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## Research Article

# A Cross Sectional Study to Evaluate the Non-Epileptic Uses of Antiepileptic Drugs at a Tertiary Care Hospital

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### Abstract

In recent years, various antiepileptic drugs (AEDs) are being increasingly used in non-epileptic disorders. This could be due to increase in the incidence of the non-epileptic conditions in the present years and availability of literature for their use in non-epileptic disorders. Due to lack of Indian data, the present study was taken up to evaluate the use of AEDs in various non-epileptic disorders. This was a cross sectional study done for a period of 6 months in neurology and psychiatry departments of BMCRI, Bangalore. The demographic, disease and drug data were collected from each patient selected for the study and was analysed descriptively. Total of 88 patients were prescribed AEDs for non-epileptic disorders. Diabetic peripheral neuropathy (32 AEDs) had majority of prescriptions of AEDs, followed by Bipolar disorder (20 AEDs) and Trigeminal neuralgia (15 AEDs). Among the AEDs prescribed for non-epileptic disorders, Pregabalin (30 patients) ranked first, followed by Carbamazepine (23 patients) and Valproate (16 patients). In conclusion, the present study noticed that AEDs are prescribed in various neurological and psychiatric disorders other than epilepsy. Though, the older AEDs were mostly prescribed for approved conditions, newer AEDs were found to be used more frequently.

## 1. INTRODUCTION

Antiepileptic drugs are the main stay of treatment for epilepsy. Many antiepileptic drugs (AEDs) have been used for indications other than epilepsy, such as neuropathic pain, migraine, movement disorders and psychiatric disorders<sup>1,2</sup>. It has been suggested that, AEDs efficacy in non-epileptic disorders could be due to modulation of GABAergic / Glutamatergic neurotransmission and voltage gated ion channels or intracellular signaling pathways<sup>3</sup>.

Older AEDs like carbamazepine and valproate have been approved for use in non-epileptic disorders like trigeminal neuralgias and bipolar disorders respectively. But, the use of newer AEDs such as pregabalin, gabapentin, oxcarbazepine, topiramate and lamotrigine has been increased for non-epileptic conditions in the recent years. This could be influenced by the increased incidence of neuropathic pain in the present years<sup>4</sup> and substantial evidence available for their use in these conditions.

Available literature from the West quantifies the use of antiepileptic drugs in various types of seizure and non-seizure disorders. Many Indian Studies have added data to the use of antiepileptic drugs in various types of seizure disorders<sup>5</sup>. Keeping in view, the increased use of AEDs in non-epileptic disorders and lack of studies in Indian setup prompted the present study.

## 2. MATERIALS AND METHODS

This cross sectional study was conducted in the department of neurology and psychiatry in hospitals attached to Bangalore Medical College and Research Institute, Bangalore. The study was conducted between June and December 2011. All the patients of either sex who were prescribed AEDs for various non-epileptic disorders were included in the study. Informed consent from

patients / guardians and appropriate clearance from the hospital authorities were taken before starting the study. Demographic data, disease data and drug data were collected in the case recording proforma from the patients selected for the study. Patients with epilepsy, pregnant females, lactating mothers and patients not willing to give written informed consent were excluded from the study. The data was analysed using descriptive statistics, mainly mean and percentage.

## 3. RESULTS AND DISCUSSION

In the present study, 88 patients with non-epileptic disorders were prescribed antiepileptic drugs. Among them 43 (49%) were male and 45 (51%) were female patients. Majority of the patients belonged to the age group of 31-40 years (26 patients), followed by 51-60 years (18 patients) and 41-50 years (15 patients), 60 and above (15 patients) and 21 – 30 (14 patients).

As shown in table 1, Diabetic peripheral neuropathy (32 AEDs) had majority of prescriptions of AEDs, followed by Bipolar disorder (20 AEDs) and Trigeminal neuralgia (15 AEDs).

Among the AEDs prescribed for non-epileptic disorders, Pregabalin (30 patients) ranked first, followed by Carbamazepine (23 patients) and Valproate (16 patients).

Though AEDs are primarily prescribed for treatment of epilepsy, they have been used widely in the management of other neurological and psychiatric conditions.

Diabetic peripheral neuropathy had the highest prescriptions of AEDs, mainly Pregabalin followed by Gabapentin. This practice is in consensus with the guidelines from American Association of Neurology which reports that Pregabalin should be offered to all the clinically appropriate cases of diabetic neuropathy based on the availability of strong evidence. Further, it also suggests that, Gabapentin is probably effective in this condition<sup>6</sup>. An Indian study reported that, Pregabalin produces faster and superior pain relief in diabetic neuropathy compared to Gabapentin and Duloxetine<sup>7</sup>.

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**Table 1:** Spectrum of non-epileptic disorders and prescribing patterns of antiepileptic drugs

SI No	Non Epileptic Disorders	PHY	VAL	CBZ	OX CBZ	PGB	GBP	TPR	LMT	Total
1	Diabetic peripheral neuropathy	0	0	0	0	27	5	0	0	32
2	Bipolar disorder	0	8	4	4	0	0	0	4	20
3	Trigeminal Neuralgia	2	0	13	0	0	0	0	0	15
4	Migraine prophylaxis	0	6	0	0	0	0	6	0	12
5	Hemifacial spasm	0	0	6	0	0	0	0	0	6
6	Generalised anxiety disorder	0	0	0	0	3	0	0	0	3
7	Choreoathetosis	0	2	0	0	0	0	0	0	2
8	Impulsive Disorder in alcohol dependency	0	0	0	0	0	0	2	0	2
	<b>Total</b>	<b>2</b>	<b>16</b>	<b>23</b>	<b>4</b>	<b>30</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>92</b>

PHY-Phenytoin, VAL-Valproate, CBZ-Carbamazepine, OXCBZ-Oxcarbazepine, PGB-Pregabalin, GBP-Gabapentin, TPR-Topiramate, LMT-Lamotrigine

In Bipolar disorder, Valproate was prescribed the most, followed by Carbamazepine, Oxcarbazepine and Lamotrigine. Valproate is approved by US FDA for the treatment of manic phase of bipolar disorders<sup>1</sup>. Carbamazepine has established its potency similar to lithium / chlorpromazine and Oxcarbazepine similar to lithium / haloperidol in bipolar disorders<sup>8</sup>. Lamotrigine is found to be the effective and safe choice in bipolar disorder as it does not induce mania in these patients.

In trigeminal neuralgia, Carbamazepine was prescribed for the majority of the patients. Carbamazepine is approved by US FDA as the first line treatment of trigeminal neuralgia. A similar study by Hall et al from Oxford, UK showed that about 50% of the patients being treated with Carbamazepine for trigeminal neuralgia<sup>9</sup>. An Indian study from Coimbatore also reported the same<sup>5</sup>.

In the management of migraine, we found equal number of prescriptions for Valproate and Topiramate. In migraine prophylaxis, Valproate has been approved by US FDA. Other AEDs like Gabapentin and Topiramate have established their efficacy in randomized placebo controlled trials<sup>1</sup>.

Hemifacial spasm is a potentially disabling disorder. Many clinical reports have shown that AEDs including Carbamazepine<sup>10</sup> may improve pain by causing reduction of hyperexcitability of nucleus of seventh nerve in these patients. In the present study, Carbamazepine was shown to be effective in 6 patients. Available literature suggests that, Pregabalin, Gabapentin and Topiramate are also effective in these patients<sup>2</sup>.

In Choreo-athetosis, Valproate was prescribed for all the cases in our study. Valproate is found to be effective in choreoathetosis because of its GABA potentiating and membrane stabilizing property<sup>11</sup>.

#### 4. CONCLUSION

In conclusion, AEDs are found to be prescribed in various neurological and psychiatric disorders other than epilepsy. Higher rate of prescription of newer AEDs such as Pregabalin, Oxcarbazepine, Lamotrigine and Topiramate was noted in the present study. Further large scale studies are required to establish their efficacy and safety in these conditions in India.

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#### REFERENCES

- Zaremba PD, Bialek M, Blaszczyk B. Non-epilepsy uses of antiepileptic drugs, *Pharmacoogical Reports*, 2006, 58(1): 1-12.
- Siniscalchi A, Gallelli L, De Sarro G. Use of antiepileptic drugs for hyperkinetic movement disorders, *Current Neuropharmacology*, 2010, 8(4): 359-366.
- Rogawski MA, Loscher W. The neurobiology of antiepileptic drugs for the treatment of nonepileptic conditions, *Nat. Med*, 2004, 10(7): 685-92.
- Landmark JC, Larsson PG, Rytter E, Johannessen SI. Antiepileptic drugs in epilepsy and other disorders – a population based study of prescriptions, *Epilepsy. Res*, 2009, 87(1): 31-9.
- Arulkumaran KSG, Palanisamy S, Rajasekharan A. A study on drug use evaluation of antiepileptics at a multispecialty tertiary care hospital, *Int. J. PharmTech Res*, 2009, 1(4): 1541-47.
- Bril V, England J, Franklin GM et al. Evidence based guideline: Treatment of painful diabetic neuropathy: report of the American Academy of neurology, the American Association of Neuromuscular and Electrodiagnostic Medicine and the American Academy of Physical Medicine and Rehabilitation, *Neurology*, 2011, 76(20): 1758-1765.
- Devi P, Madhu K, Sarma GRK, Kulkarni C. Evaluation of efficacy and safety of gabapentin, duloxetine and pregabalin in patients with painful diabetic peripheral neuropathy, *Indian j Pharmacol*, 2012, 44(1): 51-56.
- Keck PE, McElroy SL, Strakowski SM. Anticonvulsants and antipsychotics in the treatment of bipolar disorder, *J. Clin. Psychiatry*, 1998, 59(6): 74-81.
- Hall GC, Carroll D, McQuay HJ. Primary care in incidence and treatment of four neuropathic pain conditions. A descriptive study, *BMC Family Practice*, 2008, 9: 26.
- Alexander GE, Moses H. Carbamazepine for hemifacial spasm, *Neurology*, 1982, 32(3): 286-87.
- Genel F, Arslanoglu S, Uran N, Saylan B. Sydenham's chorea: clinical findings and comparison of the efficacies of sodium valproate and carbamazepine regimens, *Brain. Dev*, 2002, 24(2): 73-6.