

ARAŞTIRMA MAKALESİ

The Value of Diazepam in Postoperative Pain Management;
A Prospective, Cross-Sectional Study of 126 Cases

Ameliyat Sonrası Ağrı Yönetiminde Diazepamın Değeri;
126 Vakalık Prospektif, Kesitsel Bir Çalışma

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Abstract Background: Postoperative pain is related to complications that alter the course and the duration of hospital stay. In this report, based on a dissertation thesis study, we aimed to evaluate from the postoperative pain management point of view, the contribution of diazepam, to the effects of dipyrone in patients undergone surgical operations in our clinic.

Material and Methods: A prospective and cross-sectional study was conducted at Adana Numune Training and Research Hospital General Surgery Clinic between February 1 and March 31, 2006. The study included 126 patients with ages between 15 and 75 years who planned to receive abdominal, breast, anal, and thyroid surgeries. All the cases were on oral dipyrone as the non-opioid analgesic agent. Cases were dichotomized. The study group consisted of 63 patients and were given 10 mg diazepam via intravenous 6 hours after the recovery. The data collected included age, sex, education level, health insurance, and measurements of systolic and diastolic artery pressure, inspiration rate, pulse, and visual analog scale scores performed at preoperative, postoperative recovery time, first, sixth, twelfth and twenty-fourth hours.

Results: A total of 33 patients were excluded due to additional analgesia demand, and the study concluded with 93 patients. There was no statistical significance when two groups were compared for visual analog scale scores ($p>0.05$).

Conclusion: Diazepam appears to have no postoperative value in contribution to the analgesic effects of non-opioid analgesics.

Keywords: Postoperative pain, postoperative analgesia, dipyrone, diazepam, visual analog scale

Özet Amaç: Ameliyat sonrası ağrı, hastanede yatış süresini ve seyrini değiştirebilen komplikasyonlarla ilişkilidir. Bu çalışmada kliniğimizde ameliyat olan hastalarda diazepamın dipirona olan katkısını ağrı yönetimi açısından değerlendirmeyi amaçladık.

Yöntem: Çalışmaya Adana Numune Eğitim ve Araştırma Hastanesi Genel Cerrahi Kliniği'nde genel anestezi ile abdominal, meme, anal ve tiroid operasyonu geçirmiş olan 15-75 yaş arasında 126 vaka dahil edildi. Vakalar iki gruba ayrıldı. Tüm vakalar non - steroid analjezik olarak dipiron (metamizol sodyum) almaktaydı. Bu vakalar arasından rastgele seçilen 63 vakaya sedatif ve ajitasyonu baskılayıcı özelliklere sahip, anksiyolitik ajan olan diazepam, operasyon sonrası uyanma anını takiben ilk analjezi talebinde 10 mg intravenöz yolla uygulandı. Kontrol grubunu oluşturan diğer 63 vakalık gruba serum fizyolojik verildi. Hastaların yaş, cinsiyet, eğitim durumu, sağlık sigortası gibi demografik verilerinin yanında, operasyon öncesi, operasyon sonrasındaki uyanma anı, birinci, altıncı, 12. ve 24. saatlerde sistolik ve diastolik arter basıncı, solunum sayısı, nabız, vücut ısısı değerleri ve Görsel Analog Ağrı Ölçeği puanı kayıt edildi.

Bulgular: Analjezi talebinden dolayı 33 hasta çalışma dışı bırakıldı ve çalışma 93 hasta ile tamamlandı. Her iki grup arasındaki görsel analog ağrı skoru değerleri karşılaştırıldığında istatistiksel olarak anlamlı fark bulunamadı ($p>0.05$).

Sonuç: Çalışmada postoperatif analjezi yönünden opioid olmayan analjeziklerin etkisine diazepamın hiçbir katkısı görülmemiştir.

Anahtar Kelimeler: Postoperatif ağrı, postoperatif analjezi, dipiron, diazepam, görsel analog ağrı ölçeği

DOI: 10.37609/cmj.1419

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Bildirimler/Acknowledgement

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Çıkar Çatışması/Conflict of Interest:

Yazarlar bu makale ile ilgili herhangi bir çıkar çatışması bildirmemişlerdir.

The authors declare that they have no conflict of interests regarding content of this article.

Finansal Destek/Support Resources:

Yazarlar bu makale ile ilgili herhangi bir mali destek kullanımı bildirmemişlerdir.

The Authors report no financial support regarding content of this article.

Etik Beyan/Ethical Declaration

Bu çalışma, birinci yazarın aynı başlıklı Tıpta Uzmanlık Tezini yeniden düzenlenmesi ile oluşturulmuştur ve çalışmada Helsinki Bildirgesi kriterleri göz önünde bulundurulmuştur.

This study was prepared by rearrangement of the speciality thesis by the first author and Helsinki Declaration rules were followed to conduct this study.

Geliş/Received: 31.05.2020

Düzeltilme/Revised: 06.07.2020

Kabul/Accepted: 19.07.2020

e-ISSN: 2717-9699

www.citymedicaljournal.com

1. INTRODUCTION

The International Association for the Study of Pain, has proposed a new definition of pain in 2019 to replace “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” definition, which was announced in 1979 with “An aversive sensory and emotional experience typically caused by, or resembling that caused by, actual or potential tissue injury”. The task force that reviewed the current definition has also added accompanying notes to the proposed definition, indicating that pain is subjective, influenceable, individually specific, has effects on function, social, and psychological well-being. The task force suggests that pain should not be reduced to a sensory pathway activity. Moreover, reports of pain should be accepted as such and respected, and verbal description is only one of the expressions and inability to communicate does not mean that being is not experiencing pain. The definitions of pain clearly show that it is a chain of multiple events and is affected by emotional fluctuations. Under similar physical or even psychological conditions, pain may be defined unequally by different individuals (1–3).

Postoperative pain, beginning immediately with surgical trauma and expected to decrease and diminish by tissue repair gradually, is a mixture of unpleasant sensory, emotional and mental experience associated with autonomic, metabolic, physiological, and behavioral responses (4).

In the management of postoperative pain, non-steroid anti-inflammatory drugs (NSAID) and paracetamol are widely used and recommended for mild intensity pain (5). Yet, researchers still search for different alternatives to minimize the pain. Diazepam is a commonly used anxiolytic with muscle relaxant and sedative effects and has been reported in trials for postoperative pain management in cases with mild pain (6–8).

In the study, we aimed to evaluate from the postoperative pain management point of view, the contribution of diazepam, to the effects of dipyrone in patients undergone surgical operations in our clinic.

2. MATERIAL AND METHODS

A prospective and cross-sectional study was conducted at Adana Numune Training and Research Hospital General Surgery Clinic between February 1 and March 31, 2006. The study included 126 patients with ages between 15 and 75 years who planned to receive abdominal, breast, anal, and thyroid surgeries. All the cases were on

oral dipyrone as the non-opioid analgesic agent. Cases were dichotomized. The study group consisted of 63 patients and were given 10 mg diazepam via intravenous 6 hours after the recovery. The data collected included age, sex, education level, health insurance, and measurements of systolic and diastolic artery pressure, inspiration rate, pulse, and visual analog scale (VAS) scores performed at preoperative, postoperative recovery time, first, sixth, twelfth and twenty-fourth hours.

Patients with cardiovascular system diseases, renal failure, bleeding risks, hyperkalemia were not included. Cases with contraindications for non-steroid anti-inflammatory drugs and diazepam were also not included.

Ethical Declaration

This study was prepared by rearrangement of the speciality thesis by the first author and Helsinki Declaration rules were followed to conduct this study.

2.1 Visual Analog Scale

Visual Analog Scale is one of the most commonly used scales for pain evaluation in the studies. Although it provides a highly subjective measurement, it is a time saving and patient-friendly method. Scores of zero and ten are marked at the beginning and the end of a 100 mm line. The patients are requested to mark a point between two numbers that are told to be the extremes with words “no pain” for zero and “worst pain” for ten (9).



Figure 1. Visual Analog Scale

3. RESULTS

Among the 126 patients, 33 (26.19%) patients requested additional analgesic medication and, therefore, were excluded from the final analysis. The study concluded with 93 patients. In table 1, the summary of the analysis was presented. There were no statistically significant differences between the groups regarding average operation duration, vitals, VAS, and demographic data ($p>0,05$).

The majority of the cases in both groups received upper abdominal surgery ($n=23$, 36.51% in the study group, $n=28$, 44.44% in the control group). The number and the percentage of the patients received lower abdominal, breast, anal and neck surgeries were 15, with 23.81%, 12, with 19.05%, 9, with 14.29%, and 4, with 6.35% in the study group, and 16, with 25.40%, 9, with 14.29%, 8, with 12.70%, and 2, with 3.17% in the control group, respectively.

Table 1. Summary of the results

		Study Group		Control Group		
		Mean±SD		Mean±SD		p
Age		45.20±1.6		44.80±1.8		>0,05
		n	%	n	%	
Gender	Female	41	65.08	37	58.73	>0,05
	Male	22	34.92	26	41.27	
Literacy	Illiterate	4	6.35	5	7.94	
	Literate with no education	9	14.29	9	14.29	>0,05
	Primary education	31	49.21	29	46.03	
	Secondary education and higher	19	30.16	20	31.75	
		Mean±SD		Mean±SD		
Operation duration (min)		135.00±4.50		136.00±4.60		>0,05
Pulse rate (beat/min)	Pre-op	81.20±7.96		81.52±6.72		
	Recovery	77.15±6.95		75.61±7.12		
	1st hour	75.40±7.86		75.86±6.25		>0,05
	6th hour	77.60±5.37		76.16±7.14		
	12th hour	76.35±5.83		75.74±8.49		
	24th hour	79.70±7.88		77.80±4.89		
Respiration rate (resp/min)	Pre-op	12.60±1.68		12.70±2.31		
	Recovery	12.66±1.87		12.30±2.03		
	1st hour	12.50±1.63		12.40±1.52		>0,05
	6th hour	11.95±1.12		12.33±1.36		
	12th hour	12.90±1.83		12.33±1.45		
	24th hour	12.05±1.14		12.10±1.27		
Systolic blood pressure (mmHg)	Pre-op	126.36±15.23		127.63±24.16		
	Recovery	132.87±21.45		128.52±19.79		
	1st hour	129.62±27.14		134.49±20.82		
	6th hour	124.44±28.36		125.50±16.02		>0,05
	12th hour	126.29±12.94		128.57±16.42		
	24th hour	125.50±17.57		129.50±13.79		
Diastolic blood pressure (mmHg)	Pre-op	81.20±12.47		83.25±16.30		
	Recovery	83.69±12.34		82.31±11.79		
	1st hour	78.54±7.87		79.50±12.23		>0,05
	6th hour	72.28±9.33		74.50±10.73		
	12th hour	75.81±10.13		78.86±11.98		
	24th hour	72.64±11.21		74.56±9.84		
Visual analog scale scores	Pre-op	6.21±3.68		6.32±3.67		
	Recovery	6.43±3.69		6.54±3.23		
	1st hour	5.92±2.59		6.17±2.89		
	6th hour	5.78±3.11		5.98±3.11		>0,05
	12th hour	5.49±2.41		5.57±2.73		
	24th hour	5.51±2.44		5.58±2.55		

The number of patients requested for additional analgesia in the study group was two folds higher compared to the control group (study group n=11, 33.33%, control group n=22 66.67%, total n=33). The data of 33 patients who requested additional analgesia was excluded from the final analysis.

None of the 63 patients in the study group presented dizziness, vision impairment, headache, dysarthria, ataxia, memory impairment, or any other side effects or complications related to diazepam.

4. DISCUSSION

The study analyzed the additional effect of diazepam to a conventional non-opioid medication pain management protocol in general surgery patients by using six VAS scores beginning from the preoperative moment to the postoperative 24th hour. The non-opioid medication was dipyrone. The analysis of the scale scores did not yield significant results for any of the recordings. The analgesic effect of dipyrone seemed to provide sufficient relief for the patients.

There are studies on the pain management point of view on dipyrone reporting efficient analgesic treatment. Foster et al., in a study researching analgesic efficiency of paracetamol, ibuprofen, and dipyrone, conducted on 22 healthy individuals by using the visual analog scale for pain severity measurement, indicated that ibuprofen and dipyrone showed statistically significant analgesia in the experimentally formed pain area (10). Gronau et al., in a study conducted on 215 participants comparing a study group on a non-steroid anti-inflammatory protocol to on-demand pain relief, reported that the study group showed lower pain intensity and postoperative complication rates (11).

In a similar concept, Bektas et al. compared the analgesic effects of lornoxicam and rofecoxib to morphine in total abdominal hysterectomy patients and indicated that there were no significant differences between the groups (12).

Cevheroglu et al. and Kucuk et al. both reported that although diazepam had lower anxiolytic properties compared to other benzodiazepines, effectiveness in pain relief did not show any significant differences (13, 14). Also, Pakulska et al. demonstrated a lower anti-nociceptive effect of diazepam and midazolam compared to morphine, indomethacin, and dipyrone in a study conducted on mice (15). Besides, diazepam had been one of the most recommended elements in dentist prescriptions for optimum patient comfort regarding pain relief (16).

Our study results seem to be similar to the results of the studies above, and the analysis results did not show any difference in pain measurement scores collected by VAS.

Finally, among the 33 patients who requested additional analgesia and excluded from the analysis, the ratio to the operation type showed exciting results. The number and the percentage of the patients asked for additional analgesia in upper abdominal, lower abdominal, breast, anal and neck surgeries were four, with 17.39%, one, with 6.67%, three, with 25.00%, three, with 33.33%, and zero, with 0% in the study group, and eight, with 28.57%, two, with 12.50%, seven, with 77.78%, four, with 50.0%, and one, with 50.00% in the control group, respectively. These numbers indicate that upper and lower abdominal surgery patients experienced a more comfortable postoperative 24 hours.

4.1 Limitations

The visual analog scale should be included in the significant limitations topic of the study. Already being a highly subjective measurement method, the addition of the multiple measurements performed on the same subject should remind the Hawthorne effect in the results. Thus, decreasing the reliability similar to many studies. Also, the only analgesic used for comparison was dipyrone, and other non-opioid analgesics may be included in further studies (10, 17). Finally, the study was limited to a single clinic and a small sample size.

5. CONCLUSION

In the study, diazepam appears to have no postoperative value in contribution to the analgesic effects of non-opioid analgesics in addition to the anxiolytic and sedative properties. Moreover, it was seen that in one of four patients, pain management with dipyrone was not sufficient. Although the majority of the patients did not request any additional analgesia, the remaining may never be ignored. The addition of more studies focusing on pain management may address more flexible and patient-focused protocols.

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