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Research Article

**THE EFFICACY OF DICLOFENAC AND PETHIDINE
SUPPOSITORY IN PAIN MANAGEMENT OF RENAL COLIC
PATIENT: A COMPARATIVE STUDY****Dr Usama Ilyas¹, Dr Sania Naveed², Dr Naveed Asghar³**
^{1,2,3} Nishtar Medical University, Multan**Article Received:** November 2019 **Accepted:** December 2019 **Published:** January 2020**Abstract:**

Objective: Renal colic is a major cause of admission in emergency department. Treatment in the ED is limited to pain management because more than 90% of kidney stones are spontaneous. The currently used analgesics are selected according to the experience of doctors and different theories from various sources. The purpose of this analysis was to compare the common drugs used for renal colic (pethidine and diclofenac).

Study Design: A single-blind randomized comparative study.

Place and Duration: In the Emergency department of Nishtar Hospital, Multan for One year duration from June 2018 to May 2019.

Methods: In this single-blind randomized study, ninety renal colic patients who were admitted in ED of Nishtar Hospital, Multan were randomized into each of 3 treatments which include pre-treatment suppositories diclofenac suppository pethidine and (50 mg, iv), diclofenac suppository (50 mg) or in combination. In this sense, treatment response and hospital stay duration were compared.

Results: The first line drug to reduce severity of pain was diclofenac below 25 years of age subjects. Diclofenac and Pethidine has good efficacy and pain control in patients aged 25 to 46 years. In contrast, older than 45 years of age, pethidine is recommended. We also observed minimum duration of hospital stay in patients receiving pethidine.

Conclusion: It can be concluded that for controlling pain, morphine is much better and decreasing the time of hospital stay with Renal colic patients.

Key words: Pain relief, Emergency department, Renal colic.

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INTRODUCTION:

Kidney stones are the 3rd most usual urinary tract disease after infections and prostate hyperplasia. Renal colic is defined as painful attack and the most common clinical finding. In the world, the most common medical emergencies are Renal colic where many patients regularly go to emergency department¹⁻³. Pain is due to an increase in the upper urinary tract pressure or by the renal capsule distension and obstruction of the kidney pelvis (skin). In general, it is an acute pain that can be seen with vomiting, nausea and macroscopic or microscopic hematuria. As stones are self-concealed in 90% of the cases, the easy way to cope in this situation is to remove the pain⁴. As the most potent drug, opioids can inhibit pain by stimulating MU (μ) and Delta (δ) receptors in the central nervous system⁵. However, complications such as the activation of vomiting in the spinal cord and prevention of respiratory center cause some difficulties in the use of opioids⁶. NSAIDs inhibit the prostaglandin E2 production by inhibiting the enzyme cyclooxygenase and reduce pain⁷. They result in gastrointestinal effects, but complication rate overall is lower than that of opioids. Currently, various methods are used that use different NSAIDs and opioids and other substances according to the doctor's perspective and experience. Some researchers supposed that the simultaneous NSAIDs and opium use is much effective than use separately⁸⁻⁹. Therefore, while the patients in the emergency department were discharged earlier, some studies indicate opioids where NSAIDs are not function as a 1st-line treatment option.

MATERIALS AND METHODS:

This is a randomized, single-blind clinical trial in ninety subjects with acute renal colic who presented in Emergency department of Nishtar Hospital, Multan for one year duration from October 2017 to October 2018. Clinically, patients diagnosed with acute renal colic (pain on the side related with urinary symptoms such as confirmed

hematuria and polyuria were confirmed by ultrasound and physical examination between 18 and 60 years of age were included Ultrasound. Those who have the following conditions are excluded: nursing mothers, pregnant women, patients receiving medication (analgesia) 6 hours before bedtime, patients with renal failure, patients treated with warfarin, coagulation, then use NSAIDs and take people. Therefore, into 3 groups, 90 patients were divided and in every group each drug was tested. At the start of the analysis, each patient pain level was noted. The subjects were then assigned randomly to one of the three active treatment groups: a random combination of 50 mg suppository suppositories, 50 mg suppositories of diclofenac, and two drug combinations. After 10 minutes of each drug initial administration and on arrival the pain scores were noted. After 30 minutes of each drug 2nd dose, pain scores were reevaluated. Patients not relieved pain were given morphine 5 mg in 40 minutes. In this analysis, the pain reduction up to 3 degrees every time was accepted as the treatment response. Within 48 hours, every patient was follow-up and the accuracy of diagnosis of Renal colic was confirmed by laboratory tests and ultrasound. The data were analyzed using marginal models and chi-square analysis. To show the variables basic properties, descriptive statistics were used.

RESULTS:

90 patients were examined in this analysis; 66.7% were male and 33.3 were females. The mean age of the patients in the suppository groups was 34.50 ± 10.97 , 32.20 ± 8.19 and 41.47 ± 11.46 , respectively. Marginal models and Longitudinal analysis were used to investigate the relationship between pain severity and age and the drugs used. For this part, into 4 categories the age variable is divided: 25 years, 26-35 years, 35-45 years and above 45 years. There was a strong association between drug interaction and pain intensity ($P = 0.00$) and age ($P = 0.008$) over time as given in Table I.

Table 1. Relationship between pain intensity and type of treatment received

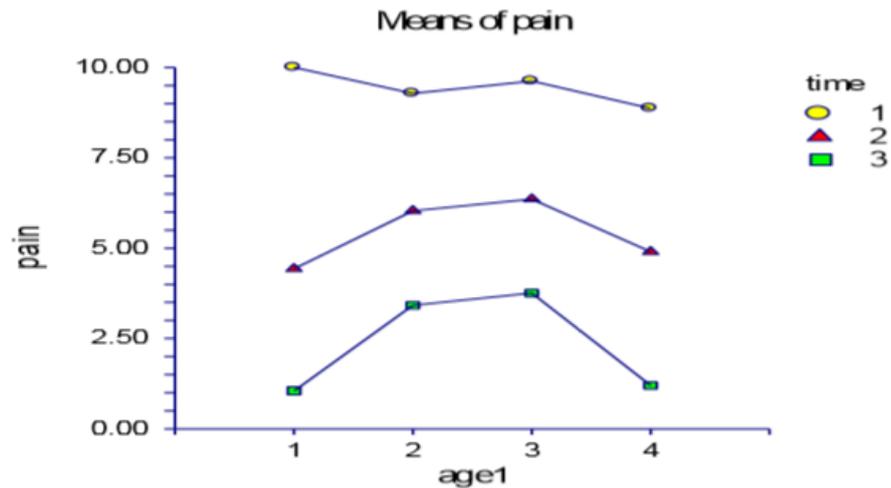
Variable	F	P value
Drug	0.05	0.954
Age	3.38	0.022
Time	418.71	0.000
Drug*age	3.13	0.008
Drug*age*time	12	0.000

There was a significant association between the age, time and drug used ($P = 0.00$). The pain intensity mean at time 2 and 3 was lower than other age groups. This means that at start of the study, patients below the age of 25 have the highest pain level and a rapid increase in pain reduction over time. The best drug to decrease pain was diclofenac in patients under twenty five years of age. Pethidine on the other side is suitable for patients between the ages of 26 and 35 and between the ages of 35 and 45 and older than 45 years combination therapy is suitable (Figures 1 and 2 and Table 2).

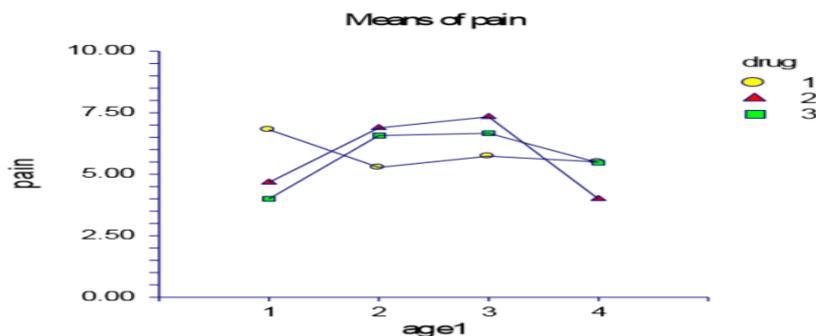
Table 2. Relationship between duration of hospitalization and type of treatment received

Variable	F	P value
Drug	10.60	0.000
Age	1.54	0,217
Drug*age	9.03	0.000

There was a significant association between drug use and hospitalization. Pethidine was the most important used with the lowest hospital stay and diclofenac suppository for patients. In addition, the minimum hospital stay was also associated with the pethidine assumption group.

**Figure 1.** Pain intensity according to age groups over time.**DISCUSSION:**

In this analysis, 3 treatments were effective significantly in alleviating kidney stone pain. But age variable is a factor that influences, the pain relief ratio showed various changes at different ages¹⁰. The most appropriate drug to decrease pain was diclofenac in 25 years of age patients, in groups 25-35 pethidine is effective and pethidine-diclofenac in 45 years of age patients¹¹.

**Figure 2.** Pain intensity in age groups over time according to the drug received.

There was a static variation in the duration of hospital stay in three groups and patients managed with pethidine has minimum hospital stay¹². In an analysis comparing the combination of morphine, ketorolac and renal colic patients, there was no significant difference in pain reduction between groups that received only ketorolac or morphine, but in a study that was more likely to alleviate Renal pain¹³. In last analysis, 50 mg diclofenac suppository was an adequate option for analgesics

to compare the diffuse pain effects in the acute renal colic treatment¹⁴. Furthermore, in this study, for the age group under 25 years the ideal treatment was diclofenac considered. Regarding the use of opioids in the renal colic treatment, a number of studies have been done to compare the morphine safety and efficacy and previous treatment to eliminate renal colic pain in emergency department¹⁵. The results shows no significant difference was found between morphine and

pethidine for pain control, morphine was recommended because of a higher complication of pethidine. Some surveys were also conducted to select NSAIDs. In a study to compare ketorolac and diclofenac, the efficacy and safety of 2 drugs were same and there was no significant variation between them.

CONCLUSION:

It can be concluded that morphine use can better control pain and decrease hospital stay in renal colic patients presenting to the emergency department.

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