristics

Headache	Groups	0 week	4 weeks	8 weeks	12 weeks	P value
Frequency	Group I	4.9	3.6	2.5	2.1	0.05
	Group II	5.4	3.0	2.1	2	
Severity	Group I	2.9	2.6	1.4	1.1	0.02
	Group II	2.8	2.8	1.6	1.3	
Duration (hours)	Group I	10.5	7.3	7.1	5.6	0.01
	Group II	10.4	9.4	7.3	3.2	

Table II, graph I shows that at 0 week, 4 weeks, 8 weeks and 12 weeks, headache frequency in group I was 4.9, 3.6, 2.5 and 2.1 and in group II was 5.4, 3.0, 2.1 and 2 respectively. Severity in group I found to be 2.9, 2.6, 1.4 and 1.1 and in group II was 2.8, 2.8, 1.6 and 1.3respectively.Duration in group I was 10.5hours, 7.3hours, 7.1hours and 5.6hours and in group II was 10.4hours, 9.4hours, 7.3hours and 3.2hoursrespectively.The difference was significant (P< 0.05).

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

Graph I Change in headache characteristics



Discussion

Migraines are controlled by acute treatment to stop an attack or prophylactic treatment to reduce the frequency, duration or severity of attacks.[7,8]Migraine is a major social issue for public health intervention as it is the third most common neurological disorder globally, with a prevalence of nearly 15%.[9] Migraine always leads to a lower quality of life compared with diabetes, heart disease, and depression, so it has been ranked as one of the topmost disabling health disorders.[10,11]The present study was conducted to assess efficacy and safety of low‐dose sodium valproate and low‐dose propranolol sustained release (SR) in the prophylaxis of common migraine headache.

We found that group I received sodium valproate 500 mg/day and group II received propranolol SR 40 mg/day. group I had 15 males and 20 females and group II had 14 males and 21 females. Takeshima et al[12]evaluated the effectiveness and safety of an extended-release tablet of sodium valproate in the prophylactic treatment for patients with migraine. A total of 1222 patients with migraine of all age groups (aged < 0.001): 70.8% of patients experienced remission of migraine by ≥30%, 59.0% by ≥50% and 11.8% by ≥100%. Sodium valproate tablet was the most effective in patients with more migraine days, and complete remission was observed in 29% of patients whose migraine days were less than 3 days per 4 weeks at baseline. The extended-release tablet of sodium valproate reduced migraine intensity and duration of migraine attacks. The incidence of adverse drug reactions was 6.3% (67/1070 patients) and well tolerated.

We found that at 0 week, 4 weeks, 8 weeks and 12 weeks, headachefrequency in group I was 4.9, 3.6, 2.5 and 2.1 and in group II was 5.4, 3.0, 2.1 and 2 respectively. Severity in group I found to be 2.9, 2.6, 1.4 and 1.1 and in group IIwas 2.8, 2.8, 1.6 and 1.3 respectively. Duration in group I was 10.5 hours, 7.3 hours, 7.1 hours and 5.6 hours and in group II was 10.4 hours, 9.4 hours, 7.3 hours and 3.2 hours respectively.Dakhale et al[13] compared sodium valproate and propranolol in common migraine headache60 patients which were randomly divided into two treatment groups treated by sodium valproate 500 mg/day and propranolol SR 40 mg/day, respectively. Fifty-five patients completed the study. At the end of the

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

treatment, both sodium valproate and propranolol caused a significant reduction in frequency, severity, and duration of migraine headache. Propranolol caused significantly greater reduction in the severity of headache than sodium valproate. The percentage of responders was 60% in sodium valproate group and 70% in propranolol group. Drowsiness was the most common adverse effect noted in both the groups.

Kozubski et al[14] in their study 5 women with migraine without aura treated with the daily dose of 1000-1500 mg of SV, during 10 weeks. The results were compared with the effect of propranolol administered to the same patients, in daily dose of 120-160 mg during 10 weeks. The effects were similar: in both methods more than 50% reduction of frequency and severity of attacks was obtained. The side effects were generally mild; in no case the treatment was stopped.

The limitation the study is small sample size.

Conclusion

Authors found that both low-dose sodium valproate and low-dose SR formulation of propranolol significantly decreased the frequency, severity, and duration of migraine headache. Low-dose SR formulation of propranolol offers a significant decrease in the severity of migraine headache compared to low-dose sodium valproate.

References

1. Bostani A, Rajabi A, Moradian N, Razazian N, Rezaei M. The effects of cinnarizine versus sodium valproate in migraine prophylaxis. Int J Neurosci2013;123:487-93.
2. Sadeghian H, Motiei-Langroudi R. Comparison of levetiracetam and sodium valproate in migraine prophylaxis: A randomized placebo-controlled study. Ann Indian AcadNeurol2015;18:45-8.
3. Rahimdel A, Zeinali A, Yazdian-Anari P, Hajizadeh R, Arefnia E. Effectiveness of Vitamin B2 versus sodium valproate in migraine prophylaxis: A randomized clinical trial. Electron Physician 2015;7:1344-8.
4. Ramadan NM. Prophylactic migraine therapy: Mechanisms and evidence. Curr Pain Headache Rep 2004;8:91-5.
5. Stovner LJ, Linde M, Gravdahl GB, Tronvik E, Aamodt AH, Sand T, et al. A comparative study of candesartan versus propranolol for migraine prophylaxis: Arandomised, triple-blind, placebo-controlled, double cross-over study. Cephalalgia 2014;34:523-32.
6. Cortelli P, Sacquegna T, Albani F, Baldrati A, D'Alessandro R, Baruzzi A, et al. Propranolol plasma levels and relief of migraine. Relationship between plasma propranolol and 4-hydroxypropranolol concentrations and clinical effects. Arch Neurol1985;42:46-8.
7. Togha M, RahmatJirde M, Nilavari K, Ashrafian H, Razeghi S, Kohan L. Cinnarizine in refractory migraine prophylaxis: Efficacy and tolerability. A comparison with sodium valproate. J Headache Pain 2008;9:77-82.
8. Brunton LL, Chabner BA, Knollmann BC. Goodman and Gilman's the Pharmacological Basis of Therapeutics. 12th ed. China: McGraw-Hill Companies, Inc.; 2011. p. 276-607.
9. PascualJ, Polo JM, Berciano J. The dose of propranolol for migraine prophylaxis. Efficacy of low doses. Cephalalgia 1989;9:287-91.
10. Jensen R, Brinck T, Olesen J. Sodium valproate has a prophylactic effect in migraine without aura: A triple-blind, placebo-controlled crossover study. Neurology 1994;44:647-51.
11. Silberstein SD. Preventive migraine treatment. Neurol Clin 2009;27:429-43.

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

12. Takeshima T, Suzuki N, Matsumori Y, Shimmoto N, Kurihara Y, Gunji R, Sakai F. Effectiveness and safety of an extended-release tablet of sodium valproate for the prophylactic treatment of migraine: Postmarketing surveillance in Japan. Neurology and clinical neuroscience. 2016 Jul;4(4):134-41.
13. Dakhale GN, Sharma VS, Thakre MN, Kalikar M. Low-dose sodium valproate versus low-dose propranolol in prophylaxis of common migraine headache: A randomized, prospective, parallel, open-label study. Indian J Pharmacol2019;51:255-62.
14. Kozubski W, Prusiński A. Sodium valproate versus propranolol in the prophylactic treatment of migraine. NeurologiaiNeurochirurgia Polska. 1995 Nov 1;29(6):937-47.