

Role of Topiramate in Improving Quality of Life in Migraine Sufferers versus Gold Standard Propranolol

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ABSTRACT

OBJECT: To assess the role of Topiramate in reducing migraine related disability and improvement in quality of life in migraine sufferers comparing with conventionally used drug propranolol.

BACKGROUND: Epilepsy and migraine have some biological features in common; therefore antiepileptic drugs are supposed to be effective in migraine prophylaxis beside active treatment, in reducing migraine headache attacks and therefore can improve sufferers' quality of life.

METHODS: Seventy diagnosed patients of migraine were enrolled in the study and 64 completed the whole study period (12 weeks). They were divided in two groups: A (Topiramate) and B (Propranolol). MIDAS scores were observed at day-0 and day-90 and results were statistically analyzed.

RESULTS: Group received Topiramate showed better response and overall reduction was 62.51% (P-value<0.001) while in Propranolol group the reduction was 52.64% (p-value <0.001).

CONCLUSION: Topiramate is superior than olden propranolol in reducing the migraine related disability and improving the daily activities related to job, school, household, family and social life. However propranolol is still effective in migraine prophylaxis.

KEY WORDS: Migraine, Prophylaxis, Topiramate, Propranolol, MIDAS (Migraine Disability Assessment)

INTRODUCTION

At the clinic of neurologists and general practitioner, the most common complaint is headache.¹ Indeed headache is a major public issue but gains little attention in our health care system.² Headaches are usually secondary due to some underlying pathology but when the cause is not determined, migraine, cluster headache and tension headache may be considered in differential diagnosis.³ In general practice and neurology departments migraine is among the ten causes, why the patients consult to them.⁴ WHO in 2004 released a report placing migraine on 19th rank with which migraine sufferers live years of their life with disability.⁵ World Health Organizations issued a fresh report which equates a day of worst migraine to the disability associated with a day of quadriplegia or psychosis.⁶ Migraine is three times more common in females than males and usually worst in between 35 to 45 years,⁷ and is an important issue in female health as many females are caring their families and making their carriers in these years of their life.⁸

The migraine management include three dimensional strategies including health education, acute (NSAIDs, Triptans) and prophylactic (Anticonvulsants, β -blockers and anti depressants) medications.⁹ The pathophysiology of migraine currently revealed migraine as a neurovascular disorder and stressed the use of preventive medications; specially those medi-

cation, whose mode of action is nearer to pathophysiology of migraine and that can modulate the neurotransmitter system, instead of only treating intracranial vessels tone.¹⁰ The effective prophylactic agents include anticonvulsants, β -blockers (the gold standard Propranolol) anti depressants and calcium channel blockers.¹¹ The quality of life of a migraine sufferer is badly hurt and is usually associated with noticeable disability which affect the ability to normal work and productivity.¹² The effects of migraine intensity and attacks on quality of life must be assessed when different treatments are in consideration.¹³ Severe migraine attacks may restrict the normal activity of the patient at home and at work. The various guidelines on migraine management emphasized the need of assessment of disability of migraine sufferers. The three most important questionnaire or tools used to assessed migraine related disability are HIT (headache impact test), HDT (headache disability inventory), and MIDAS (migraine disability assessment) questioner. MIDAS is the most trusted and commonly used questioner having seven stems or questions, including the days affected during school work, paid work, and house hold work, social, family, or other leisure activities over the past three months. The migraine prophylaxis has the key role in the management of migraine and migraine related disability. The appropriate prophylactic agent(s) (anti epileptics)

which is related to its pathophysiology can improve the migraine related disability and improving quality of life of the sufferer.¹⁴ In the light of above stated background the aim of this current study is to compare the role of topiramate (anti epileptic) and propranolol (beta blocker), in improving the quality of life of migraine sufferer.

METHODS

This comparative study was conducted at the Department of Pharmacology and Therapeutics, BMSI, JPMC Karachi in collaboration with Departments of Neurology and Medicine, JPMC Karachi.

Inclusion criteria

Patients with history of migraine for more than 6 months with or without aura, aged between 18 to 55 years of either sex, patient with the history of three or more attacks in a month.

Exclusion criteria

Patients with history of attacks other than migraine, women using oral contraceptives, pregnant females, lactating mothers, patients suffering from renal and liver diseases, glaucoma, bronchial asthma, congestive cardiac failure and diabetes mellitus.

Data collection and analysis

The pain visual analog scale is designed to present to the respondent to rate scale with minimum constraints. Respondents marked the location on line corresponding to the amount of pain they experienced. The scale consists of a straight line of a specified length with verbal description at each end. The use of the scale was explained to each subject beforehand. It is a valid and reliable instrument for measurement of chronic pain intensity.

The migraine diary gives details about how worse the attacks are and how well medication helped during the study period. This will decide its efficacy in migraine prevention. It helps the physician in managing the migraine attacks and guiding them for proper treatment. Furthermore it provides the knowledge about the number of attacks (frequency) and duration of migraine attacks.

Patients were divided into two groups (A and B) of 35 patients each. Group A patients received tablet Topiramate 100mg in two divided doses and group B patients were given Tablet Propranolol 40mg in two divided doses for 12 weeks. Assessment of improvement of disability was measured in days by using MIDAS questionnaire at baseline and at the end of study. The migraine diary was maintained daily for the entire study period (12 weeks). Patients were provided with the visual analogue scale to be marked daily against each date (1-10) was given, so whenever

the patients having migraine attack can mention the intensity of pain and no of attacks during study period. All the values were taken as mean and ±SEM; the primary efficacy measurement was the mean change in MIDAS scores from the baseline to end point. The data was analyzed statistically and student's t-test was applied.

Materials

- Topiramate 50mg tablet
- Propranolol 40mg tablet
- Migraine diary having pain visual analogue scale
- MIDAS questionnaire.

RESULTS

In this study the disability was assessed by the MIDAS questionnaire by comparing the scores (in days) at day 0 to score at the end of study (day-90). Total scores were obtained by asking from the patients (all 5 questions) at the beginning of the study and were compared with scores of day-90 in both groups. Group A (Topiramate) showed much better reduction in days of migraine attacks from base line 24.57±1.08 to 9.21±0.40 (62.51%) with p value <0.001 when compared to group B in which reduction from baseline was 25.74±1.73 to 12.19±0.85 (52.64%). The p-value for both groups is highly significant(<0.001) and mean MIDAS scores were reduced from 24.57 to 9.21 days in group A while in group B the reduction was from 25.74 to 12.19 days. Statistically both drugs are highly significant in improving the quality of life of migraine patient as shown in Table II.

TABLE I: BASELINE CHARACTERISTICS OF PATIENTS

Characterstics	Topiramate Group	Propranolol Group
Total patients:	35	35
Remained in the study:	33 (94.28%)	31 (88.57%)
Left out:	02 (05.71%)	04 (11.42%)
Gender:		
Female:	26 (78.78%)	25 (75.70%)
Male:	07 (21.21%)	06 (19.35%)
Age:		
Mean:	29±1.24 years	30±1.56 years
Range:	18-50 years	18-53 years
Marital status:		
Married:	20 (60.6%)	17 (54.83%)
Unmarried:	13 (39.7%)	14 (45.16%)
Family history:		
Positive:	28 (84.80%)	29 (80.64%)
Negative:	05 (15.5%)	06 (19.35%)

TABLE II: COMPARISON OF MIDAS SCORES IN BOTH GROUPS

Groups	Day-0	Day-90	% Change	P-Value
Topiramate	24.57± 1.08	9.21± 0.40	62.51%	<0.001
Propranolol	25.74± 1.73	12.19± 0.85	52.64%	<0.001

DISCUSSION

Many drugs are used for migraine prevention such as antiepileptic or anticonvulsants (valporate sodium, Topiramate, Gabapentine), Beta-blockers (Gold standard propranolol), Ca channel blockers and antidepressants drugs. These drugs are used to reduce migraine frequency, intensity, duration and most importantly to improve quality of life and to restore patient's daily activities.¹⁵ According to clinical guidelines of IHS (international headache society) >50% reduction in headache attacks is the primary therapeutic efficiency end point in migraine prophylactic clinical trials.¹⁶ Epilepsy and migraine have many of their biological features in common including pathophysiology and antiepileptics are effective in both disorders with same mode of action.¹⁷ The newer antiepileptic drug topiramate shows its action by blocking voltage sensitive sodium channels, increasing the activity of GABA by decreasing the calcium channel opening and by decreasing the excitatory neurotransmitter glutamate, it has recently been approved by FDA for migraine prevention.

Ashkenazi and silbeisten (2003)¹⁰ conduct various clinical trials with topiramate 100 mg and concluded that reduction in headache days was from 20.6 to 8.2 (58%) after treatment, the results are nearer to the findings of our study. Our study is also consistent with studies conducted by Launer et al, 1999¹⁸ Rachel MD (2001)¹⁹ who found excellent results with Topiramate 100 mg and mean MIDAS were reduced at the end of study, with improved quality of life and normal functioning of migraine sufferers. Three Pivotal studies are in accordance with our study in which they found superior efficacy of topiramate in migraine prophylaxis²⁰⁻²³, the frequency, intensity and duration of migraine attacks reduced and consequently contributed in improving the quality of life of migraine patients²³⁻²⁵. Therefore the newer antiepileptic drug Topiramate in moderate doses is capable of reducing the migraine related disability and can improve the quality of life of these patients.

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