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Original Research

Carbamazepine versus gabapentin in patients of trigeminal neuralgia

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ABSTRACT:

Background: The present study was conducted to compare Carbamazepine (CBZ) and gabapentin (GBP) in management of TN. **Materials & Methods:**82 patients of primary trigeminal neuralgia of both genderswere randomly divided into 2 groups of 41 each. Group I patients were prescribed carbamazepine in the dose range of 400mg to 1200 mg and group II patients were prescribed gabapentin in the dose range of 600mg to 1800mg. Patients were recalled on 3rd day, 15th day, 1 month and 3 months period. **Results:** Group I patients were prescribed carbamazepine and group II patients were prescribed gabapentin. Group I had 18 males and 23 females and group II had 20 males and 21 females. On 3rd day, VAS in group I was 7.0 and in group II was 7.6, on 15th day was 4.8 in group I and 4.0 in group II, on 1 month was 3.6 in group I and 3.2 in group II and on 3rd month was 2.8 in group I and 1.6 in group II. The difference was significant (P< 0.05). **Conclusion:** Carbamazepine found to be effective than gabapentin in patients with trigeminal neuralgia.

Key words: Carbamazepine, Trigeminal neuralgia, pain

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INTRODUCTION

Trigeminal neuralgia (TN) is a common type of neuropathic pain, which is characteristically sudden, usually unilateral, severe, brief, stabbing, and the recurrent electric shock-like episodes of pain lasts from a few seconds to < 2 minutes in the area of one or more branches of the trigeminal nerve. The disease usually has trigger points and is often induced in the process of daily routines such as washing face, brushing teeth, talking, and even shaving. The annual incidence is 5.9/ 100,000 women and 3.4/100,000 men. The incidence tends to be slightly higher among women at all ages, and even increases with age.[1]

Currently, drug therapy is most commonly used in the treatment of TN, and carbamazepine (CBZ) is recommended as the first-line medical treatment according to the American Academy of Neurology and the European Federation of Neurological Societies, and it has achieved a reduction in attacks in up to 88% ofpatients.[2] However, the therapeutic index of CBZ is relatively narrow. Its efficacy is compromised by poor tolerability of serious adverse effects such as vertigo, nausea, and white blood cell reduction.[3] Besides, some studies show that CBZ has no significant efficacy in partial patients.

Gabapentin (GBP), a newer anti-epileptic drug, is widely used in clinical treatment of TN. Studies have demonstrated that GBP has broad application prospects in chronic pain syndromes, especially in the neuropathic pain.[4] Furthermore, GBP has been the first-choice drug therapy for all types of neuropathic chronic pain in several international pain control centers. Its effects contain relatively low rate of adverse reactions, lack of interaction with other drugs acting on the nervous system, and evident perception of its efficacy. And whenever CBZ fails to control TN, GBP can be used as an alternative for reducing its intensity. But in comparison with CBZ, its efficacy and safety remain controversial.[5] The present study was conducted to comparescarbamazepine and gabapentin in management of TN.

MATERIALS & METHODS

The present study was conducted on82 patients of primary trigeminal neuralgia of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were randomly divided into 2 groups of 41 each. Group I patients were prescribed carbamazepine

in the dose range of 400mg to 1200 mg and group II patients were prescribed gabapentin in the dose range of 600mg to 1800mg. Patients were recalled on 3rd day, 15th day, 1 month and 3 months period. Response of the drug was recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Drug	Carbamazepine	Gabapentin
M:F	18:23	20:21

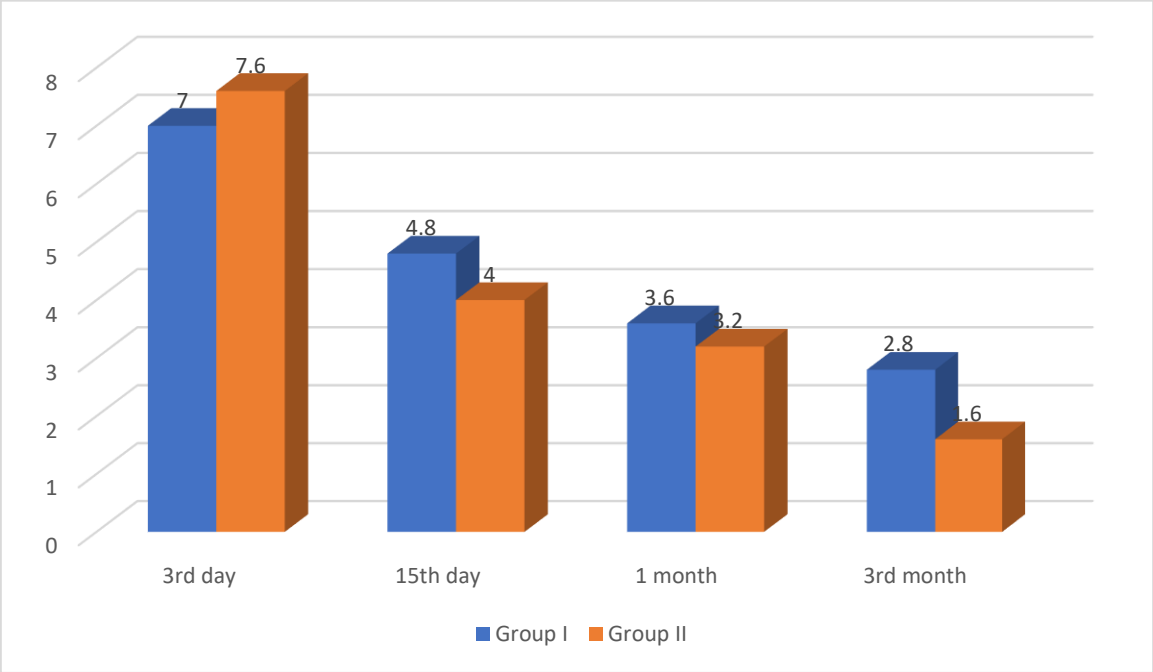
Table I shows that group I patients were prescribed carbamazepine and group II patients were prescribed gabapentin. Group I had 18 males and 23 females and group II had 20 nales and 21 females.

Table II Comparison ofpain (VAS)

Duration	Group I	Group II	P value
3rd day	7.0	7.6	0.82
15th day	4.8	4.0	0.11
1 month	3.6	3.2	0.09
3rd month	2.8	1.6	0.02

Table II, graph I shows that on 3rd day, VAS in group I was 7.0 and in group II was 7.6, on 15th day was 4.8 in group I and 4.0 in group II, on 1 month was 3.6 in group I and 3.2 in group II and on 3rd month was 2.8 in group I and 1.6 in group II. The difference was significant (P< 0.05).

Graph I Comparison ofpain (VAS)



DISCUSSION

The antiepileptic agents carbamazepine and gabapentin are effective against neuropathic pain and trigeminal neuralgia. However, the action of these antiepilep-tic drugs on neuronal activity in the brain may not be simple. A large body of evidence indicates that carbamazepine may interact with different types of ion channels and synaptic transmission.[6] The molecular targets for ion channels have generally been voltage-gated Na+ channels, Ca^{2+} channels and K+ channels. An increasing number of findings indicate that carbamazepine induces the inhibition of glutamate release, inhibition of an adenosine receptor and modulation of neuromodulator levels, such as those of serotonin, dopa-min and cyclic adenosine monophosphate (AMP). In addition, the effects of gabapentin on neural activity are not explained by a single mechanism.[7] Although gabapentin is a structural analogue of γ amino-butyric acid (GABA), it has no affinity for GABA receptors. The main target of gabapentin is synaptic transmission, where it inhibits voltage-gated Ca^{2+} channels in the presynap-tic membrane, which inhibits the release of glutamate and substance P.[8] Recent evidence suggests that other actions of gabapentin include inhibition of glutamatergic *N*-methyl-D-aspartate (NMDA)

receptors and an increase in GABA release.[9]The present study was conducted to compares carbamazepine and gabapentin in management of TN.
In present study, Patients were randomly divided into 2 groups of 41 each. Group I patients were prescribed carbamazepine and group II patients were prescribed gabapentin. Group I had 18 males and 23 females and group II had 20 males and 21 females. Cheshire et al[10]examined 194 consecutive cases of trigeminal neuralgia, many of whom had paroxysmal facial pain resistant to previous surgical interventions or treatment with multiple medications. Of the 92 who had received a trial of gabapentin, 43 reported reduction in facial pain. This benefit was complete in 16, nearly complete in 9, moderate in 12, and partial in 6. Onset of pain relief occurred generally within 1 to 3 weeks, depending on the rate and end point of dose titration. The effective range of stable daily dosing varied from 100 to 2400 mg divided 3 times a day, with a mean of 930 mg. Pain relief was sustained in two thirds during a mean follow-up time of 8 months. The fact that gabapentin was well-tolerated and without serious side effects is an important advantage when prescribing for elderly patients.
We found that on 3rd day, VAS in group I was 7.0 and in group II was 7.6, on 15th day was 4.8 in group I and 4.0 in group II, on 1 month was 3.6 in group I and 3.2 in group II and on 3rd month was 2.8 in group I and 1.6 in group II.Yuan et al[11]evaluated the safety and efficacy of gabapentin in comparison with carbamazepine in the treatment of trigeminal neuralgia. Sixteen randomized controlled trials that included 1,331 patients were assessed. The meta-analysis showed that the total effective rate of gabapentin therapy group was similar with carbamazepine therapy group. While the effective rate of gabapentin therapy for 4 weeks was higher than that of carbamazepine therapy the life satisfaction improvement is also better in the gabapentin therapy group after a 4-week treatment. Furthermore, our meta-analysis suggested that the adverse reaction rate of gabapentin therapy group was significantly lower than that of carbamazepine therapy group.

CONCLUSION

Authors found that carbamazepine found to be effective thangabapentin in patients with trigeminal neuralgia.

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