

RESEARCH PAPER

Clinical Improvement in Patients with Neuralgic Upper Limb Pain Treated with Pregabalin and Gabapentin: A Comparative Study

Dr Priyanka¹, Dr Beena², Dr Hitendr Kumar³

¹Senior Resident Deptt of Physiology Pgims, Rohtak
Email: priyankashivangi69@gmail.com

²Professor, Deptt of Physiology, Pgims, Rohtak
Email: beenaphy8@gmail.com

³DM, Cardiology
Email: reserchhub062@gmail.com

ABSTRACT

Background: Neuralgic upper limb pain can cause significant pain and functional disability. Pregabalin and Gabapentin are commonly used in its management. This study compared the clinical outcomes of patients treated with these two drugs.

Methods: A comparative study of 60 patients with neuralgic pain in the upper limb. The patients were divided into two groups, each of 30 patients: Pregabalin was administered to Group I and Gabapentin to Group II. Clinical outcomes were evaluated by the Numerical Rating Scale (NRS) and Pain Disability Questionnaire (PDQ) at baseline, 2 weeks and 6 weeks. Patient satisfaction and adverse effects were noted during follow-up also.

Results: NRS scores decreased from 7.16 ± 0.69 to 2.26 ± 1.01 in the Pregabalin group and from 6.83 ± 0.75 to 1.76 ± 0.62 in the Gabapentin group at 6 weeks ($p < 0.001$ within both groups). PDQ scores decreased from 11.96 ± 2.55 to 3.73 ± 2.04 and from 14.90 ± 3.06 to 3.20 ± 1.71 , respectively ($p < 0.001$ within both groups). Patient satisfaction improved during follow-up. Reported adverse effects included somnolence, dizziness, dry mouth, blurred vision, peripheral edema, and weight gain.

Conclusion: Both Pregabalin and Gabapentin groups showed significant improvement in pain and functional disability over the 6-week follow-up period. The reported clinical outcomes were comparable between the two treatment groups.

How to site this article : Dr Priyanka, Dr Beena, Dr Hitendr Kumar, “ Comparison of Median and Ulnar Nerve Conduction Parameters in Patients with Neuralgic Upper Limb Pain Treated with Pregabalin and Gabapentin” Int J Drug Deliv Technol 2026;16(86s): 474-478; DOI: 10.25258/ijddt.16.86s.53

INTRODUCTION

Neuralgic pain of the upper limb is a common condition that can considerably affect activities of daily living and quality of life. Neuropathic pain is commonly characterized by symptoms including pain, discomfort, and functional limitation. Pregabalin and gabapentin are commonly used to treat neuropathic pain. Both drugs primarily act by decreasing the abnormal excitability of neurons and transmission of pain. Clinical assessment is important to assess the severity of pain and functional disability during treatment. Pain and functional impact measures were the Numerical Rating Scale (NRS) and the Pain Disability Questionnaire (PDQ)^{1,2}.

Pregabalin is rapidly absorbed when administered on an empty stomach, with peak plasma concentrations occurring within one hour. Pregabalin oral bioavailability is estimated to be greater than or equal to 90% and is independent of dose. Pregabalin has been shown to cross the blood-brain barrier in mice, rats, and monkeys. Pregabalin has been shown to cross the placenta in rats and is present in the milk of lactating rats. In humans, the volume of distribution of pregabalin for an orally administered dose is approximately 0.56 L/kg and is not bound to plasma proteins.⁹ Pregabalin undergoes negligible metabolism in humans.^{3,4} The major metabolite is N-methyl pregabalin. Pregabalin is

Clinical Improvement in Patients with Neuralgic Upper Limb Pain Treated with Pregabalin and Gabapentin: A Comparative Study

eliminated from the systemic circulation primarily by renal excretion as unchanged drug. Renal clearance of pregabalin is 73 mL/minute.^{5,6,7}

Gabapentin (1-aminomethyl cyclohexane acetic acid) is a structural analogue of the neurotransmitter i.e Gamma-aminobutyric acid (GABA). Though it is a GABA agonist, it does not bind to GABA A or GABA B receptors. It is neither converted to GABA, nor it is a GABA agonist and even it is not an inhibitor of GABA reuptake or degradation. Gabapentin may promote nonvascular release of GABA.⁴ Gabapentin has antihyperalgesic and antiallodynic properties but does not have significant actions as an antinociceptive agent.^{8,9} The mechanism by which gabapentin exerts its analgesic actions in human has not been clearly established.

METHDOLOGY

The present prospective, randomized study was conducted in the Department of Physiology in

collaboration with Department of Anesthesiology & Critical Care, Pt. B.D. Sharma PGIMS, Rohtak.

A comparative study of 60 patients with neuralgic pain in the upper limb. The patients were divided into two groups, each of 30 patients: Pregabalin was administered to Group I and Gabapentin to Group II. Clinical outcomes were evaluated by the Numerical Rating Scale (NRS) and Pain Disability Questionnaire (PDQ) at baseline, 2 weeks and 6 weeks. Patient satisfaction and adverse effects were noted during follow-up also.

OBSERVATIONS

Both treatment groups showed significant reductions in NRS and PDQ scores over 6 weeks. There were no between-group comparisons at baseline, 2 weeks and 6 weeks that were statistically significant. Patient satisfaction differed by group at 2 weeks but not at 6 weeks

Table 1. NRS score at different time points

Time	Pregabalin (n=30)	Gabapentin (n=30)	Between-group p
Baseline	7.16±0.69	6.83±0.75	0.060
2 weeks	4.93±0.82	4.20±1.18	0.070
6 weeks	2.26±1.01	1.76±0.62	0.060

Table 2. PDQ score at different time points

Time	Pregabalin (n=30)	Gabapentin (n=30)	Between-group p
Baseline	11.96±2.55	14.90±3.06	—
2 weeks	7.36±2.25	7.13±2.62	0.720
6 weeks	3.73±2.04	3.20±1.71	0.327

Table 3. Patient satisfaction after treatment

Satisfaction	Time	Pregabalin	Gabapentin	p
Excellent	2 weeks	0	5	0.010
Good	2 weeks	11	19	0.010
Fair	2 weeks	19	6	0.010
Excellent	6 weeks	19	25	0.175

Clinical Improvement in Patients with Neuralgic Upper Limb Pain Treated with Pregabalin and Gabapentin: A Comparative Study

Good	6 weeks	10	5	0.175
Fair	6 weeks	1	0	0.175

Table 4. Adverse effects during follow-up

Adverse effect	Time	Pregabalin	Gabapentin	p
Dizziness	2 weeks	4	2	0.422
Dizziness	6 weeks	4	2	0.369
Somnolence	2 weeks	9	4	0.422
Somnolence	6 weeks	8	4	0.369
Dry mouth	2 weeks	4	2	0.422
Dry mouth	6 weeks	4	1	0.369
Blurred vision	2 weeks	3	0	0.422
Blurred vision	6 weeks	3	0	0.369
Peripheral edema	2 weeks	1	2	0.422
Peripheral edema	6 weeks	1	2	0.369
Weight gain	2 weeks	0	1	0.422
Weight gain	6 weeks	0	1	0.369

Within-group ANOVA showed a significant reduction in NRS in both groups ($p < 0.001$) and a significant reduction in PDQ in both groups ($p < 0.001$).

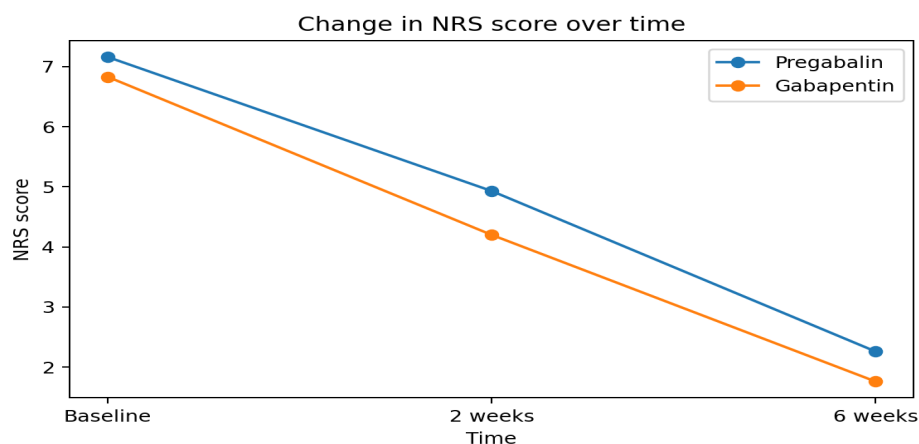


Figure 1. Mean NRS scores at baseline, 2 weeks and 6 weeks.

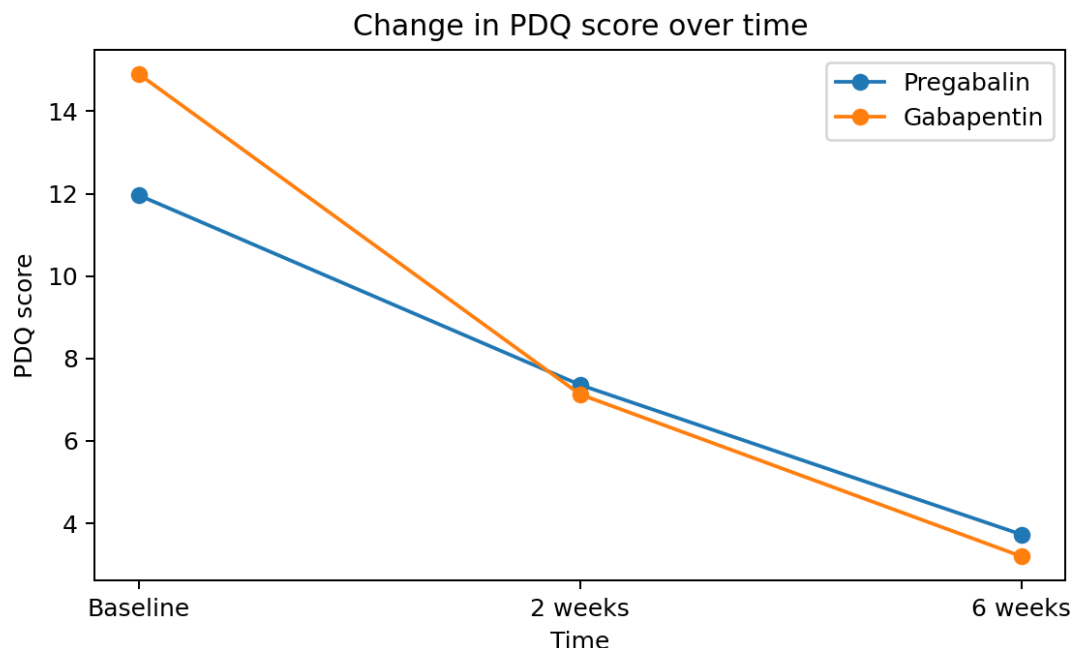


Figure 2. Mean PDQ scores at baseline, 2 weeks and 6 weeks.

DISCUSSION

The present study showed a significant reduction in pain severity in both Pregabalin and Gabapentin groups at 6 weeks follow-up. Mean NRS score in the Pregabalin group was 7.16 ± 0.69 and 2.26 ± 1.01 after treatment and the Gabapentin group was 6.83 ± 0.75 and 1.76 ± 0.62 respectively with significant within group change ($p < 0.001$). A similar pattern was observed for functional disability as assessed by PDQ. The mean PDQ score was reduced from 11.96 ± 2.55 to 3.73 ± 2.04 in the Pregabalin group and from 14.90 ± 3.06 to 3.20 ± 1.71 in the Gabapentin group. The changes within the groups were statistically significant ($p < 0.001$). At follow-up, there was no statistical difference between groups in reported data.

Both groups showed a decrease in NRS and PDQ scores reflecting improvement in pain and pain-related functional disability during the treatment period. Follow-up showed increased patient satisfaction, with more patients reporting excellent or good satisfaction at 6 weeks. Adverse effects of treatment included somnolence, dizziness, dry mouth, blurred vision, peripheral edema, and weight gain. Effects were recorded at 2 and 6 weeks. No statistically significant difference was found between groups for dizziness.

Perez et al evaluated the pregabalin and gabapentin in matched patients with peripheral neuropathic pain. They found that pregabalin appeared to be associated with

greater reduction in mean weekly intensity of pain as compared to gabapentin.¹⁰ Toth investigated the effects of substitution of gabapentin therapy with pregabalin therapy in neuropathic pain due to peripheral neuropathy. He found that pregabalin provided additional pain relief and possible improvement in quality of life above that received by gabapentin use in patients with neuropathic pain due to peripheral neuropathy.¹¹ Our findings concluded that both pregabalin and gabapentin are equally effective in the management of neuralgic upper limb pain.

Overall, the present study results showed that both treatment groups had improvements in clinical pain and disability measures over a six-week period. Within each group the changes observed were significant, whereas the available between-group comparisons did not show a statistically significant difference.

CONCLUSION

Both Pregabalin and Gabapentin groups showed significant improvement in pain severity and functional disability during the 6-week treatment period. Both groups showed significant reductions in NRS and PDQ scores ($p < 0.001$). Patient satisfaction was also better for follow-up. To summarize, both treatments showed improvement in clinical outcome in patients with neuralgic upper limb pain, with no significant difference in the reported clinical measures between groups.

REFERENCE

1. Pallar S, Palmar A M .Pharmacotherphy for neuropathic pain: Progress and prospects. Drug news prospects 2003; 16(9): 622-30.
2. Taylor CP. Mechanism of action of Gabapentin. Drugs Today 1998; 34: 3-11.
3. Mixcoatl ZT, Medina-Santillan R et al. Effect of k⁺ channel modulators on the antiallodegnia effect of gabapentine. Eur J Pharmacol 2004; 484 (2-3): 201-08.
4. Jeffrey K Aronson (4 March 2014). Side Effects of Drugs Annual: A worldwide yearly survey of new data in adverse drug reactions. Newnes. p. 137. ISBN 978-0-444-62636-3.
5. Pan HL, Eisenach JC, Chen SR. Gabapentin suppresses ectopic nerve discharges and reverses allodynia in neuropathic rats. J Pharmacol Exp Ther. 1999; 288:1026-30.
6. M.G. Serpell: Gabapentin in neuropathic pain syndromes: a randomised, double-blind, placebo-controlled trial. Pain 2002; 99: 557–66.
7. To TP, Lim TC, Hill ST, Frauman AG, Cooper N, Kirsas SW et al. Gabapentin for neuropathic pain following spinal cord injury. Spinal Cord. 2002; 40(6):282-5.
8. Aminoff MJ. Clinical electromyography. In: Aminoff MJ editor. Electrodiagnosis in clinical neurology. 2nd ed. New York: Churchill Livingstone;1986. p.231-6.
9. Erin EK, Timothy SC, Moris W. Accuracy of the pain numeric rating scale as a screening test in primary care. J Gen Intern Med. 2007; 22(10):1453–8.
10. Pérez C, Navarro A, Saldaña MT, Masramón X, Rejas J. Pregabalin and gabapentin in matched patients with peripheral neuropathic pain in routine medical practice in a primary care setting: Findings from a cost-consequences analysis in a nested case-control study. Clin Ther. 2010; 32(7):1357-70.
11. Toth C. Substitution of gabapentin therapy with pregabalin therapy in neuropathic pain due to peripheral neuropathy. Pain Med. 2010; 11(3):456-65.