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COMPARISON OF THE EFFECTIVENESS OF FLUNARIZINE, PROPRANOLOL, AND PETASITES IN MANAGING PAIN SEVERITY AND DISABILITY IN MIGRAINE PATIENTS

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Abstract:
Objectives: To Compare the Effectiveness of Flunarizine, Propranolol, and Petasites in Managing Pain Severity and Disability in Migraine Patients.
Materials and Methods: Following ethical approval from Lady Reading Hospital, Peshawar, and obtaining informed consent, 93 patients meeting the inclusion criteria were enrolled. Participants were divided into three groups: Group A (flunarizine), Group B (propranolol), and Group C (petasites). Pain and disability were assessed using the Visual Analogue Scale (VAS) and the Migraine Disability Assessment Test (MIDAS) before and after two weeks of treatment. Pain severity on the VAS was categorized from mild to very severe, while MIDAS classified disability into four grades. Data were collected via a predesigned questionnaire and analyzed using SPSS Version 25.
Results: A total of 93 patients (mean age 40.82±12.14 years) were studied, with 32.3% males and 67.7% females. Age distribution was 33.3% (22–30 years), 37.6% (31–50 years), and 29.0% (>50 years). Post-treatment, significant reductions in Visual Analogue Scale and MIDAS scores were observed across Groups A, B, and C (p=0.00).
Conclusion: Flunarizine, propranolol, and petasites effectively manage migraine pain and disability, with flunarizine being most effective, followed by propranolol and petasites. These findings guide clinicians in choosing treatments, though further research on long-term outcomes is needed.

Key words: Flunarizine, propranolol, petasites, migraine pain.

INTRODUCTION:

Migraine is a common neurological disorder characterized by recurrent episodes of moderate to severe headache, often accompanied by nausea, vomiting, and sensitivity to light and sound.(1, 2) It significantly impacts patients' quality of life, productivity, and daily functioning, posing a substantial burden on individuals and healthcare systems worldwide.(3) Effective management of migraine involves both acute treatment of episodes and preventive therapy to reduce the frequency, intensity, and associated disability. It is the third most common and sixth most disabling condition globally.(4, 5) A family history of migraine is found in 90% of individuals with migraines.(6) Flunarizine, propranolol, and petasites are among the preventive therapies commonly used in clinical practice.(7, 8) Flunarizine, a calcium channel blocker, has shown efficacy in reducing migraine frequency by stabilizing neuronal hyperexcitability.(9, 10) Propranolol, a beta-blocker, is a well-established first-line preventive medication due to its ability to modulate vascular and neuronal responses associated with migraine.(10-12) Petasites, derived from the butterbur plant, has gained attention for its anti-inflammatory and smooth muscle relaxant properties, which are thought to alleviate migraine symptoms.(13, 14)

Migraine can interfere with a patient's daily activities and work, leading to reduced productivity due to the pain and disability it causes. This often extends to affect the patient's family and social life as well. This study aims to compare the efficacy of flunarizine, propranolol, and petasites in managing migraine-associated pain and disability. By analyzing their effects using validated tools such as the Visual Analogue Scale (VAS) and the Migraine Disability Assessment Test (MIDAS), this study seeks to provide evidence-based insights to guide clinicians in optimizing migraine management strategies.

Objective: To compare the effectiveness of flunarizine, propranolol, and petasites in managing pain severity and disability in migraine patients.

MATERIALS AND METHODS:

Study Design: Randomized controlled trial
Study setting: Department of Neurosurgery Surgery, MTI/ lady Reading Hospital Peshawar.
Duration of the study: Duration of the study was 3 month (July 2024 to Sep 2024).
Sampling Technique: Non-probability Consecutive sampling were used for the recruitment of patients.

Selection criteria:

Inclusion criteria:

- Patients who fulfill the International Classification of Headache Disorders (ICHD) criteria for migraine.
- A history of migraines for at least one year.
- Patients of 18-60 years of age.
- Both genders.

Exclusion criteria:

- Presence of other significant neurological conditions, such as epilepsy, stroke, or Parkinson's disease.
- Any diagnosis of secondary headaches, including medication-overuse headache or cluster headaches..
- Patients with known hypersensitivity or contraindications to flunarizine, propranolol, or petasites.
- Patients with active psychiatric disorders, including severe depression or anxiety.
- Pregnant or breastfeeding women.
- Use of any other migraine prophylactic treatments within the past six months.

Methods:
Following approval from the Ethical Committee of Lady Reading Hospital, Peshawar, patients meeting the inclusion criteria were identified and provided written informed consent, either personally or via a guardian. Each participant underwent a comprehensive history review and a detailed physical examination. A total of 93 patients were enrolled in the study. All enrolled patients were divided into three groups (A, B, and C):

Group A received flunarizine, Group B was prescribed propranolol, and Group C was treated with petasites. The severity of pain and disability among the three groups was assessed using the Visual Analogue Scale (VAS) and the Migraine Disability Assessment Test (MIDAS questionnaire) before and after two weeks of treatment with the respective medications. Pain severity was classified using the VAS as mild (1–3), moderate (4–6), severe (6–8), or very severe.

The MIDAS questionnaire measured the impact of headaches and the resulting disability, categorizing patients into Grade I (no/little disability, score 0–5), Grade II (mild disability, score 6–10), Grade III (moderate disability, score 11–20), and Grade IV (severe disability, score >21). Mean scores for pain severity and disability were analyzed to compare the efficacy of the treatments among the groups. A predesign questionere was used to collect data. The collected data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) Version 25 software.

Statistical analysis: The collected data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) Version 25 software. Results for all descriptive data, such as age, were expressed as mean ± standard deviation. Frequency and percentage were presented for qualitative data like gender. Both the groups were compared for postoperative pain using an independent sample T-test at a 5% level of significance. Postoperative pain was stratified by age and gender, and a post-stratification independent sample T-test was used at a 5% level of significance.

RESULTS:
A total of 93 patients with mean age of 40.82±12.14 years, were enrolled. The number of male patients was 30(32.3%) and that female patients were 67(67.7%). The age distribution of the participants was as follows: 22–30 years (31 participants, 33.3%), 31–50 years (35 participants, 37.6%), and over 50 years (27 participants, 29.0%). A comparison of the mean severity scores on the Visual Analogue Scale before and after treatment (n=93) revealed the following results: Group A had a mean score of 8.741±0.929 before treatment and 4.096±0.789 after treatment (p=0.00); Group B had a mean score of 8.451±0.888 before treatment and 5.225±1.055 after treatment (p=0.00); and Group C had a mean score of 7.258±0.96 before treatment and 4.935±0.813 after treatment (p=0.00).

A comparison of the mean severity scores on the Migraine Disability Assessment Test (MIDAS) questionnaire before and after treatment (n=93) showed the following results: Group A had a mean score of 16.19±2.120 before treatment and 11.16±1.46 after treatment (p=0.00); Group B had a mean score of 13.38±1.475 before treatment and 8.22±1.055 after treatment (p=0.00); and Group C had a mean score of 14.29±1.243 before treatment and 9.32±0.94 after treatment (p=0.00).

Table 1: Patient characteristics of enrolled patients *(n=60)*

Variables	
Age (Years)	40.82±12.14
Gender	
Male	30(32.3%)
Female	67(67.7%)
Age Groups	

22-30 years	31(33.3%)
31-50 years	35(37.6%)
>50 years	27(29.0%)

Table 2: Comparison of the severity of the mean scores of visual analogue scale before and after the treatment (*n=93)*

Groups	Before treatment (Mean ±SD)	After treatment (Mean ±SD)	p-value
Group A	8.741±0.929	4.096±0.789	0.00
Group B	8.451±0.888	5.225±1.055	0.00
Group C	7.258±0.96	4.935±0.813	0.00

Table 2: Comparison of the severity of the mean scores of Migraine Disability Assessment Test questionnaire before and after the treatment (*n=93)*

Groups	Before treatment (Mean ±SD)	After treatment (Mean ±SD)	p-value
Group A	16.19±2.120	11.16±1.46	0.00
Group B	13.38±1.475	8.22±1.055	0.00
Group C	14.29±1.243	9.32±0.94	0.00

Discussion: The present study aimed to compare the effectiveness of flunarizine, propranolol, and petasites in managing pain severity and disability in patients suffering from migraines. The findings demonstrated that all three treatments were effective in reducing the severity of pain and disability, as indicated by significant improvements in the Visual Analogue Scale (VAS) and Migraine Disability Assessment Test (MIDAS) scores after two weeks of therapy. However, the extent of improvement varied among the groups, highlighting differences in the efficacy of these therapeutic options. The VAS scores before treatment revealed that Group A (flunarizine) had the highest mean pain severity, followed by Group B (propranolol) and Group C (petasites). Post-treatment, Group A exhibited the greatest reduction in VAS scores, indicating superior effectiveness of flunarizine in alleviating pain severity. Group B also showed significant pain reduction, but the decrease was less pronounced than in Group A. Group C demonstrated moderate effectiveness, with pain reduction comparable to but slightly lower than that of propranolol.

These results align with previous studies suggesting that flunarizine's calcium-channel blocking properties may provide potent analgesic effects in migraine management.(15) Our study finding was supported by another study by Singhal et al.(16) The MIDAS scores further confirmed the effectiveness of the treatments. Patients in Group A showed the most notable improvement in disability scores, significantly reducing the impact of migraines on their daily activities. Group B also exhibited substantial improvement, although to a slightly lesser extent than Group A. Meanwhile, Group C displayed a moderate reduction in disability scores, suggesting that petasites is effective but less potent compared to flunarizine and propranolol. These differences may stem from the unique mechanisms of action of the treatments: flunarizine's neuroprotective and vasodilatory properties, propranolol's beta-blocking effects, and petasites' anti-inflammatory attributes, each addressing distinct aspects of migraine pathophysiology. Overall, flunarizine emerged as the most effective treatment in this study, achieving the highest reductions in both pain severity and disability scores. Propranolol also provided significant benefits and is a well-established option for migraine

prophylaxis. Petasites, while effective, demonstrated relatively lower efficacy, suggesting that it may serve as an alternative for patients who cannot tolerate or have contraindications to flunarizine or propranolol.

CONCLUSION: It was concluded that flunarizine, propranolol, and petasites are all effective in managing migraine-associated pain and disability. Flunarizine demonstrated the highest efficacy, followed by propranolol and petasites. These results provide valuable insights for clinicians in selecting appropriate treatment options based on individual patient needs and tolerability. Further research is warranted to explore the long-term benefits and comparative effectiveness of these therapies.

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