

Effect of Dietary Management in Patients with Chronic Kidney Disease

Ruaa Nashat Al-Saffar ¹, Frqad Salih Jawad ¹, Amasee Falah Jabbar ¹, Ahmed Neamah Abed ¹, Ahmed Ali Shaaban ¹, Mahmoud M. Al-Mukhtar ^{1&2} and Rania Abd Elmohsen Abo El Nour ^{1&3}

¹ Anaesthesia Techniques Department, College of Health and Medical Techniques, Al-Mustaqbal University, 51001, Babylon, Iraq.

² College of Medicine, Al-Mustaqbal University, 51001 Babylon, Iraq.

³ Community Health Nursing Department, Beni-Suef Health Technical Institute, Ministry of Health, Beni-Suef 62511, Egypt.

E-Mail: rania.abd.elmohsen@uomus.edu.iq

Abstract

Objective: This research explores the relationship between diet and kidney disease, controlled study was to examine the sedoanalgesia effects of ketamine-dexmedetomidine and ketamine-midazolam during dressing changes in burn patients. **Methods:** a total of 90 adult burn patients classified as ASA physical statuses I and II were enrolled in the study. The patients were randomly assigned to one of three groups. A continuous infusion of dexmedetomidine was administered to the dexmedetomidine group (group KD) (n = 30) at a rate of 1 $\mu\text{g kg}^{-1}$, ten minutes prior to the dressing change, while the midazolam group (group KM) (n = 30) received midazolam at a rate of 0.05 mg kg^{-1} , and the saline group (group KS) (n = 30) received a continuous intravenous infusion of saline. One minute before the dressing change, each participant was given 1 mg kg^{-1} of ketamine intravenously. Data on hemodynamic variables, pain and sedation scores, the number of patients needing additional ketamine, the duration of the dressing change, and recovery time were recorded. **Results:** Systolic blood pressure (SBP) levels were notably lower at baseline and post-ketamine administration, as well as 5, 10, and 15 minutes after the procedure in the KD group compared to the other groups ($P < 0.05$). There were no significant differences in pain scores among the groups throughout the duration of the study. Sedation scores at the end of the first hour were significantly higher in the KD group compared to the KM and KS groups ($P < 0.05$). **Conclusions:** In burn patients receiving dressing changes, both combinations of ketamine with dexmedetomidine and ketamine with midazolam provided effective sedation and pain relief without significant adverse effects.

Keywords: Dexmedetomidine, Ketamine and Midazolam.

Introduction

The possible function of food and nutrition goes beyond merely providing a mix of nutrients. Public health guidelines for the primary prevention of chronic illnesses have shifted over time from focusing on individual nutrients to emphasizing whole foods and dietary patterns, particularly advocating for plant-based diets (Chiu, Y. F., et al., 2014). Conversely, the conventional approach to dietary management for chronic kidney disease (CKD) primarily emphasizes the amount of energy, protein, and the limitation of certain micronutrients, while often neglecting the

overall quality of the diet. Additionally, there is a common trend to limit the consumption of fruits and vegetables to avoid diet-induced hyperkalemia. Therefore, it is not surprising that the dietary quality among CKD patients tends to be inadequate (Palmer, S. C., et al., 2015). This situation can be attributed to various factors, including economic and social obstacles frequently associated with CKD, a focus on reducing sodium, potassium, and phosphorus that compromises overall diet quality, and a general shift towards western diets that favor convenience, fast foods, and ultra-processed options (Campbell, K. L., et al., 2016).

In recent years, observational studies have revealed that the quality of one's diet can impact the outcomes for patients with chronic kidney disease (CKD). These studies investigate the combined effects of food and how the nutrients in various dietary patterns correlate with health results (Gündüz, M., et al., 2011). At times, findings challenge the conventional understanding of the "renal diet," suggesting that dietary quality might not always align with traditional dietary recommendations. In this edition of the Journal, Smyth et al. present a substantial prospective cohort study involving more than half a million community-dwelling adults in the United States, examining the relationship between various dietary patterns and the combined outcome of renal-related mortality and the initiation of dialysis over a 14-year follow-up period (Huang, X., et al., 2013). The authors evaluated diet quality using well-recognized dietary patterns, including the Healthy Eating Index, Mediterranean Diet Score, and Dietary Approaches to Stop Hypertension scores. A consistent observation is that individuals who adhered to any of these healthful dietary patterns showed a lower risk of the combined outcome (Luis, D., et al., 2016).

The reader will recognize that typical aspects of these eating habits include a higher consumption of fruits, vegetables, legumes, and whole grains being associated with a healthy diet, while an increased intake of red meat, saturated fats, and processed foods (which are often high in added sugars and/or sodium) is linked to an unhealthy diet (Hung, A. M., et al., 2015).

This research aimed to explore alternative pain management techniques and to assess the impacts of ketamine, ketamine-midazolam, and ketamine-dexmedetomidine on hemodynamic parameters, pain relief, and sedation levels in burn patients receiving dressing changes.

1. Patient and methods

2.1 Design of the Study

This is a retrospective cross-sectional study. All dialysis patients at your hospital are open due to the availability of equipment.

2.2 Setting of the study

This study included the patients who referred from 04/2024 to 04/2025.

2.3 The study instruments and sampling

Patients who were less than 18 a long time of age, pregnant or nursing; or had irregular research facility test comes about, extreme touchiness to opioids, noteworthy psychiatric, cardiovascular, renal or hepatic infections were avoided. Patients in group ketamine-dexmedetomidine (KD) ($n = 30$) received intravenous (IV) dexmedetomidine ($1 \mu\text{g kg}^{-1}$) over 10 minutes, before intervention, followed by 1 mg kg^{-1} of IV ketamine.

Patients in group ketamine-midazolam (KM) ($n = 30$) received IV midazolam (0.05 mg kg^{-1}) over 10 minutes, before intervention, followed by 1 mg kg^{-1} of IV ketamine. Patients in group ketamine-saline (KS) ($n = 30$) received IV saline over 10 minutes, before intervention, followed by 1 mg kg^{-1} of IV ketamine.

2.4 Inclusion criteria

Patients age below 18 and above 60, patients with no medical disease (past medical history negative).

2.5 Exclusion criteria

Lack of histopathological report, Alvarado score below 3 and above 7 and incomplete information needed for calculating the Alvarado score.

2.6 Study protocol

The number of patients requiring extra ketamine; and the torment and sedation scores, time to dressing alter and recuperation time for all patients were recorded. Hemodynamic factors were moreover recorded at standard (some time recently the think about medicate implantation), after stacking dosage of ponder medicate, sometime recently and after ketamine organization, and at 5, 10, 15, 30, 45 and 60 minutes after the method. It was too arranged that in case hypotension happened ($\text{SBP} < 80 \text{ mm Hg}$) (AbdulRaheem Hussein Aljuboori,

S., et al., 2025), the patients would be fundamentally treated with liquid organization (0.9% saline 10 mL kg⁻¹h⁻¹). Patients were educating on the utilize of Visual Practically equivalent to Scale (VAS) self-rating strategy. All patients utilized a partitioned 10-cm VAS gadget to evaluate the level of torment (0, no torment; 10, most exceedingly bad conceivable torment). Sedation was surveyed on a five-point scale ('0' = no sedation patient wide wakeful and caution; 4' = deep profound rest, troublesome to energize). Torment and sedation were evaluated by a right hand at 1, 2, 4, 6, 12 hours postoperatively.

2.7 Statistical analysis

Subjective information was analyzed with Pearson Chi-square test. Quantitative information, communicated as 'mean ± standart deviation (SD)', were analyzed by one way ANOVA test. A likelihood esteem of .05 was considered measurably critical. All investigations were done by utilizing measurable bundle for social sciences (SPSS) form 10.0 (SPSS, Chicago, IL), (Mann Whitney, U. 2007).

2. Result

The characteristics of the 90 patients who completed the ponder are summarized in

(Table 1). Statistic characteristics (age, weight, sex), time to dressing alter and recuperation time were comparable among the bunches. SBP was essentially lower in bunch KD in comparison with the other bunches at, sometime recently and after ketamine organization; and 5, 10 and 15 minutes after the strategy ($P < .05$) as shown in (Table 2). From that point, there was no noteworthy distinction in SBP among the bunches (information not appeared in Table 2). No critical distinction was found in DBP and HR among the bunches (Xu, H., et al., 2014).

There was no statistically significant difference in pain scores among the groups during the study period as shown in (Figure 1). There were four antagonistic occasions in all the bunches (Figure 2). At 23 year old male understanding who had gotten ketaminedexmedetomidine combination experienced brief (<1 hour) scene of hypotension (SBP, 60 mm Hg), and it was treated basically with IV liquid (0.9% saline mixture 10 mL kg⁻¹ h⁻¹) organization. Two patients in bunch KM experienced sickness and heaving. As it were 1.0 persistent among those who had gotten ketamine-saline combination experienced mental trip. Hypoxia and apnea were not watched in any of the selected about patients.

Table 1. Data of patients in the study groups

Parameters	Group KD (n= 30)	GroupKM (n= 30)	Group KS (n= 30)
Age (years)	26.7 ± 6.1	25.0 ± 6.8	33.4 ± 18.9
Sex (M/F)	20/10	22/8	19/11
Weight (kg)	61.5 ± 7.6	65.2 ± 9.9	63.7 ± 6.5
Dressing changes time (min)	19.0 ± 9.1	22.8 ± 9.7	20.7 ± 4.6

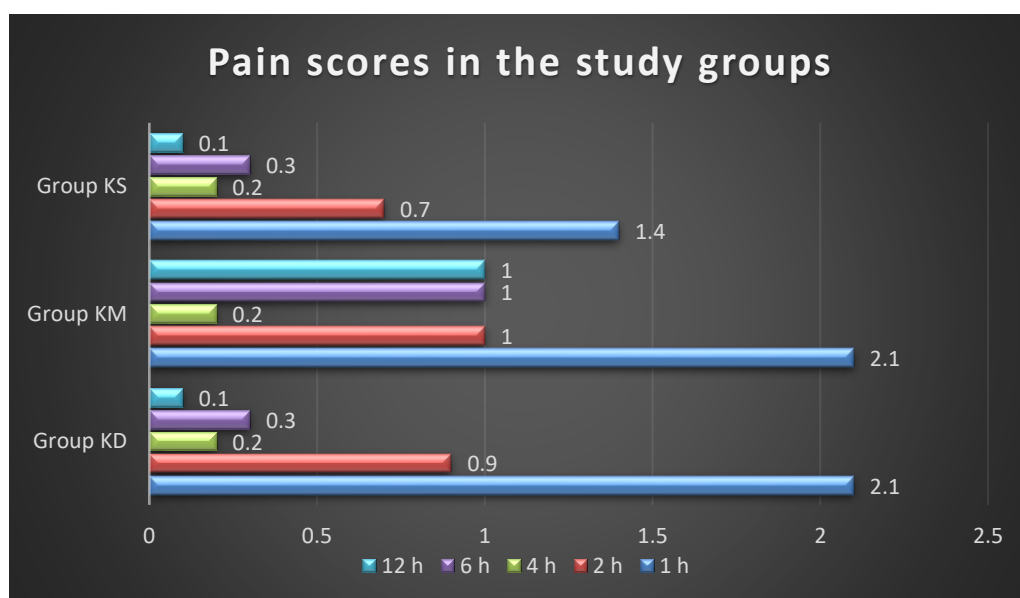
Time to dressing change, age and weight values in the above table are in terms

of 'mean ± SD'

Table 2. Data of blood pressure in the study groups

Parameters	Group KD (n= 30)	GroupKM (n= 30)	Group KS (n= 30)
Before infusion	140.9 ± 18.4	146.3 ± 16.1	138.2 ± 20.3
After infusion	141.7 ± 16.7	147.8 ± 17.9	143.8 ± 24.6
Before ketamine	135.4 ± 18.0*	149.8 ± 17.1	140.1 ± 22.0
After ketamine	137.9 ± 18.0*	157.1 ± 18.7	148.4 ± 24.5
After 5 min	137.5 ± 19.7*	161.2 ± 16.6	155.4 ± 23.2
After 10 min	137.7 ± 21.1*	162.2 ± 20.4	157.0 ± 29.8
After 15 min	139.0 ± 21.7*	164.2 ± 14.7	152.0 ± 18.7

*In terms of 'mean ± SD'. *P<0.05*

**Figure 1.** Pain scores in the study groups

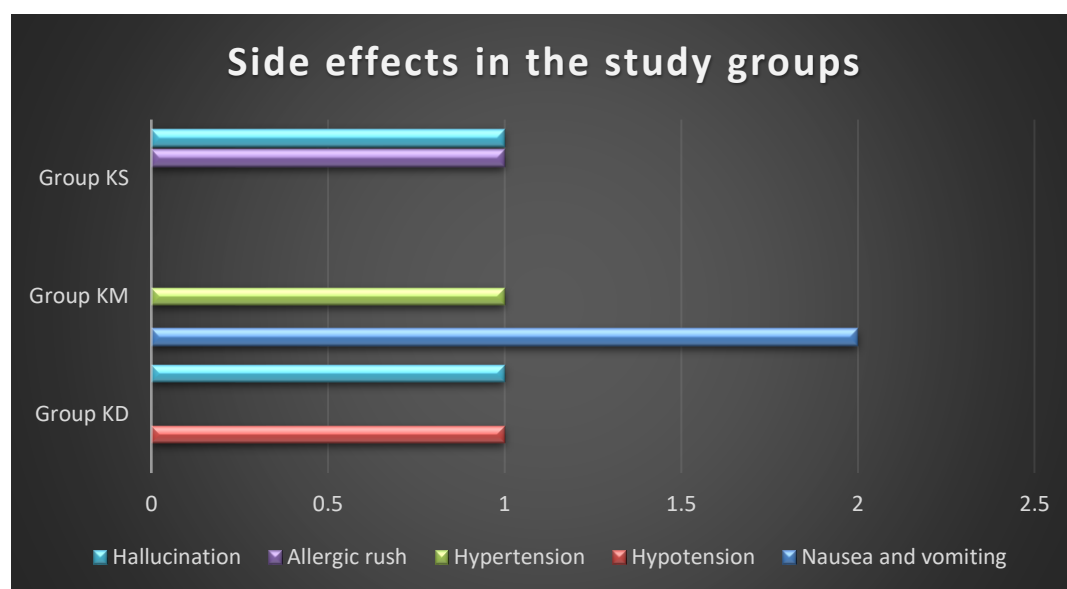


Figure 1. Side effects in the study groups

3. Discussion

Burn care requires day by day debridement, dressing changes and appraisal with respect to the require for skin joining. These methods are difficult and may require a working room environment. To extend the consolation of burn patients amid dressing changes, it is essential to allow a quite custom-made IV sedation with pain relieving and anxiolytic drugs and to require into consideration the daily self-evaluation of the patient pain. The torment taking after burn damage could be a complex blend of foundation and occurrence torment with fiery and neuropathic components. Burn damage is among the foremost serious shapes of injury, and burn torment, in specific, is one of the foremost serious shapes of intense torment, which requires forceful utilize of opioids. As of now, opiates such as morphine, meperidine and fentanyl are the foremost common shapes of pain-relieving treatment in utilize for burn patients (Walker, J., et al., 2006). These days ketamine and other pain-relieving drugs such as acetaminophen, NSAIDs (nonsteroidal anti-inflammatory drugs), nearby anesthetics, benzodiazepines, clonidine, nitrous oxygen blends; and mental strategies are utilized (Aho, M., et al., 2013).

Dexmedetomidine could be a as of late created α_2 -agonist that appears much more noteworthy selectivity for the 2-adrenoceptor than the other broadly utilized agonists (e.g., clonidine). It produces dose-dependent absence of pain (including spinal and supraspinal locales) without respiratory depression. The pain-relieving profile of dexmedetomidine has not been completely characterized in people. In a past think about, it was detailed that clonidine counteracted the thoughtful incitement of ketamine, (Green, S. M., et al., 2000), by ethicalness of its activity in diminishing thoughtful outpouring, and the combination of clonidine and ketamine may be valuable for burn patients with hypertension or myocardial ischemia. In this consider, balance of the thoughtful incitement by ketamine may have been given by dexmedetomidine.

The foremost regularly seen unfavorable impact of ketamine is rise of responses or mental trips. Recuperation disturbance of ketamine has been unassumingly related with diminishing age and the nearness of a basic therapeutic condition. In this study, as it were 1 understanding among those who had gotten as it were ketamine-saline combination experienced

mental trip. Owens et al. detailed that 2.9% of the patients who gotten ketamine amid sedation experienced side impacts such as desaturation, apnea, hypotension, It was expressed that no respiratory misery related with the utilize of dexmedetomidine had happened. Essentially, (Taghinia, A. H., et al., 2008), detailed that dexmedetomidine diminished the recurrence of oxygen desaturation and diminished the sums of opiate and anxiolytic necessity. In this ponder, we did not watch any respiratory misery, hypoxia or apnea in any bunch. Hemodynamic factors were too comparable among the bunches in each consider period, but SBP was essentially lower in bunch KD than in bunches KM and KS at the to begin with hour. The foremost habitually seen antagonistic impacts of IV dexmedetomidine that have been detailed are hypotension and bradycardia. as it were a brief scene (<1 hour) of hypotension (SBP, 60 mm Hg) was watched in a 23-year-old male quiet who had gotten ketamine-dexmedetomidine combination, and it was treated primarily with IV liquid (0.9% saline 5-10 mL kg⁻¹ h⁻¹) organization (Talke, P., et al., 2000).

Conclusion

Finally, this can be the primary consider comparing the sedoanalgesic impacts of ketamine, ketamine-dexmedetomidine combination and ketamine-midazolam combination amid wound dressing changes in burn patients. Past considers have detailed constriction of hypertension and tachycardia in reaction to laryngoscopy and intubation by dexmedetomidine. Hemodynamic reactions may be seen amid dressing changes in burn patients, and they are not as visit and significant as those seen with intubation or laryngoscopy. Hemodynamic occasions seen amid dressing changes may be related with either plasma concentration of catecholamines or think about drugs. There was no significantly noteworthy contrast between bunches in hemodynamic parameters, but that systolic blood weight was essentially lower within the KD bunch than KM and KS bunches at the primary hour. The changes in HR and DBP were comparative for the treatment bunches. Dexmedetomidine (plasma concentrations in the run of 0.18 to 0.35 ng/mL) weakens the increments in HR and

plasma norepinephrine concentrations observed during emergence from anaesthesia.

Conflict of Interest

The authors declare no conflict of interest

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