Ketoprofen versus Diclofenac sodium in the treatment of renal colic.

Kétoprofène versus Diclofénac sodique dans le traitement de la colique néphrétique

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RÉSUMÉ

Introduction : La colique néphrétique (CN) est un motif fréquent d'admission aux urgences. Le traitement est basé sur les anti-inflammatoire non stéroïdien (AINS). Dans cette étude, on propose de comparer l'efficacité et l'innocuité du Kétoprofène versus le Diclofénac sodique.
Méthodes : étude randomisée contrôlée en double aveugle monocentrique menée sur une période de 8 mois incluant toute CN avec une EVA > 5. Tous les patients ont été randomisés après consentement en 2 groupes: 100 mg KETOPROFEN (GK) ou 75 mg de DICLOFENAC sodique (GD). Le traitement est administré en intramusculaire. L'évaluation de la douleur s'est faite à l'admission (T0), à 20 mn, à 30 mn, à 40 mn et à 60 mn. Un antalgique additionnel est donné à tous les malades si EVA > 3 après 40 mn. Le critère de jugement principal était l'obtention de l'analgésie. Le critère secondaire à étudier était l'apparition d'effets indésirables.
Résultats : Nous avons inclus 80 patients. L'âge moyen était de 39 ± 13 ans dans le GK versus 43 ± 14 ans dans le GD. La moyenne de l'EVA à T0 était similaire dans les deux bras ainsi que le taux de succès thérapeutique (92%). Ce succès était similaire dans les 2 groupes avec une légère tendance en faveur du GK. Nous n'avons pas objectivé d'effets indésirables majeurs.
Conclusion : l'effet des anti-inflammatoires était égale entre le diclofenac et le kétoprofène sur l'efficacité et la tolérance.

Mots-clés
Anti-inflammatoire non stéroïdien,colique néphrétique, diclofénac sodique, kétoprofène

SUMMARY

Introduction: Adult renal colic is a frequent lombo-abdominal painful syndrome in emergencies. Treatment is based on nonsteroidal anti-inflammatory drug (NSAID) but the choice between different NSAIDs remains a subject of controversy. Our aim was to compare the efficacy and the safety of two intramuscularly NSAIDs in renal colic.
Methods: We conducted a 32-week, randomized, double-blind, single-center study . Patients who had renal colic with a visual analogue scale (VAS) ≥ 5 were randomly assigned to receive, by intramuscularly injection, 100 mg of Ketoprofen (GK) or 75 mg of diclofenac (GD). If VAS > 3 after 40 minute, 1 g of paracetamol was administered as rescue analgesia. Primary endpoint was successful treatment. Secondary outcome was the occurrence of side effects.
Results: We have included 80 patients. the average age was 39 ± 13 years for GK versus 43 ± 14 years for GD. The mean VAS on admission was also similar in both arms. We objectified a therapeutic success rate of 92% in both groups. This success was similar in both arms. The use of rescue medication was 32.5% in the GK versus 47.5% in the GD (P=0.17). We have observed in 46% (n =37) of the study population side effects. These effects were only minor and no major intolerance expression was registered.
Conclusion: the efficacy and tolerance of NSAIDs in the treatment of renal colic was the same for diclofenac and ketoprofen.

Key-words
Nonsteroidal anti-inflammatory, renal colic, diclofenac, ketoprofen.

Adult renal colic is a frequent lombo-abdominal painful syndrome in emergencies [1, 2]. Treatment is based on nonsteroidal anti-inflammatory drug (NSAID) [3, 4] but the choice between different NSAIDs remains a subject of controversy. From this perspective we suggest comparing the efficiency of two NSAIDs in the treatment of renal colic; Ketoprofen versus diclofenac sodium. The pain assessment tool was based on the visual analogue scale (VAS). The objective of the study: The aim was to compare the efficacy and the safety of two intramuscularly NSAIDs in renal colic.

METHODS

This is a randomized controlled clinical trial, single-center double-blind realized in Sahloul emergencies service over an eight-month period.

Inclusion criteria were age upper to 16 years, consenting to participation in the study, consultant for renal colic defined by the presence of major criterion (back pain) associated with at least with a minor criterion (urinary symptoms).

• Major criteria: A unilateral lumbar or lombo-abdominal pain, rough, paroxysmal, radiating to the external genitalia, intense: The intensity is measured by the visual analogue scale (VAS) using a graduated scale from zero (no pain) to 10 (unbearable intense pain), this slide is led by a cursor. The patient is asked to move the cursor to quantify the intensity of pain; graduation being invisible to the patient and only patients with a visual analogue scale (VAS) ≥ 5 on 10 are included.

• Minor criteria: signs of urinary type of macroscopic or microscopic hematuria objectified by urine strips, dysuria and urinary frequency and urgency.

In case of diagnostic doubt, we looked for an obstacle in the urinary tracts by:

• Urinary tract without preparation in search of radiopaque calculations projecting forward the urethral route.

• Renal ultrasound looking for:

- Direct signs: identifying a calculation: hyperdense image with a shadow cone.

- Indirect signs : renal pelvis calices dilation.

However, achieving these examinations is not systematic at emergency.

Exclusion criteria were patients with indication against NSAID or morphine, pregnant or breastfeeding women, hepatic and renal failure, known or suspected allergy to NSAIDs, known peptic ulcer, hemorrhagic pathology – Patient receiving anticoagulant therapy, patient having already consumed some analgesic medicine or NSAIDs within 4 hours preceding the inclusion in the study and patient unable to assess the severity of pain according to VAS. After consent, the resident on call in two groups (simple random sample) will randomize all the patients:

• GK (KETOPROFEN): a 5 ml syringe containing a bulb of 100 mg / 2 ml + 1 ml of 5% normal saline solution.

• GD (DICLOFENAC SODIUM): a 5 mL syringe containing a bulb of 75 mg / 3 ml.

A resident in medicine prepared these injections. The route of injection was intramuscularly. Regular monitoring of the visual analogue scale (VAS) as a function of time, at admission, 20 min, 30 min, 40 min and 60 min respectively at T0, T20, T30, T40 and T60, after injection was provided by another resident on a pre-established surveillance form. If VAS > 3 after 40 minutes of the product injection, one gram of paracetamol (in the absence of contraindication) was administered to the patient on slow intravenous .

Primary outcome was successful treatment. This success was defined as the decrease in the intensity of pain objectified by a decrease of VAS ≥ 50% of its initial value. Secondary outcomes were the occurrence of side effects, time to resolution of pain (this period is defined as the time elapsed for the reduction of the initial VAS is ≥ 50%) and VAS drop percentage.

The data obtained in this study were collected, stored and analyzed by the SPSS computer software (version 13.0). Different standard statistical tests will be applied (independent t-test, Chi test two crosstabs) as variables.

For comparison of the two groups regarding the characteristics and effects between the two NSAIDs, we realized an analysis of variance. The difference was considered statistically significant for p values ≤ 0.05.

RESULTS

We have included eighty patients. The two groups were comparable regards to age (p=0.57), the average age was 39±13 years for ketoprofen group versus 43±14 years for diclofenac sodium group. A slight male predominance with a sex ratio at 0,57 no significant difference between the two groups (p=0.12). The two groups were also comparable on diabetic terrain view, location of pain (p=0.45), anuria and fever (Table I). The mean VAS on admission was also similar in both arms (Table II). We objectified a therapeutic success rate of 92% in both groups (Figure 1). This success was similar in both arms with a slight tendency for the ketoprofen group (Figure 2). The use of rescue medication was 32.5% (n=13) in the GK versus 47.5% (n=19) in the GD no significant difference (p=0.174). We have observed in 46% (n=37) of the study population side effects. These effects were only minor and no major intolerance expression was registered. Adverse events were more frequent in the GK with no significant difference (p= 0.693). The two most common side effects were vomiting and epigastric pain (Table III).

Except 7.5% (n=6) of patients, renal ultrasound was performed systematically. The most frequently sonographic sign observed in our study population was identified nephrolithiasis (31%). Among all patients included in the study, only 29% (23) were hospitalized.

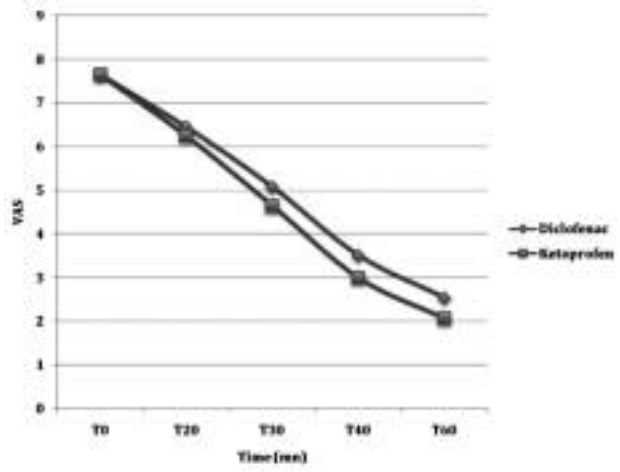

Figure 1 : Scaleimprovement in pain during the first hour

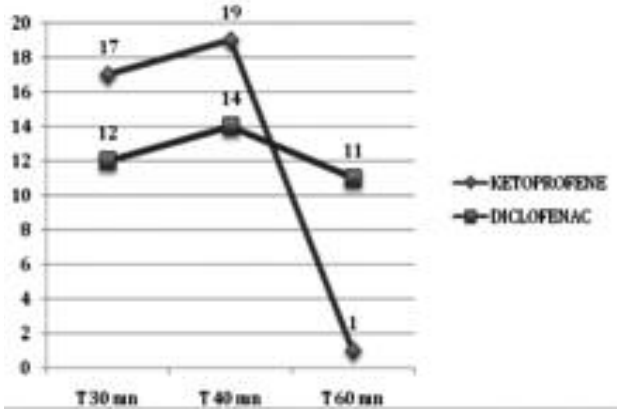

Figure 2: Decreasing of VAS ≥ 50% depending on the time.
(N = 37 in each arm, axis abscissa : time en mn, axis ordones : effective)

Table 1 : Random patient Demographic

	Kétoprofène (n = 40)	Diclofenac (n=40)
Age, yrs	39 ± 13	43 ± 14,5
Male	20 (50%)	26 (65%)
Diabetesmellitus	9 (22%)	10 (25%)
Location right	22 (55%)	19 (47%)
Fever	11	12
Anuria	1	0
Renalfailure	1	0

Table 2 : score improvement in pain during the first hour

Pain scale	Ketoprofen(n = 40)	Diclofenac (n=40)
VAS_T0	7,65 ± 1	7,65 ± 1
VAS_T20	6,25 ± 1,2	6,45 ± 1,5
VAS_T30	4,65 ±1,5	5,08 ± 1,9
VAS_T40	3 ± 1,2	3,51 ± 1,7
VAS_T60	2,07±1	2,54±1,5

Table 3 : Adverse events (P= 0,693)

Adverse events	Ketoprofen (n=22)	Diclofenac (n=15)
Vomiting	9	6
epigastric pain	6	5
nausea	3	2
Vertigo	2	2
Sweats	1	0
Pruritus	1	0

DISCUSSION

Many analgesics treatments have been used in the treatment of renal colic, including mainly NSAIDs, opioids, and antispasmodic. Several studies have shown that NSAIDs are more effective and safer than opioid analgesia in renal colic. [5] Therefore NSAIDs were considered the analgesic of choice in the treatment of renal colic.

We made a reviewed literature and found that few studies that have compared ketoprofen versus diclofenac. Paulin Ng et al [6] have compared these two NSAIDs intramuscularly in the treatment of musculoskeletal pain in the emergencies in a population of 154 patients. They found a similar equal efficacy and safety between Ketoprofen and diclofenac intramuscularly in the treatment of acute musculoskeletal pain less than 12 hours in a Chinese adult population. Tans say JAMDDE et al found that Ketoprofen is more efficient and faster than Diclofenac [7].

In our study, a similar efficacy between ketoprofen and diclofenac intramuscularly in the treatment of renal colic despite anti-inflammatory power of both NSAIDs deferential described in the literature was objectified [8, 9]. Indeed, the two groups had a similar reduction of pain score during the 60-min observation time with a success rate of 92%. This success was similar in the two groups with a slight tendency for the ketoprofen group. This trend can be explained by its S-enantiomer (+) [10, 11]. Some studies [12, 13] have objectified identical efficiency of these two NSAIDs. Dash et al [14] reported that 90% of patients who received a single dose of 75 mg diclofenac sodium intramuscularly, achieved more than 50% decrease in visual analogue scale at 60 min. Holdgate and Pollock [4] reported a rate of 18.9% of patients requiring rescue analgesia after a single dose of NSAIDs for renal colic.

The efficacy and safety of ketoprofen and oral diclofenac were compared in a multicenter, randomized, double blind, including 239 patients with advanced osteoarthritis of the hip and /or knee. Both treatments were iso-effective with a similar rate of adverse events in both groups [15]. According to some authors [4], the incidence of vomiting in patients treated with NSAIDs is 5.8%. While the incidence of vomiting in our series, was 18.75%.

Our therapeutic trial is the first that has tested both

NSAIDs intramuscularly in the treatment of renal colic. Our study had two limitations; the first was that the intramuscular route on the one hand is not a Privileged way in emergency, on the other hand, the risk of injury of the sciatic nerve via this route. Other disadvantage of intramuscular is pain at the injection site.
The second limitation was the single-center nature of the study, and therefore, the results have only a local value.

CONCLUSION

The efficacy and tolerance of anti-inflammatory drugs in the treatment of renal colic was the same for diclofenac and ketoprofen. Other factors such cost, side effect profile, and personal preference may be taken into consideration in the choice of treatment.

Disclosure of interest: The authors declare that they have non-competing interest.

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