Postoperative analgesia by non-specialists in pain*

Analgesia pós-operatória por não especialistas em dor

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ABSTRACT

BACKGROUND AND OBJECTIVES: Postoperative analgesia is often administered by the assistant physician non-specialist in pain management. This study aimed at evaluating the efficacy of immediate postoperative period analgesia with drugs prescribed by the assistant physician, non-specialist in pain.
METHODS: This is a prospective, descriptive and observational study carried out by means of interviews with 186 patients operated in Hospital Santa Cruz. Postoperative pain was evaluated after 12 and 24 hours, in addition to drugs used and possible adverse effects.
RESULTS: In the first evaluation, 12 hours after surgery, prevalence of pain was 59%, being 35% from moderate to severe. In the second evaluation, 24 hours after surgery, prevalence of pain was 22% being 12% from moderate to severe. Variables "type of surgery" and "drugs used" have not influenced pain intensity in the postoperative period of 12 hours. However, "type of surgery" has influenced pain intensity (p=0.02) in the postoperative period of 24 hours, being that patients submitted to orthopedic procedures were more likely to report pain (49.57%) as compared to other types of surgery. Opioids had significant association with the presence of adverse effects in the first evaluation (p=0.0001).
CONCLUSION: Our data have shown that analgesia with drugs prescribed by physicians non-specialists in pain management was effective when compared to other studies not using specialized pain services. However, a multimodal approach to acute pain management, coordinated by a specialized service, could further decrease this prevalence.
Keywords: Analgesia, Opioid analgesics, Postoperative pain.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A analgesia pós-operatória frequentemente é realizada pelo médico assistente, não especialista no tratamento da dor. O objetivo deste estudo foi avaliar a eficácia da analgesia utilizada em pacientes no pós-operatório imediato com fármacos prescritos pelo médico assistente, não especialista em dor.
MÉTODOS: Estudo prospectivo, descritivo, observacional realizado por meio de entrevista com 186 pacientes operados no Hospital Santa Cruz. Avaliou-se a dor no pós-operatório entre 12 e 24 horas, fármacos utilizados e possíveis efeitos adversos.
RESULTADOS: Na primeira avaliação, 12 horas após a cirurgia, a prevalência de dor encontrada foi de 59%, sendo 35% moderada a intensa. Na segunda avaliação, 24 horas após a cirurgia, a prevalência de dor foi de 22%, sendo 12% moderada a intensa. As variáveis "tipo de cirurgia" e "fármacos utilizados" não apresentaram influência sobre a intensidade da dor no pós-operatório de 12 horas. Entretanto, o "tipo de cirurgia" mostrou influência sobre a intensidade de dor (p=0,02) no pós-operatório de 24 horas, sendo que o paciente submetido a cirurgia ortopédica foi o que apresentou a maior probabilidade de dor (49,57%), quando comparado aos outros tipos de cirurgia. O uso de opioides apresentou associação significativa com a ocorrência de efeitos adversos na primeira avaliação (p=0,0001).
CONCLUSÃO: Os dados encontrados mostram que a analgesia realizada com fármacos prescritos por médicos não especialistas em tratamento da dor foi eficaz quando comparada a outros estudos que não utilizam serviços especializados em dor. Entretanto, uma abordagem multimodal no tratamento da dor aguda, coordenada por um serviço especializado, pode diminuir ainda mais essa prevalência.
Descritores: Analgesia, Analgésicos opioides, Dor pós-operatória.

INTRODUCTION

Acute postoperative pain is result of local surgical trauma which induces not only physiological changes but also negative psychological symptoms[1]. Studies show that up to 90% of surgical patients have some type of pain[1,2].
Some risk factors for the development of acute postoperative pain have been already identified: preoperative pain and psychological factors, such as anxiety and depression[3]. In addition, patients under chronic opioids develop tolerance to the drug and so are at increased risk for postoperative pain (POP)[4].
Inadequate pain control may be related to the team assisting patients, due to reasons such as lack of adequate training, in-

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complete pain evaluation and fear of potential side effects of analgesics[5]. Aiming at improving assistance to such patients, many hospitals have introduced pain services which allow broad access to specialized techniques[6,7], such as patient-controlled analgesia and epidural infusion of opioids and local anesthetics[6]. Some studies suggest that the implementation of such services decreases pain intensity scores of patients[7,9]. Aiming at improving assistance to such patients, many hospitals have introduced pain services which allow broad access to specialized techniques[6,7], such as patient-controlled analgesia and epidural infusion of opioids and local anesthetics[6]. Some studies suggest that the implementation of such services decreases pain intensity scores of patients[7,9]. However, there is a cost intrinsically linked to this service, thus burdening assistance to patients[8,9]. Notwithstanding the increasing number of hospitals offering pain services, there are still places where it is not available, making postoperative analgesic prescription responsibility of the assistant physician[7].

The importance of treating acute postoperative pain is that, in addition to being an unpleasant feeling to patients, it is a risk factor to the development of chronic pain and to increase morbidity[10]. Pain persistence is associated to organic disorders, such as hypoventilation, increased heart work, decreased peripheral blood perfusion and reflex muscle contraction[11]. In addition, studies have shown that POP impairs early ambulation, favoring the appearance of deep vein thrombosis, especially in elderly patients and in those submitted to major surgeries[1].

To treat acute postoperative pain, the multimodal approach may significantly decrease pain and its progression to chronic pain[12,13]. The objective is to block generation, transmission, perception and appreciation of nociceptive stimuli, which can be achieved at different central and peripheral nervous system levels. For such, one may use analgesics with peripheral and central action, such as non-steroid anti-inflammatory drugs (NSAIDs) and opioids, and also analgesics used for blockades[14]. Modalities include oral analgesics, muscular analgesic injections, intravenous bolus analgesic doses, patient-controlled intravenous analgesia, epidural analgesia, controlled or not by patient, and regional nervous block[15].

Adequate postoperative analgesia may start in the preoperative period with preemptive analgesia where there is previous inhibition of nociceptive pathways through pharmacological intervention before surgery. The objective is to decrease pain triggered by the activation of inflammatory mechanisms and to prevent patients of having memory of the painful response[16].

The choice of the best method or combination of methods should be according to patients' pain intensity and knowledge of the health team about the right application of the method, risks and possible adverse effects[5].

In this context, this study aimed at evaluating the efficacy of immediate postoperative period analgesia with drugs prescribed by the assistant physician non-specialist in pain.

METHODS

This was a prospective, descriptive, observational study carried out at Santa Cruz Hospital from Curitiba (HSC). Two evaluations were carried out in the postoperative period of patients submitted to surgeries in HSC, being the first 12 hours and the second 24 hours after surgery.

Participants were patients submitted to general surgeries (videolaparoscopic fundoplication, videolaparoscopic cholecystectomy, inguinal hernia repair, videolaparoscopic appendectomy, videolaparoscopic gastroplasty), orthopedic surgeries (shoulder arthroscopy, spine arthrodesis, surgical treatment of clavicle fracture, bone tumor resection, knee arthroscopy, disk hernia surgery, osteomyelitis surgical treatment, microsurgery for narrow lumbar canal and hallux surgery), gynecological surgeries (perineoplasty, vaginal hysterectomy, gynecologic videolaparoscopy, surgery to place pubourethral sling, tubal ligation and myomectomy) and transverse segmental Cesarean section.

Sample was made up of patients of both genders, above 18 years of age, and who agreed with signing the Free and Informed Consent Term. Exclusion criteria were patients having been discharged less than 24 hours after surgery.

Evaluations were carried out with an evaluation card with questions regarding postoperative pain and, if present, about its intensity as well as possible adverse effects of drugs (nausea, vomiting, itching and urinary retention). Drugs used (simple analgesics, NSAIDs or opioids) were recorded in the evaluation card according to prescription of the assistant physician.

A verbal numeric pain scale was used to evaluate pain intensity were zero means no pain and 10 the worst imaginable pain. Other numbers represent intermediate pain stages. Pain was classified as absent (0), mild (1-3), moderate (4-6) and severe (7-10)[17].

The model with multinomial response and logistic binding function was used for statistical analysis, where variables "type of surgery" and "type of drugs used" were correlated with possible effects on pain intensity 12 and 24 hours after surgery. Likelihood ratio test was used to evaluate the significance of such variables and only variables with $p<0.05$ were maintained in the model. Analyses were carried out with the statistical package R version 2.15.1.

In addition, Chi-square test of independence was used to evaluate the association between opioids and the presence of adverse effects (nausea, vomiting, itching, urinary retention) considering significant $p<0.05$.

This study was approved by the Research Ethics Committee, Clinicas Hospital, Federal University of Paraná, under opinion 127110/2012.

RESULTS

Participated in the interviews 186 patients, of whom four were excluded for being discharged before 24 postoperative hours. So, 182 patients were included in data analysis. With regard to demographic variables, 89% (n=162) of patients were females and 11% (n=20) were males. Mean age of patients was 34.9±10.2 years.

Patients were submitted to different types of surgeries being 49% to transverse segmental Cesarean section, 27% to general surgeries, 14% to gynecological surgeries and 10% to orthopedic surgeries.

With regard to analgesic prescription, from 182 patients, 120

(65.9%) have received opioids associated or not to NSAIDs and/or simple analgesics; 48 (26.4%) have received NSAIDs associated to simple analgesics; 7 (3.8%) have received NSAIDs alone and 7 (3.8%) have received simple analgesics alone. Drugs used were according to assistant physician prescription and there has been no association with "type of surgery".

The prevalence of POP in the first 12 hours was 59%, with patients at rest, under analgesia. In the second evaluation 24 hours after surgery, prevalence of pain was 22%. Prevalence of pain for each type of surgery is shown in table 1.

Taking into consideration pain intensity 12 hours after surgery, with patients at rest, it was observed that 25% have referred mild pain (1 to 3), 23% moderate pain (4 to 6) and 12% severe pain (7 to 10). With regard to pain intensity 24 hours after surgery, 10% have referred mild pain, 8% moderate pain and 4% severe pain.

After statistical analysis, calculated data have shown that variables "type of surgery" (general, orthopedic, gynecologic, Cesarean section) and "drugs used" (simple analgesics, NSAIDs, opioids) had no influence on pain reported in the first evaluation. Calculated likelihood for each POP level at 12 hours is shown in table 2.

However, in the second evaluation 24 hours after surgery, the variable "type of surgery" was significant for pain intensity (p=0.02). This variable, then, was maintained in the model and the likelihood calculation is shown in table 3.

According to our results, patients submitted to orthopedic surgeries were more likely to have pain (49.57%) as compared to other types of procedures.

When relating pain prevalence 12 hours after surgery to the use of opioids, it was observed that among those using the drug, 57% (n=69) have referred pain, and among those not using it 63% (n = 39) have referred pain, as shown in table 4.

From all evaluated patients, 129 (70.8%) had possible adverse effects induced by analgesics in the postoperative evaluation of 12 hours, being that 86 (48%) have reported itching, 55 (30%) had urinary retention, 48 (26%) have reported nausea and 29 (16%) had at least one vomiting episode. With regard to the prevalence of such effects among patients using opioids, data have shown significant association, being that 80.8% of patients using opioids have referred at least one adverse effect versus 51.6% of those not using the drug (p=0.0001). This relationship between the use of opioids and adverse effects is shown in table 5.

Table 1. Distribution of patients by type of surgery and presence of postoperative pain between 12 and 24 hours

Type of surgery	Postoperative pain (12h)		Postoperative pain (24h)	
	Yes	No	Yes	No
C-section	60%	40%	17%	83%
General	62%	38%	24%	76%
Gynecologic	52%	48%	16%	84%
Orthopedic	61%	39%	50%	50%

Table 2. Calculated likelihood for each pain level 12 hours after surgery

Pain intensity	Likelihood (%)
Absent	40.65
Mild	24.72
Moderate	23.07
Severe	11.53

Table 3. Pain intensity 24 hours after surgery according to type of surgery

Types of surgery	Pain intensity	Likelihood (%)
Cesarian	Absent	83.47
Cesarian	Mild	7.96
Cesarian	Moderate	5.61
Cesarian	Severe	2.93
Gynecologic	Absent	83.74
Gynecologic	Mild	7.85
Gynecologic	Moderate	5.53
Gynecologic	Severe	2.88
General	Absent	75.22
General	Mild	11.30
General	Moderate	8.67
General	Severe	4.79
Orthopedic	Absent	50.43
Orthopedic	Mild	17.84
Orthopedic	Moderate	18.64
Orthopedic	Severe	13.07

Table 4. Use of opioids and presence of pain 12 hours after surgery

Relevant variables	Postoperative pain		
	Yes	No	Total
Opioid			
Yes	n=69 (57%)	n=51 (43%)	n=120 100%)
No	n=39 (63%)	n=23 (37%)	n=62 (100%)

Likelihood ratio test p=0.950.

Table 5. Use of opioids and presence of adverse effects

Opioid	Adverse effects		
	Yes	No	Total
Yes	n=97 (80.8%)	n=23 (19.2%)	n=120 (100%)
No	n=32 (51.6%)	n=30 (48.4%)	n=62 (100%)

Chi-square test p=0.0001.

DISCUSSION

The prevalence of postoperative pain varies widely[18]. Studies have shown that up to 90% of patients submitted to surgical procedures have some type of pain in the first 24 postoperative hours and, if intensity is considered, 40 to 60% of patients report moderate to severe pain[1,2]. However, a study using the multimodal approach for pain management has shown that this prevalence may be limited to just 2.2% of patients[19].

Our study has shown that 59% of patients have reported pain in the first 12 postoperative hours, and 35% of patients have reported it if just moderate to severe pain is considered. In the second evaluation, 24 postoperative hours, 22% have reported pain and 12% have scored it as moderate or severe. This prevalence reflects a relatively effective pain control, considering that analgesic prescription was performed by the assistant physician and not by pain specialists. This could justify the non use of multimodal approaches and the presence of more severe pain than desired.

In addition, the profile of the studied sample should be considered, where there is predominance of females (89%). Studies have shown that females have lower pain threshold and different response to pain stimulation as compared to males. This may have influenced our results[20].

With regard to drugs used, patients receiving opioids had lower prevalence of pain (57%) as compared to those not receiving opioids (63%). However, this correlation was not statistically significant, which may be associated to the fact that different surgical procedures with different nociceptive stimulations were evaluated[18]. In addition, every patient has a different sensitivity to pain and may report different pain intensities for a same procedure[21].

The association of POP and type of surgery has shown significant correlation in the 24 postoperative hours. Other studies have shown this same relationship[18].

According to our data, a patient submitted to general surgery, for example, has 24.78% likelihood of having pain, differently from a patient submitted to orthopedic surgery, with much higher likelihood of 49.57%. There is no consensus in the literature about the subject. Similar data to our study may be found, where the prevalence of POP is higher in patients submitted to orthopedic procedures[22], and data different from this theory may also be found, showing that the prevalence of pain is higher in patients submitted to general procedures[18].

With regard to possible side-effects 12 hours after surgery, 129 patients (70.8%) have reported at least one investigated symptom, being that 86 (48%) have referred itching; 55 (30%) urinary retention; 48 (26%) nausea and 29 (16%) had at least one vomiting episode. Consistent with these findings, studies have shown that the most common adverse event induced by spinal opioids is itching[21].

In addition, studies have indicated that the incidence of nausea in the postoperative period is between 22 and 38% and the incidence of vomiting between 12 and 26%, which is similar to our findings[22].

According to calculated data, patients receiving opioids had significant association with the presence of adverse effects in the first 12 postoperative hours (p=0.0001). However, it is important to remember that pain *per se* does not increase the incidence of postoperative nausea and vomiting[23]; it should be also taken into consideration the type of anesthesia, which may be associated to increased incidence of adverse effects[24].

This study had some limitations which have to be analyzed. First, the studied population was submitted to different types of surgeries and, even grouping them by specialties, one has to take into consideration that painful stimulation induced by each procedure is different[25].

Another important factor is that the type of anesthesia may have influenced results, since patients submitted to neuraxial blocks (spinal and epidural anesthesia) have prolonged analgesia due to residual sensory block[26].

Last, but not least, it has to be considered the small sample size, which does not allow reported data to be extrapolated to the general population.

CONCLUSION

Our data have shown that analgesia with drugs prescribed by physicians who are not pain specialists was effective as compared to other studies which have not used specialized pain services. However, since a non-negligible portion of patients remain with pain, a multimodal approach to treat acute pain, coordinated by specialized services, could further decrease such prevalence.

The importance of adequately treating acute postoperative pain is that, in addition to decreasing patients' distress, it decreases associated morbidities and the progression toward chronic pain.

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