POSTOPERATIVE URINARY RETENTION: EVALUATION OF PATIENTS USING OPIOIDS ANALGESIC

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Fernandes MCBC, Costa VV, Saraiva RA. Postoperative urinary retention: evaluation of patients using opioids analgesic. Rev Latino-am Enfermagem 2007 março-abril; 15(2):318-22.

The study aimed to determine the occurrence of urinary retention in patients using opioid analgesic and to describe the method used for vesical relief. A prospective and consecutive series of 1,316 patients undergoing surgery from September 1999 to April 2003 and using opioids post surgery were studied. From the 1,136 patients, 594 did not use urinary catheters pre-surgery. From these 594 patients, 128 (22%) suffered post operative urinary retention. Urinary retention was significantly related to the use of continuous epidural analgesia (p=0.009). About 69% of patients experiencing urinary retention post surgery returned to spontaneous micturition following a single catheterization. The incidence found of urinary retention was similar to the literature, more frequent in men who received continuous epidural analgesia. The findings suggest orientation and careful nursing team observation of post operative micturition, emphasizing the intermittent aseptically catheterization for urinary retention in order to prevent potential complications of the urinary tract.

DESCRIPTORS: incidence; urinary retention; urinary catheterization; analgesia, patient-controlled; epidural analgesia; nursing

RETENCIÓN URINARIA POST-OPERATORIA: EVALUACIÓN DE PACIENTES EN TRATAMIENTO ANALGÉSICO CON OPIOIDES

Los objetivos de este estudio fueron determinar la incidencia de retención urinaria post-operatoria en pacientes que se encontraban en uso de analgésicos opioides, así como describir el método utilizado en el vaciado vesical. Se trata de una serie prospectiva y consecutiva de 1.316 pacientes quirúrgicos, estudiados de septiembre de 1999 a abril de 2003. De ellos, 594 pacientes no usaron cateterismo de demora en el pre-operatorio. Así mismo, 128 pacientes de este grupo presentó retención urinaria, con una incidencia del 22% (128/594). Hubo una asociación estadísticamente significativa entre la ocurrencia de retención urinaria y el uso de analgesia epidural continua (p=0,009). El 69% de los pacientes presentó una micción espontánea luego de haber realizado apenas un cateterismo. La incidencia de retención urinaria encontrada es semejante a la descrita en la literatura, siendo más frecuente en hombres, así como en aquellos pacientes sometidos a analgesia epidural continua. Se sugiere una orientación y vigilancia adecuadas por el equipo de enfermería, haciendo énfasis en el cateterismo vesical intermitente aséptico, durante el transcurso de la retención urinaria, para prevenir complicaciones del tracto urinario.

DESCRIPTORES: incidencia; retención urinaria; cateterismo urinario; analgesia controlada por el paciente; analgesia epidural; enfermería

RETENÇÃO URINÁRIA PÓS-OPERATÓRIA: AVALIAÇÃO DE PACIENTES EM USO DE ANALGESIA COM OPIÓIDES

Os objetivos deste estudo foram determinar a incidência de retenção urinária pós-operatória em pacientes que estavam em uso de analgesia com opióides e descrever o método utilizado para esvaziamento vesical. Trata-se de uma série prospectiva e consecutiva de 1.316 pacientes cirúrgicos de 9/1999 a 4/2003. Dos 1.316 pacientes, 594 não usaram cateterismo de demora no pré-operatório. Desses, 128 pacientes apresentaram retenção urinária, com incidência de 22% (128/594). Houve associação estatisticamente significativa entre a ocorrência de retenção urinária e uso da analgesia peridural contínua (p=0,009). Cerca de 69% dos pacientes apresentaram micção espontânea após a realização de apenas um cateterismo. A incidência de retenção urinária encontrada é semelhante à literatura, sendo mais freqüente em homens e naqueles submetidos à analgesia peridural contínua. Sugere-se orientação e vigilância adequada pela equipe de enfermagem, com ênfase no cateterismo vesical intermitente asséptico, na ocorrência de retenção urinária para prevenção de complicações do trato urinário.

DESCRITORES: incidência; retenção urinária; cateterismo urinário; analgesia controlada pelo paciente; analgesia epidural; enfermagem

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INTRODUCTION

The treatment of postoperative pain is still a serious challenge in current medicine, despite the intense efforts made for its effective control.

Effective postoperative pain control depends on an individualized prescription and on factors like the patient's emotional aspects, physiological alterations due to the surgical procedure, techniques and resources available at the service[1]. Moreover, the extension, site and duration of the surgery can influence the intensity of the postoperative pain.

Nowadays, several techniques are used to treat postoperative pain[2-3]. Patient-controlled analgesia, with opioids, is one of the most recent procedures and has been frequently studied in postoperative pain research[2,4-5].

Although the use of opioids in postoperative analgesia is considered safe, the adverse effects of this class of analgesia can coexist with pain relief and comprise: respiratory depression, sedation, nausea and vomiting, itching, constipation and urinary retention[2-3].

Urinary retention has been reported relatively frequently in studies about the subject[6-9]. In international medical literature, reports of several studies affirm that the incidence of urinary retention can vary from 3 to 40%[2,5-11]. In Brazil, there are few studies about the theme, especially involving orthopedic surgeries[3,12-13].

The etiology of postoperative urinary retention is related to the use of anticholinergic or analgesic drugs, type of surgery, intravenous therapy, patient's position and loss of privacy during urination[10]. A recent study performed in a total hip arthroplasty concluded that the male gender, advanced age and the use of patient-controlled analgesia are factors that increase the probability of urinary retention[7]. In the physiology of urinary retention, opioids increase the tonus and range of contractions of the urinary sphincter, but diminish contractions of the urethra, making spontaneous urination difficult[8].

Although some patients do not present symptoms, there are frequent clinical manifestations that include: incapacity to urinate, abdominal pain, abdominal distension, palpable bladder, jactitation, urinary urgency, rigor, shiver, diaphoresis and headache[6].

Intermittent aseptic catheterization has been indicated as a treatment of choice in this kind of clinical intercurrence[14-15], aiming to reduce the risk of mechanical and infectious complications, pain and discomfort[6]. However, the use of intermittent catheterization or delay in the occurrence of postoperative urinary retention has been questioned, especially in the nursing area. Incidence studies are the epidemiological method used to verify the actual occurrence of urinary retention and the performed treatment. In view of these inquiries, we carried out this study, with a view to determining the incidence of postoperative urinary retention in patients who were using opioids as analgesia, which they controlled via the venous route (PCA), or continuous epidural analgesia, and describe the method used for bladder outlet, before the first spontaneous urination, in patients who presented urinary retention.

METHODS

A total of 1216 patients, children and adults, who underwent orthopedic, thoracic and neurosurgical surgeries in the period from September 18th, 1999 to April 28th, 2003 were evaluated prospectively and consecutively. The study was evaluated and approved by the Ethics Committee of the Hospital SARAH.

All patients using patient-controlled analgesia (PCA) or continuous analgesia were followed by the anesthesiology team, composed of 15 anesthesiologists and a nurse, until the suspension of the analgesia was determined by the anesthesiologists during the pre-anesthetic consultation.

During the postoperative period, patients who presented difficulty to urinate were stimulated to perform it in a spontaneous way through non aggressive methods, such as the use of warm compresses on the abdomen, sit position or in orthostatism when possible, use of running water sound and promotion of privacy in the bathroom or on the bed. In cases of failure to perform spontaneous urination after such measures, besides the referred presence of abdominal pain and bladder distention, the patients were submitted to the invasive method through aseptic catheterization. These patients were evaluated and followed. The type of bladder catheterization and its frequency before the first spontaneous urination were registered.

An evaluation protocol was used, filled out by the nurse of the anesthesiology team, with the following variables: gender, age, type of surgery, ASA (American Society of Anesthesiology) classification of physical state; analgesia and opioid used, adverse effects, nursing conduct in the type of catheterization performed (intermittent or indwelling). In addition, the patient's satisfaction with the adopted therapeutic analgesic scheme was verified through a closed question, which all participants verbally agreed to answer.

The data were compiled and analyzed in *Epi Info* version 6.04. The parametric variables were expressed by means and standard deviations. The categorical variables were expressed in percentages and analyzed by the exact Chi-square test. For statistical significance, we considered p£ 0.05.

RESULTS

From the 1316 patients evaluated, 594 did not use the indwelling vesical catheter in the transoperative period. From these patients, 128 (22%) presented urinary retention, 126 of whom were submitted to orthopedic surgeries and two to thoracic surgeries, who needed intermittent or indwelling vesical catheters to relieve symptoms (Figure 1)

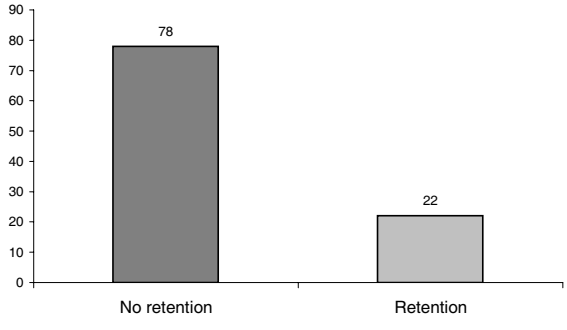

Figure 1 - Frequency distribution of urinary retention among the 594 patients not catheterized in the pre or transoperative period. Brasília - DF, 2003

From those patients who presented urinary retention, we verified that 79 (62%) were men and 49 (38%) women, with statistical significance (p=0.04).

The mean age of the patients with urinary retention was 32.4 ± 18.2 years, with a minimum age of 6 years old and a maximum of 80 years old.

Regarding the analysis of the pre-surgical physical state, evaluated by the ASA criteria, it was verified that 49% were classified as physical state II (ASA); 48% as ASA I and 3% as physical state III (ASA).

Regarding the anesthesia, around 75% of the patients received combined anesthesia (general + epidural blockage), followed by 21% of regional blockage and 4% of general anesthesia.

Regarding the types of surgical procedures performed, 126 (98%) were orthopedic and two (2%) thoracic. There were no cases of postoperative urinary retention in patients submitted to neurosurgery, because all were submitted to indwelling catheterization in the transoperative period. The orthopedic surgeries with higher occurrence of urinary retention were, in decreasing order: total arthroplasty of the hip and total arthroplasty of the knee, triple arthrodesis of the foot, lower limb amputation, lower limb osteotomy and tumor resection, among others.

Regarding the postoperative analgesia used in patients who presented urinary retention, 115 (24%) patients received continuous epidural analgesia and 13 (12%) patient-controlled venous analgesia (PCA). There was a statistically significance association between the occurrence of urinary retention and the use of continuous epidural analgesia, that is, there was higher frequency of urinary retention in patients who received continuous epidural analgesia (p=0,009) (Table 1).

Table 1 - Distribution of patients who presented urinary retention according to the analgesic technique used. Brasília - DF, 2003

Analgesia	Urinary retention n(%)**	No urinary retention n(%)**	Total n(%)
Continuous Epidural	115* (24)	372 (76)	487 (100)
Venous analgesia (ACP)	13 (12)	94 (88)	107 (100)
Total	**128 (22)**	**466 (78)**	**594 (100)**

* p=0.009 : significant association between the analgesic technique of analgesia and the occurrence of urinary retention
** number of individuals; %: proportion to the line total

In order to alleviate the symptoms, 79 (62%) of the 128 patients with urinary retention were submitted to intermittent catheterization, 26 (20%) were submitted to indwelling catheterization and 23 (18%) used combined catheterization, that is, initially intermittent and then indwelling catheterization (Figure 2).

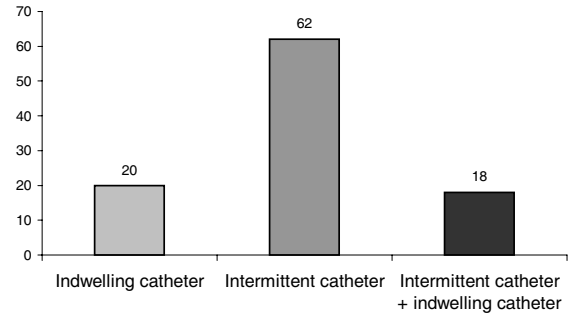

Figure 2 - Frequency distribution of type of catheter in patients with urinary retention. Brasília, DF, 2003

From the 102 who received the intermittent or combined catheter, in 71 (69%) cases, only one catheterization had to be performed before the spontaneous urination; in 21 (21%), two catheterizations were needed, in eight patients (8%), three catheterizations and, in two (2%), four catheterizations were performed (Figure 3).

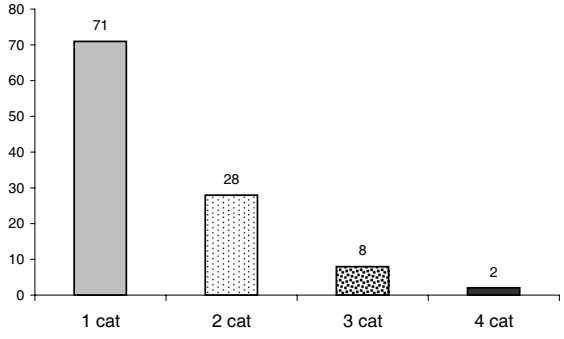

Figure 3 - Distribution of number of catheterizations (cat) realized before spontaneous urination in patients with urinary retention. Brasília, DF, 2003

Regarding the level of patients' satisfaction related to the continuous epidural or venous patient-controlled analgesia, it was verified that around 98% of the patients were satisfied with this therapeutic pain control technique.

DISCUSSION

The incidence rate of urinary retention in case of postoperative analgesia found in this study, i.e. 22%, is similar to the literature we reviewed[2-3,5-11]. The incidence of urinary retention, associated to the number of catheterizations found in the present study, indicates that a specially trained nursing team is needed to detect the problem and act adequately, aiming to reduce the risk of posterior complications for the patient[3,10].

The predominance of the male gender in urinary retention is also similar to the reviewed studies[3,7,10].This predominance can be justified by the fact that the supine position inhibits patients' spontaneous urination, especially in men who underwent orthopedic surgeries, whose time of permanence in bed and dependence on nursing care are higher[6,10].

Some studies have demonstrated an association between urinary retention and advanced age[7,10]. Besides other factors, one of these studies described previous history of urinary retention and the presence of symptoms suggestive of urinary tract obstruction, through logistic regression analysis. This study concluded that the male gender, advanced age and use of patient-controlled analgesia were determining factors of urinary retention, with a rate of 18%[7]. It is important to mention that, in the male gender, aging significantly increases the occurrence of urethral and prostate hyperplasia, with consequent urination difficulties[8,16]. In the present study, these symptoms suggestive of urinary tract obstruction were not studied.

The results of this study showed a statistically significant association between the continuous epidural analgesic technique with fentanyl citrate and the occurrence of urinary retention. Fentanyl citrate is an opioid with high liposolubility, provoking a faster connection to the spinal nervous system and, consequently, higher absorption by the blood vessels of the epidural space. This fact would make it difficult for patients to perform spontaneous urination, especially because this drug inhibits the reflexes below the level of the epidural lumbosacral puncture. Therefore, this fact can explain the occurrence of urinary retention and is comparable with data found in literature[3,10-11].

Many studies agree that intermittent vesical catheterization must be the procedure of choice in the treatment of urinary retention, with a view to reducing mainly asymptomatic bacteriuria and urinary tract infection[1,5,8], which has been relatively frequent in patients with indwelling catheters[15-16].

Few studies look at the number of catheterizations performed before spontaneous urination. Only two studies mention the performance of catheterization before urination, but use another methodology[10-11]. In the present study, 71 (69%)

patients with urinary retention presented spontaneous urination after one single vesical catheterization. This result shows that, most of the time, patients with urinary retention can be helped with only one catheterization.

CONCLUSION

The incidence of urinary retention found in this study (22%) is in accordance with literature data. It is considered low and, despite being quite an uncomfortable adverse effect, it is not considered serious. Intermittent aseptic vesical catheterization is the procedure of choice in the occurrence of the urinary retention to prevent urinary tract complications.

Controlled and randomized studies are needed to evaluate postoperative urinary retention when analgesia with opioids is used, especially in orthopedic surgeries.

REFERENCES

1. Sinatra RS, Torres J, Bustos AM. Pain management after major orthopaedic surgery: current strategies and new concepts. J Am Acad Orthop Surg 2002; 10(2):117-29.

2. Ballantyne JC, Carr DB, Chalmers TC, Dear KBG, Angelillo IF, Mosteller F. Postoperative patient-controlled analgesia:meta-analyses of initial randomized control trials. J Clin Anesth 1993; 5:182-93.

3. Duarte LTD, Fernandes MCBC, Fernandes MJ, Saraiva RA. Analgesia peridural contínua: análise da eficácia, efeitos adversos e fatores de risco para ocorrência de complicações. Rev Bras Anestesiol 2004; 54(3):371-89.

4. Dauri M, Polzoni M, Fabbi E, Sidiropoulou T, Servetti S, Coniglione F, et al. Comparison of epidural, continuous femoral block and intraarticular analgesia after anterior cruciate ligament reconstruction. Acta Anaesthesiol Scand 2003; 47(1):20-5.

5. Chaves LD, Pimenta CAM. Controle da dor pós-operatória: comparação entre métodos analgésicos. Rev Latino-am Enfermagem 2003 março-abril; 11(2):215-9.

6. Jolley S. Intermittent catheterisation for post-operative urine retention. Nurs Times 1997; 93(33):46-7.

7. O´Riordan JA, Hopkins PM, Ravenscroft A, Stevens JD. Patient-controlled analgesia and urinary retention folowing lower limb joint replacement: prospective audit and logistic regression analysis. Eur J Anaesthesiol 2000; 17:431-5.

8. Rocha LCA. Retenção urinária aguda. Rev Assoc Med Bras 1990; 36(1):26-8.

9. Smith NKG, Morrant JD. Post-operative urinary retention in women: management by intermittent catheterization. Age and Ageing 2001; 5:337-40.

10. Tammela T, Kontturi M, Lukkarinen O. Postoperative urinary retention: Incidence and predisposing factors. Scand J Urol Nephrol 1986; 20(3):197-201.

11. Silvasti M, Pitkänen M. Patient-controlled epidural analgesia versus continuous epidural analgesia after total knee arthroplasty. Acta Anaesthesiol Scand 2001; 45:471-6.

12. Lutti MN, Simoni RF, Cangiani LM, Vieira JL, Silva LA. Analgesia controlada pelo paciente com morfina ou fentanil no pós-operatório de reconstrução de ligamentos do joelho: estudo comparativo. Rev Bras Anestesiol 2000; 50(1):8-13.

13. Valverde J Filho, Ruiz-Neto PP, Freire RCMC, Garcia DM. Análise descritiva de serviço de dor aguda pós-operatória em hospital terciário. Rev Bras Anestesiol 2000; 50(5):386-90.

14. Britton PM, Wright ES. Nursing care of catheterised patients. Professional Nurse 2001; 5(5):231-4.

15. van den Brand IC, Castelein RM. Total joint arthroplasty and incidence of postoperative bacteriuria with an indwelling catheter or intermittent catheterization with one-dose antibiotic prophylaxis: a prospective randomized trial. J Arthroplasty 2001; 16(7):850-5.

16. Marangoni DV, Soares CR, Moreira BM. Infecções do trato urinário. In: Marangoni DV, Schechter M, organizadoras. Doenças infecciosas: conduta diagnóstica e terapêutica. Rio de Janeiro (RJ): Guanabara Koogan; 1998. p. 425-55.

Recebido em: 6.7.2005
Aprovado em: 4.10.2006