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Comparison of Efficacy and Safety of Patient Taking Pregabalin and Desvenlafaxine in Neuropathic Pain

Neenu Rachel Santhosh [1], Ajay K Raj [2], Rahmathullah SN[3], Dr.Abdu Rahman[4], Sereena A[5]
[1,2,3,]Department of pharmacy practice, National college of pharmacy, Kerala, India.
[4]Professor and HOD, Department of Neurology, KMCT Medical College, Kerala, India
[5]Assistant professor, Department of pharmacy practice, National College of pharmacy, Kerala, India

Abstract

➢ ***Objectives***

To compare safety and efficacy of pregabalin and desvenlafaxine respectively for treating Neuropathic Pain.

➢ ***Methods***

104 patients were entered into a prospective observational study of pregabalin and desvenlafaxine in neuropathic pain for 6 months. Patients were randomly arranged into 2 groups, 52 patients received pregabalin and other group of 52 patients received desvenlafaxine. The initialassessement were made during the first visit and two subsequent reviews were done in 2 months interval, up to 6 months. Visual analogue pain scores, incidence of side effects were measured.

➢ ***Results***

The pain scores(mean±S.D.) were 5.37±1.14 and 6.7±1.39 respectively for desvenlafaxine and pregabalin.The low pain score of desvenlafaxine was associated with prolonged pain relief. There were pronounced differences in incidence of side effect between the two drugs: pregabalin, 36.5% compared to desvenlafaxine, 7%.

➢ ***Conclusion***

The study findings revealed that desvenlafaxine is more safe and efficacious than pregabalin. Thus this study recommends the use of desvenlafaxine for neuropathic pain over pregabalin.

Keywords:- *Desvenlafaxine, Pregabalin, pain, Neuropathic pain.*

I. INTRODUCTION

Neuropathic pain is now defined by the International Association for the Study of Pain (IASP) as 'pain caused by a lesion or disease of the somatosensory nervous system. This replaces the Older definition of 'pain initiated or caused by a primary lesion, dysfunction or transitory Perturbation of the peripheral or central nervous system. Neuropathic pain is linked with impaired quality of life, and is often poorly managed. Around 7–8% of adults have pain with neuropathic characteristics. A quarter of people with diabetes and 35% of people with HIV have neuropathic pain [1]. The management of neuropathic pain can be challenging and, as with all pain, should be approached with a biopsychosocial framework. There are several options for drug treatment as part of an overall approach to improve patients' quality of life and function [2] .

➢ *Drug treatment for neuropathic pain – updated recommendations from the International*

- *Association for the Study of Pain*

Recommendation Drugs

Recommendation	Drugs
First-line	SNRI – duloxetine, venlafaxine
	Tricyclic antidepressants
	Gabapentin, pregabalin
Second-line	Capsaicin 8% patches
	Lidocaine (lignocaine) patches
	Tramadol
Third line	Strong opiods

Table 1

In spite of the fact that several drugs including anticonvulsant have shown varying degrees of effectiveness in treating neuropathic Pain, inimical side-effects and inconsistent patient response may limit their long-term use. The pain relief with regular pharmacological treatment have benefited only 30% to 40% of community. So, a continuing need, therefore, exists, for additional drug treatment options for this chronic pain condition. Desvenlafaxine is a third generation antidepressant belonging to group of SNRI, was evaluated due to its unique pharmacokinetics properties for treatment of neuropathic pain [3,4,5] .The role of pregabalin in neuropathic pain was already well-established. So, the scope of this study was to compare the effectiveness of desvenlafaxine, with a well-established pregabalin.

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II. MATERIALS AND METHODS

➢ *Study design*

The study was conducted as a prospective observational study.

➢ *Study site*

Department of Neurology in a 700-bedded tertiary care teaching hospital

➢ *Study duration*

The total duration of the study was 6 months.

➢ *Study population*

A minimum of 104 patients who visited the Neurology department during the study period.

➢ *Plan of work*

The entire study was designed to be conducted in three phases.

PHASE I

- Detailed literature review, done extensively using tertiary resources, secondary resources, primary resources
- Procure the necessary documentation: Designing of data entry form, informed consent document, patient information sheet.
- Ethical committee approval: Ethical clearance was obtained from the Institutional Ethics Committee of National College of Pharmacy.

PHASE II

- The sample size was collected which comes under the inclusion and exclusion criteria at the time of enrolment.
- Data was collected using data entry form after explaining patient information sheet and signing informed consent document.

PHASE III

- Reports were analyzed using various statistical tools.
- Reporting of results and presentation.

➢ *Study criteria*

Patients were selected based on the following inclusion and exclusion criteria:

- *Inclusion Criteria*

✓ All patients, having clinical diagnosis of Neuropathic Pain.
✓ Age category between 18-80 years.
✓ Patients of both sexes.

- *Exclusion Criteria*

✓ Patient less than 18 years of age and more than 80 years of age
✓ Pregnant women and lactating mother.
✓ Patient taking psychotropic agents.
✓ Patients taking pain medications other than desvenlafaxine and pregabalin.

➢ *Subject Selection*

The patients were selected during the time period from November 2018 to June 2019. From the 700 patients who visited Neurology department, 104 patients who satisfied the inclusion, as well as exclusion criteria, were allotted for the study. The sample population was requested to answer questionnaire at the time of their first review and relevant information were collected.

➢ *Sources of data*

Patient interview and patients case records which contain the patient's demographics, history, laboratory investigation reports and prescribed drugs.

➢ *Study materials*

- *Informed Consent Form and Patient Information Sheet*

To enroll patients in the study, informed consent and patient information sheet in the local language (Malayalam) was prepared.

- *Patient Data Entry Form*

For collecting the necessary data obtained from the sources, separate data entry form was designed by including demography of patients, date of admission, past medical and medication history, diagnosis, current medication, visual analog scale

➢ *Study Procedure*

A prospective observational study, entitled "Comparison of safety, efficacy and quality of life of pregabalin and desvenlafaxine in the treatment of Neuropathic Pain" was conducted on 104 patients of age 18 years or above, with a clinical diagnosis of Neuropathic Pain. Patients were randomly arranged into 2 groups. Group 1 received pregabalin, whereas the other received desvenlafaxine . The comparison was done among both the groups to assess efficacy using VAS (Visual Analog Scale). VAS is a unidimensional measure of pain intensity, which is a single 11-point numeric scale. Score ranges from 0-10, in which the score "0" resemble "No pain" and that of "10" resembles "worst pain imaginable". Respondent is asked to indicate the scale that best describes their pain intensity, after which, the corresponding percentage is calculated (0-100%; 0 signifying "No pain", and 100 signifying "Worst pain"). Safety was assessed using The ADR Probability Scale. It consists of 10 questions that are answered as either Yes, No, or "Do not know". Different point values (-1, 0, +1 or +2) are assigned to each answer.In the first visit, clinical history of the patient, along with an assessment of pain (using VAS) was done. After one month, during the first review, assessment of pain & ADRs were assessed, followed by a second review after 2 months, during which patients were telephoned and assessed for drug efficacy & safety.

➢ *Statistics*

The data entry and statistical analysis were done using software SPSS version. A p value of < 0.05 was considered to be statistically significant.

III. RESULTS

A. Adverse drug reaction

FREQUENCY	SIDE EFFECTS				
	Sedation	Headache	Dizziness	Nausea	Total
PREGABALIN	15	2	2	0	19
DESVENLAFAXINE	0	0	1	3	4

Table 2:- Categorization of patient based on ADR

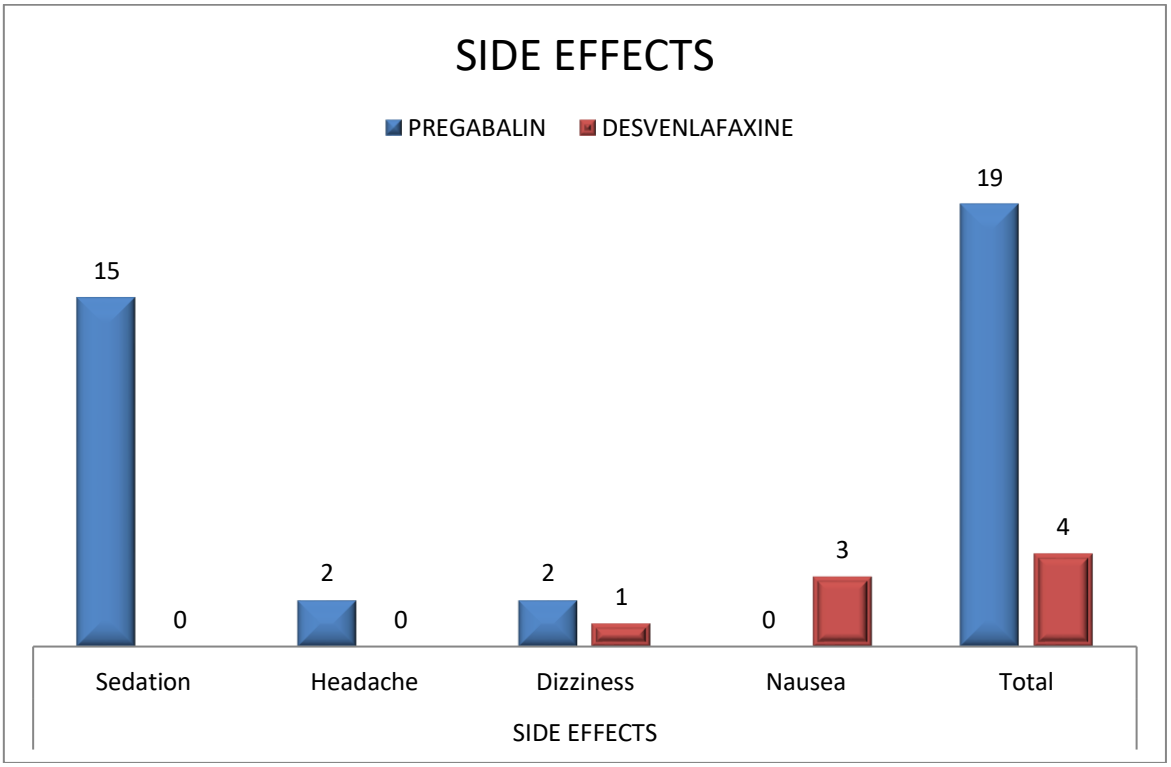

Fig 1:- Comparison of incidence of ADR

➢ In the study population, sedation was the most common ADR, seen in patients treated with Pregabalin.
➢ Patients treated with desvenlafaxine showed the least number of ADRs.

B. Comparison of Pain Response

MEAN PAIN SCORE			
	1ST VISIT	1ST REVIEW	2ND REVIEW
PREGABALIN	7.65	6.87	5.58
DESVENLAFAXINE	7.94	4.74	3.44

Table 3:- Comparison of pain response in two treatment groups

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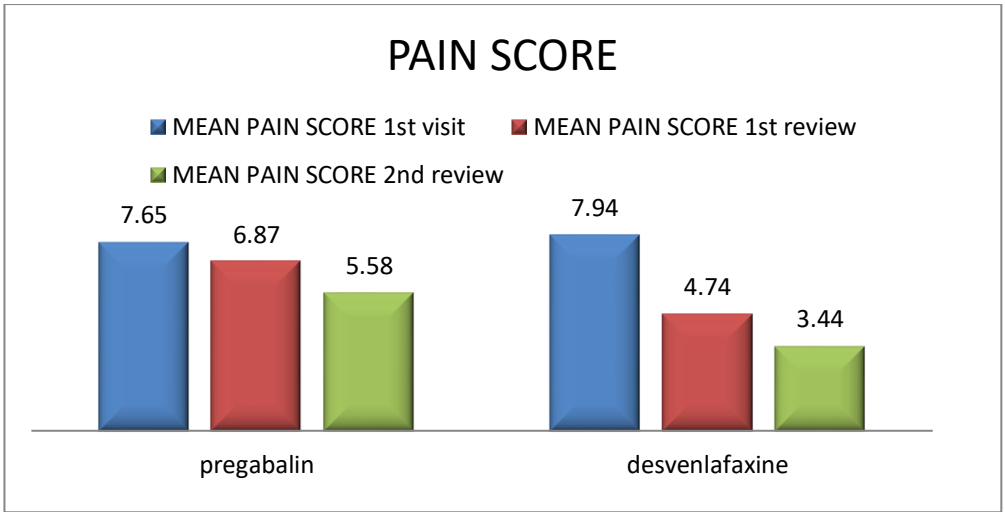

Fig 2

➢ *Comparison of pain response in two treatment groups*

- In the entire study population, patients treated with desvenlafaxine showed a significant reduction in the pain.
- Patients treated with pregabalin showed a less significant reduction in pain.

➢ *Association of Pain (Paired Samples Test):*

- *Desvenlafaxine*

MEAN	S. D	P-VALUE
5.37	1.141	0.000

Table 4

- *Pregabalin*

MEAN	S. D	P-VALUE
6.7	1.3913	0.0011

Table 5

Comparison of pain in desvenlafaxine and pregabalin groups showed significance as the p-value is <0.05

IV. DISCUSSION

The selected study population, majority of the patients was diagnosed with peripheral n neuropathy followed by central pain syndrome, complex regional pain syndrome, trigeminal neuralgia and Diabetic neuropathy being the rarest. During the 6-month study period only 7% of the patients in the desvenlafaxine treatment group developed ADR i.e. only 4 patients were presented with ADR among the 52 patients in the desvenlafaxine treatment group. i.e. 1 patient was presented with dizziness and 3 with Nausea. Only a minute fraction of study population was presented with Side-effects in the desvenlafaxine treatment group. During the study, 36 % of patients enrolled in the pregabalin treatment group were presented with ADR. i.e. 15 patients with sedation, 2 patients with headache and 2 patients with dizziness, among the 52 patients. In 6-month study desvenlafaxine treatment group showed very few occurrences of side-effects compared to pregabalin treatment group so that justifies the safety of the desvenlafaxine over pregabalin. Severity of pain was assessed in the patients who enrolled in the study. Each patient was asked to rate the pain on a 0 to 10 score, to assess the severity of pain. Reduction of pain in patients reflects the efficacy of the drug in reducing pain. In this study the patients administering desvenlafaxine treatment group showed a major reduction in pain score. The mean pain score for the first visit was 7.94 followed by 4.74 in first review and finally 3.44 for the second review. The group administering pregabalin showed less reduction in the pain score compared to that of desvenlafaxine .ie. The mean pain score for the first visit was 7.65 followed by 6.87 in first review and finally 5.58 for the second review. The statistical analysis by paired t test generated a p value that was < 0.05. The p value showed the significance in comparison of pain severity between the two groups. Null hypothesis, stating the equal efficacy of desvenlafaxine and pregabalin in the pain reduction gets rejected, which support the alternative hypothesis, stating the difference in efficacy of desvenlafaxine and pregabalin as the p value is <0.05. The reduction in average pain score determine that desvenlafaxine have more efficacy in reducing pain when compared to group receiving pregabalin.

V. CONCLUSION

Safety, efficacy and QOL of patients, was compared among Desvenlafaxine and Pregabalin for a duration of 6-month in this study. Study results concludes that Desvenlafaxine has more safety and efficacy compared to pregabalin as number of side-effects are less in Desvenlafaxine treatment group compared to pregabalin treatment group. Also, severity of pain has significant reduction in Desvenlafaxine treatment group compared to that of pregabalin.Thus this study supports the use of Desvenlafaxine for neuropathic pain, over pregabalin.

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