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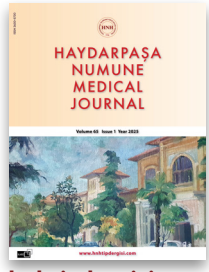

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ORIGINAL ARTICLE

Exploring the Efficacy of Eletriptan and Dexketoprofen Through HIT-6, MIDAS, Allodynia, and VAS Assessments in Migraine

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Abstract

Introduction: Migraine is a common and disabling neurological disorder, often managed with pharmacological treatments such as eletriptan, a serotonin receptor agonist, and dexketoprofen, a nonsteroidal anti-inflammatory drug (NSAID). This study compared the clinical effectiveness and patient-reported outcomes of these two medications in female migraine patients.

Methods: A total of 40 female migraine patients were divided into two treatment groups: 18 received dexketoprofen, and 22 received eletriptan. Clinical assessments included the Headache Impact Test-6 (HIT-6), Migraine Disability Assessment (MIDAS), Allodynia Questionnaire, and Visual Analog Scale (VAS). Correlations among these measures were analyzed within each group, and Fisher's Z-test was used to compare correlation strengths.

Results: The eletriptan group had significantly higher HIT-6 ($p<0.001$) and allodynia scores ($p=0.002$) than the dexketoprofen group. However, there were no significant differences in MIDAS and VAS scores between the groups. Correlation analysis showed a stronger association between HIT-6 and MIDAS in the eletriptan group ($r=0.622$) compared to the dexketoprofen group ($r=0.491$). HIT-6 and allodynia were significantly correlated in the dexketoprofen group, while HIT-6 and VAS were significantly correlated in the eletriptan group.

Discussion and Conclusion: These findings suggest that eletriptan may be more effective for severe migraines associated with central sensitization, while dexketoprofen may be more beneficial for mild to moderate migraine cases. Understanding these differences can help guide personalized migraine treatment strategies.

Keywords: Allodynia; Dexketoprofen; Eletriptan; Headache Impact Test-6 (HIT-6); Migraine; Migraine Disability Assessment (MIDAS); Visual Analog Scale (VAS).

Migraine is a prevalent chronic neurovascular disorder that affects approximately 15% of the global population, causing significant personal and societal impact. Migraine is marked by recurring, often severe headaches, frequently accompanied by nausea, vomiting, and increased sensitivity to light and sound. These episodes can persist for anywhere between 4 and 72 hours[1-3].

Triptans and nonsteroidal anti-inflammatory drugs (NSAIDs) are cornerstone treatments for acute migraine management, each targeting distinct aspects of migraine pathophysiology. Triptans, selective serotonin receptor agonists, act on 5-HT1B and 5-HT1D receptors to induce cranial vasoconstriction, inhibit neuropeptide release, and modulate central pain pathways, making them highly effective for moderate to

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severe migraine attacks[4]. Among these, eletriptan has demonstrated rapid onset and sustained efficacy in clinical studies[5,6]. NSAIDs, on the other hand, alleviate migraine pain by inhibiting cyclooxygenase enzymes, reducing peripheral inflammation and prostaglandin synthesis, with some central effects on pain modulation[7]. Dexketoprofen, a potent NSAID, offers rapid analgesia, particularly for mild to moderate migraine episodes[8,9].

Despite the widespread use of these medications, comparative studies evaluating their clinical efficacy and associated patient-reported outcomes remain limited. Parameters such as the Headache Impact Test-6 (HIT-6), Migraine Disability Assessment (MIDAS), Allodynia Questionnaire, and Visual Analog Scale (VAS) provide valuable insights into the multifaceted burden of migraine, including headache severity, functional disability, sensory sensitivity, and overall pain intensity[10-15]. Understanding the correlations between these parameters within distinct treatment groups can elucidate the broader clinical implications of these drugs. This study aims to compare the clinical profiles of patients using eletriptan and dexketoprofen by analyzing the interrelationships between these key outcome measures.

Materials and Methods

Study approval was obtained from the Non-Interventional Research Ethics Committee (approval number 2025/6). All procedures adhered to the ethical standards of the University of Siena and the principles of the 1964 Helsinki Declaration and its later amendments. The study flowchart is presented in Figure 1. The study initially screened a total of 37,800 admissions to the Neurology Department. Among these, 12,852 patients were diagnosed with migraine. Eligibility criteria were applied, resulting in 96 eligible patients. Eligible patients were divided into two groups: 41 patients receiving dexketoprofen and 55 patients receiving eletriptan. Following a second screening phase, patients who failed to adhere to the required dosage regimen or lacked consent for clinical tests were excluded, resulting in a final sample of 18 patients in the dexketoprofen group (Group D) and 22 patients in the eletriptan group (Group E).

Group D consisted of 18 patients diagnosed with migraines three months prior, who were administered dexketoprofen (50 mg p.o., once daily) during acute migraine attacks. Group E included 22 patients diagnosed with migraines three months prior, who were administered eletriptan (40 mg p.o., once daily) during acute migraine attacks. Migraine was diagnosed in accordance with the ICHD-3 beta criteria[16] by neurologists in our clinic, and patients meeting these criteria were enrolled in the study. At the end of each patient's 3-month medication period, they were invited to the clinic, demographic data were collected, and the Headache Impact Test (HIT-6), Migraine Disability Assessment Test (MIDAS), Allodynia Questionnaire, and Visual Analog Scale (VAS) were administered.

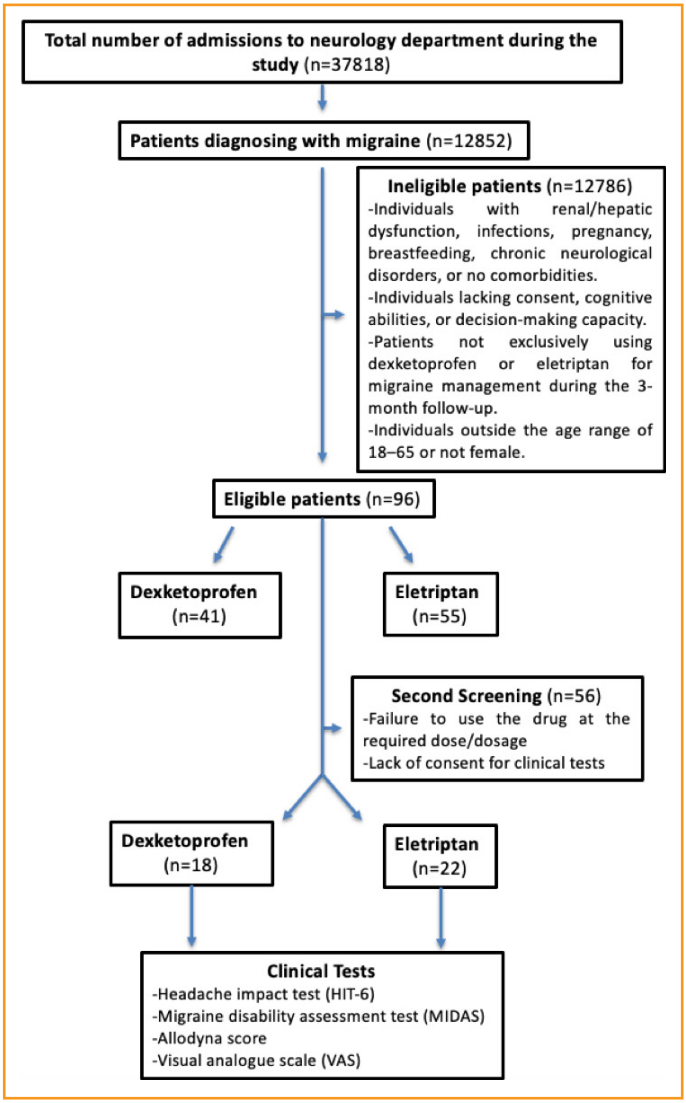

Figure 1. Flowchart illustrating the patient selection process for the study. A total of 37,818 admissions were recorded during the study period, with 12,852 patients diagnosed with migraines. After excluding 12,786 ineligible patients based on predefined criteria (e.g., renal/hepatic dysfunction, pregnancy, lack of consent, or comorbidities), 96 patients remained eligible. These were divided into two groups based on their exclusive use of Dexketoprofen (n=41) or Eletriptan (n=55) for migraine management. Following a second screening for compliance with dosage and consent, the final study population consisted of 18 patients in the Dexketoprofen group and 22 in the Eletriptan group. Clinical tests performed included HIT-6, MIDAS, Allodynia score, and VAS.

The exclusion criteria included individuals with renal or hepatic dysfunction, active infections, pregnancy, breastfeeding, other chronic neurological disorders, or the absence of any comorbid conditions. Additionally, individuals who did not provide consent or lacked cognitive abilities or decision-making capacity were excluded. The inclusion criteria required participants to be female, aged 18 to 65, experiencing headaches due to acute migraine attacks without aura. All participants were required to provide written consent to participate in the study and to exclusively use either dexketoprofen or eletriptan for managing their migraine attacks.

Statistical Analysis

The Shapiro-Wilk test was applied to evaluate whether continuous variables followed a normal distribution. For pairwise comparisons of datasets following a normal distribution, the Student's t-test was utilized. The comparison of means between the two groups was conducted using a one-way analysis of variance (ANOVA). The relationships between clinical test scores (HIT-6, MIDAS, Allodynia, and VAS) were evaluated using Pearson's correlation coefficient to measure the strength and direction of associations between variables within each treatment group (Group E and Group D). To compare the correlation coefficients between the two groups, Fisher's Z-transformation was applied, followed by a Fisher Z-test to assess the statistical significance of the differences in correlation strengths. Data were presented as mean±standard deviation (SD). Statistical analyses were conducted using SPSS for Windows, version 23.0 (IBM Corp., USA), with a significance threshold set at $p<0.05$.

Table 1. Clinical and demographic characteristics of the groups

Parameter	Eletriptan (E) (n:22)	Dexketoprofen (D) (n:18)	p[a*]
Age (years)	40.09±10.38	38.33±7.85	ns
Height (cm)	156.91±7.57	163.89±8.29	0.020
Weight (kg)	62.91±13.40	58.33±8.78	ns
BMI (kg m^{-1})	25.77±6.56	21.70±3.44	0.032
Headache history (years)	7.82±3.37	11.00±3.66	0.002
Smoking			
+	27% (5)	33% (6)	ns
Alcohol			
+	27% (5)	22% (4)	ns
Antioxidant-vitamin use			
+	20% (5)	36% (9)	ns
	80% (20)	64% (16)	
Aura			
+	27% (5)	11% (2)	0.008
Pain localization			
Bilateral	27% (5)	44% (8)	ns
Unilateral	73% (17)	56% (10)	
Nausea-vomiting			
+	73% (16)	89% (16)	ns
Photophobia			
+	73% (16)	67% (12)	ns
Phonophobia			
+	64% (14)	78% (14)	ns
Monthly attack frequency	5.91±1.82	6.00±2.00	ns
Attack duration (h)			
With medicine	2.55±1.76	3.00±1.60	ns
Without medicine	27.27±15.79	28.0±14.25	

[a]One-way ANOVA; *$p<0.05$ was considered statistically significant.

Table 2. Comparison of Clinical Test Scores and Their Severity Classifications Between Eletriptan and Dexketoprofen Treatment Groups

Parameter	Eletriptan (E) (n:22)	Dexketoprofen (D) (n:18)	p[a*]
HIT-6 score	68.64±4.45	62.89±3.27	0.000
60-78 (Severe effect)	n:22	n:16	
56-59 (Intermediate effect)	-	n:2	
MIDAS score	9.62±3.91	9.46±5.38	ns
11-20 (Severe effect)	n:8	n:4	
6-10 (Intermediate effect)	n:12	n:8	
0-5 (Minimum effect)	n:2	n:6	
Allodynia score	10.91±4.17	6.78±3.55	0.002
VAS score	8.18±1.62	8.22±1.73	ns
7-10 (Severe pain)	n:18	n:14	
4-6 (Intermediate pain)	n:4	n:4	

HIT-6: Headache Impact Test-6; MIDAS: Migraine Disability Assessment; VAS: Visual Analog Scale. [a]One-way ANOVA; *p<0.05 was considered statistically significant.

Results

Demographic characteristics of the groups are presented in Table 1. The mean age of patients in Group E was 40.09±10.38 years, compared to 38.33±7.85 years in Group D, with no statistically significant difference. The mean height of participants showed a significant difference, with Group E being shorter (156.91±7.57 cm) than Group D (163.89±8.29 cm). Similarly, body mass index (BMI) was significantly higher in Group E (25.77±6.56) compared to Group D (21.70±3.44). Lifestyle habits such as smoking and alcohol consumption did not differ significantly between the groups. Antioxidant-vitamin usage showed a non-significant trend, with a slightly higher proportion in Group D. Patients in Group D reported a longer headache history (11.00±3.66 years) compared to Group E (7.82±3.37 years), a difference that was statistically significant. The presence of aura was significantly more frequent in Group E (27%) than in Group D (11%). Other clinical features, including phonophobia, photophobia, and nausea-vomiting, showed no significant differences between groups. No significant differences were observed between groups regarding pain localization (bilateral vs. unilateral), monthly attack frequency, or attack duration with and without medication.

In Table 2, the HIT-6 score, measuring headache impact, was significantly higher in Group E (68.64±4.45) than in Group D (62.89±3.27). The Allodynia score, indicating sensitivity to pain, was also significantly greater in Group E (10.91±4.17) compared to Group D (6.78±3.55). However, MIDAS and VAS scores did not differ significantly between the groups.

Table 3. Correlations and Fisher Z-Test Results Between Eletriptan and Dexketoprofen Groups

Parameters (r)	Eletriptan (E)[a]	Dexketoprofen (D)[a]	Fisher Z-Test
HIT6 - MIDAS	0.622*	0.491*	0.679
HIT6 - Allodynia	0.271	0.456*	0.644
HIT6 - VAS	-0.556*	-0.412	0.834
MIDAS - Allodynia	-0.020	0.071	1.397
MIDAS - VAS	-0.071	-0.240	0.487
Allodynia - VAS	-0.354	-0.301	1.550

HIT-6: Headache Impact Test-6; MIDAS: Migraine Disability Assessment; VAS: Visual Analog Scale; [a]Pearson Correlation Test; *p<0.05 was considered statistically significant.

In Table 3, the analysis of correlations between clinical test scores within Group E and Group D revealed no statistically significant differences in correlation strengths between the two groups, as indicated by the Fisher Z-test results (p>0.05) for all variable pairs. Both groups exhibited a significant positive correlation between HIT-6 and MIDAS scores, with Group E demonstrating a slightly stronger association (r=0.622, p=0.002) compared to Group D (r=0.491, p=0.004). While the correlation between HIT-6 and Allodynia was significant only in Group D (r=0.456, p=0.020), the HIT-6 and VAS relationship was significant solely in Group E (r=−0.556, p=0.010). Other variable pairs, such as MIDAS and Allodynia or MIDAS and VAS, showed weak correlations that were not statistically significant in either group.

Discussion

This study aimed to compare the clinical efficacy and patient-reported outcomes of eletriptan and dexketoprofen in the management of acute migraine. By utilizing validated tools such as HIT-6, MIDAS, Allodynia Questionnaire, and VAS, we assessed the multifaceted burden of migraine and explored the correlations between these parameters within each treatment group.

Our findings demonstrated that patients in the eletriptan group exhibited higher HIT-6 and allodynia scores compared to those in the dexketoprofen group. This aligns with the pharmacological profiles of the two drugs. Eletriptan, as a selective serotonin receptor agonist, targets central pain pathways and cranial vasculature, providing rapid and sustained migraine relief in moderate to severe attacks[17]. However, the higher allodynia scores in the eletriptan group may indicate greater baseline sensory sensitivity, which could result from more frequent or severe migraines, as reflected in their HIT-6 scores. In contrast, dexketoprofen, a potent NSAID, was associated with lower HIT-6 and allodynia scores. This suggests that its primary mechanism—cyclooxygenase inhibition and peripheral anti-inflammatory effects—may be more effective in reducing pain and sensory sensitivity in mild to moderate migraine episodes[18,19].

Interestingly, no previous study has specifically examined the effects of both eletriptan and dexketoprofen on headache impact (HIT-6) and allodynia scores, making this study a novel contribution to the literature. Moreover, the absence of significant differences in MIDAS and VAS scores between the two drugs suggests comparable overall impacts on disability and pain intensity, albeit through distinct mechanisms. This observation aligns with Lampl et al.'s[20] findings that the efficacy of triptans, including eletriptan, may be limited in cases of advanced central sensitization.

The correlation analysis revealed significant positive relationships between HIT-6 and MIDAS scores in both groups, consistent with prior studies showing that increased headache impact correlates with greater migraine-related disability[21,22]. However, group-specific differences emerged in the associations involving allodynia and VAS scores. HIT-6 and allodynia were significantly correlated only in the dexketoprofen group. Conversely, HIT-6 and VAS were significantly correlated in the eletriptan group, highlighting the central role of pain intensity in determining headache impact in this cohort.

This study has several limitations that should be recognized. The generalizability of the results is limited due to the relatively small sample size and the single-center study design. Additionally, the exclusive focus on female participants limits the applicability of the results to male patients and prevents any conclusions regarding potential gender differences in treatment response. The short follow-up period of three months may not fully capture the long-term efficacy or adverse effects associated with these treatments. Moreover, the study's scope was restricted to HIT-6, MIDAS, Allodynia Questionnaire, and VAS scores, without considering other important factors such as quality of life, medication adherence, or side effects. Addressing these limitations in future multicenter studies with larger, more diverse populations and longer follow-up periods could provide a deeper understanding of the comparative efficacy and mechanisms of action of eletriptan and dexketoprofen in managing migraines.

Conclusion

This study contributes to the growing body of literature on migraine pharmacotherapy by providing a nuanced comparison of eletriptan and dexketoprofen. Further studies should prioritize larger, multicenter trials to confirm these results and investigate the long-term effects of these treatments on patient outcomes. Additionally, examining the effects of combination therapy or the inclusion of preventive migraine treatments could further enhance our understanding of optimal migraine management strategies.

Data Availability Statement: The datasets generated and/or analyzed during the current study are not publicly available due to ethical reasons but are available from the corresponding author on reasonable request.

Ethics Committee Approval: The study was approved by Bezmialem Vakif University Ethics Committee (No: 2025/6, Date: 29.01.2025).

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Conflict of Interest: The authors declare that there is no conflict of interest.

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