Rev Bras Anestesiol. 2014;64(5):335–342

REVISTA BRASILEIRA DE ANESTESIOLOGIA

Official Publication of the Brazilian Society of Anesthesiology
www.sba.com.br

SCIENTIFIC ARTICLE

Adding 75 mg pregabalin to analgesic regimen reduces pain scores and opioid consumption in adults following percutaneous nephrolithotomy

Harun Aydoğan[a,*], Ahmet Kucuk[a], Hasan Husnu Yuce[a], Mahmut Alp Karahan[a], Halil Ciftci[b], Mehmet Gulum[b], Nurten Aksoy[c], Saban Yalcin[a]

[a] *Department of Anesthesiology and Reanimation, Harran University Medical Faculty, Sanliurfa, Turkey*
[b] *Department of Urology, Harran University Medical Faculty, Sanliurfa, Turkey*
[c] *Department of Clinical Biochemistry, Harran University Medical Faculty, Sanliurfa, Turkey*

Received 11 June 2013; accepted 19 August 2013
Available online 25 October 2013

KEYWORDS
Pregabalin;
Opioid analgesics;
Percutaneous nephrolithotomy

Abstract
Background and objectives: Adding novel adjunctive drugs like gabapentinoids to multimodal analgesic regimen might be reasonable for lessening postoperative pain scores, total opioid consumption and side effects after percutaneous nephrolithotomy. We aimed to evaluate the effect of pregabalin on postoperative pain scores, analgesic consumption and renal functions expressed by creatinine clearance (CrCl) and blood neutrophil gelatinase-associated lipocalin (NGAL) and cystatin C (Cys C) levels in patients undergoing percutaneous nephrolithotomy (PCNL).
Methods: 60 patients undergoing elective PCNL were enrolled in the study. Patients were randomized to oral single dose 75 mg pregabalin group and a control group. Visual Analog Scale pain scores (VAS), postoperative intravenous morphine consumption during the first 24 postoperative hours, serum NGAL, Cys C levels and creatinine clearance (CrCl) was measured preoperatively and post-operatively at 2nd and 24th hour.
Results: Postoperative VAS scores were significantly decreased in the pregabalin group at the postoperative 30th min, 1st, and 2nd hour ($p = 0.002$, $p = 0.001$ and $p = 0.027$, respectively). Postoperative mean morphine consumption was statistically significantly decreased for all time intervals in the pregabalin group ($p = 0.002$, $p = 0.001$, $p = 0.001$, $p = 0.001$, $p < 0.001$, respectively). No statistically significant differences were found between the two groups with regard to CrCl, or Cys C at preoperative and postoperative 2nd and 24th hour. Postoperative 24th hour NGAL levels were significantly decreased in the pregabalin group ($p = 0.027$).

* Corresponding author.
E-mail: drharunaydogan@yahoo.com (H. Aydoğan).

http://dx.doi.org/10.1016/j.bjane.2013.08.001

Conclusions: Oral single-dose preemptive 75 mg pregabalin was effective in reducing early postoperative pain scores and total analgesic consumption in patients undergoing PCNL without leading to hemodynamic instability and side effects.

PALAVRAS-CHAVE
Pregabalina;
Analgésicos opiáceos;
Nefrolitotomia percutânea

Adição de 75 mg de pregabalina ao regime analgésico reduz escores de dor e consumo de opiáceos em adultos após nefrolitotomia percutânea

Resumo
Justificativa e objetivos: A adição de novos medicamentos adjuvantes, como os gabapentinoides, ao regime analgésico multimodal pode ser razoável para diminuir os escores de dor no pós-operatório, o consumo total de opiáceos e os efeitos colaterais após nefrolitotomia percutânea. Nosso objetivo foi avaliar durante o período pós-operatório o efeito de pregabalina nos escores de dor, consumo de analgésicos e funções renais expressas por clearance de creatinina (ClCr) e níveis séricos de cistatina-C (Cis-C) e lipocalina associada à gelatinase de neutrófilos (LAGN) em pacientes submetidos à nefrolitotomia percutânea (NLPC).
Métodos: Sessenta pacientes submetidos à NLPC eletiva foram incluídos no estudo. Os pacientes foram randomizados para receber pregabalina oral em dose única de 75 mg – grupo pregabalina e grupo controle. Os escores de dor medidos pela Escala Visual Analógica (EVA), o consumo de morfina intravenosa nas primeiras 24 horas de pós-operatório, LAGN sérico, níveis de Cis-C e clearance de creatinina (ClCr) foram mensurados no pré-operátorio e na segunda e 24a horas de pós-operatório.
Resultados: Os escores EVA no pós-operatório foram significativamente menores no grupo pregabalina nos tempos de 30 min, 1 e 2 horas ($p = 0{,}002$, $p = 0{,}001$ e $p = 0{,}027$, respectivamente). A média do consumo de morfina no pós-operatório foi estatisticamente significante menor em todos os intervalos de tempo no grupo pregabalina ($p = 0{,}002$, $p = 0{,}001$, $p = 0{,}001$, $p = 0{,}001$, $p < 0{,}001$, respectivamente). Não houve diferença estatisticamente significante entre os dois grupos em relação ao ClCr ou Cis-C no pré-operatório e na segunda e 24a horas de pós-operatório. Os níveis de LAGN na 24a hora de pós-operatório foram significativamente menores no grupo pregabalina ($p = 0{,}027$).
Conclusões: A dose única de 75 mg de pregabalina oral administrada precocemente foi eficaz na redução dos escores de dor no pós-operatório imediato e o consumo total de analgésicos em pacientes submetidos à NLPC, sem causar instabilidade hemodinâmica e efeitos colaterais.

Introduction

Percutaneous nephrolithotomy (PCNL) is a common surgical method used for the treatment of renal calculi.[1] Postoperative pain due to dilatation of the renal capsule, the parenchymal tract, and peritubal distressing of the nephrostomy tube[2,3] is one of the complex pain conditions in urology. Multimodal postoperative pain management may decrease the incidence of complications, the requirement for hospitalization, and decrease recovery times and health costs.[4]

Opioids have an important role in postoperative pain management despite important side-effects[5] that might have significant impact on patient recovery after surgery.[6] Thus, multimodal postoperative pain management might also be valuable in reducing opioid-related side-effects.[7] Adding novel adjunctive drugs like gabapentinoids to a multimodal analgesic regimen, which has been shown to be effective in postoperative analgesia in different procedures, might be reasonable for lessening postoperative pain scores, total opioid consumption and side effects after percutaneous nephrolithotomy.[8–11]

Pregabalin is a structural analog of the inhibitory neurotransmitter gaba-aminobutyric acid, with anticonvulsant, anti-hyperalgesic, and anxiolytic properties like gabapentin, but with a more favorable pharmacokinetic profile.[12,13] It was proven to be valuable in different postoperative pain situations, including dental and spinal surgery, laparoscopic hysterectomy, and cholecystectomy with different dosage regimens, besides the success in neuropathic pain management.[14–19]

We hypothesized that adding pregabalin to the analgesic regimen would have an effect on postoperative pain scores and renal functions and reduce opioid consumption. To the best of our knowledge this is the first study designed to evaluate the effect of single dose preoperative 75 mg pregabalin on postoperative pain scores, analgesic consumption and renal functions expressed by creatinine clearance (CrCl) and blood neutrophil gelatinase-associated lipocalin