Extended Abstract

General Surgery Reports

2019

Vol.3 No.2

Evaluation of a Protocolized Analgesic Program of Acute Postoperative Pain in Patients Undergoing Major Abdominal Surgery

F Leticia Hernández Hernández[1] , Alfredo Ramírez Bermejo[2], César Alberto Cruz Santiago[3] and **Juan Osvaldo Talavera Piña[4]**

[1]Mexican Social Security Institute, Mexico
[2]Medical Specialist in pain and palliative medicine, Mexico
[3]Director of scientific assessment general health council, Mexico
[4]Doctor of Medical Sciences and Research, Mexico

Keywords: Pain, Acute Post-surgical Pain, Analog Numerical Scale, Satisfaction.

Abstract: Postoperative pain is deeply prevalent and incidental, it represents a public health problem. The presence of pain may be due to the poor assessment, recording, insufficient treatment or lack of analgesic protocols.

Objective: Evaluation of a protocolized analgesic program of acute postoperative pain in patients undergoing major abdominal surgery.

Material and methods: Ecological, observational, comparative, retroprolective, cross-sectional study including 244 patients, divided into 2 groups. Group: A (GA) in which 116 patients participated and corresponded to non-protocol analgesia (analgesia by treating service). Group: B (GB) analgesia protocolized with 128 patients.

Results: The mean age of years in GA: 51.88 ± 14.86, in GB: 50.2 ± 15.14 p value 0.3822. In GA: 55% were men and 45% women, in GB: 57.36% men and 42.64% women, p value 0.8287. The assessment of post-surgical pain at 24 hours in the GA: 100% reported pain, in the GB: 60.94% did not present pain, p value <0.05. In the assessment of maximum pain at 24 hours, moderate to severe intensity in GA: 93.11%, while in GB: 23.44%, p value <0.0001. The binary logistic regression analysis adjusted for age, sex and type of surgery in the G: B relative to the maximum pain intensity at 24 hours yielded a p value <0.0001.

Conclusions: The assessment of the analgesic program protocolized in patients with acute post-surgical pain operated in major abdominal surgery, provided better percentage results, with statistically significant difference compared to the group of patients who did not receive it. Patients who received protocolized analgesia significantly influenced low pain levels, this influenced the perception of patient satisfaction in the category from regular to good.

Introduction: Pain management in surgical practice is aimed at reducing suffering, morbidity and hospital length of stay for patients (1). Pain treatment is considered insufficient and represents a public health problem. Postoperative pain is a form of acute pain, secondary to surgical trauma, with an inflammatory response, which precipitates the discharge of afferent neurons that becomes an unpleasant sensory and emotional experience (2). To contain the pain, the development of new analgesic drugs, technologies and the proper organization of health services is a priority (3). In the evaluation of postoperative pain, one-dimensional scales are included; these allow verifying the effect of the treatments (4). Knowledge in the molecular mechanisms of pain, pain measurement, standardized treatment protocols and multimodal analgesic techniques are a more assertive picture in the management of postoperative pain (5). Postoperative analgesia has traditionally been in charge of the treating services, acute pain services are currently recommended, which is why it is necessary to evaluate their results (6).

Pain decreases pulmonary ventilation, produces hypoxemia, cardiac ischemia, ileus, nausea, vomiting, urinary retention, delayed wound healing, deep vein thrombosis, embolism, which increases morbidity/mortality, chronic pain, dissatisfaction and hospital stay (7 -19). An adequate control improves the results of the above described (20-23).

The incidence of acute postoperative pain ranges from 30% -86%, in abdominal surgery it is 22% to 67%, and the intensity of moderate to severe at 24 hours is 41% (24, 25).

Various postoperative pain management guidelines suggest specific approaches for each type of surgery as it offers better pain control and fewer adverse effects (26). Preventive analgesia, patient controlled analgesia, epidural-subarachnoid analgesia, multimodal analgesia are important resources that give good results (27-30).

Method and Materials: Type of study: Ecological, observational, comparative, retroprolective, cross-sectional. Conducted at the Specialty Hospital Centro Médico Nacional Siglo XXI (HE CMNSXXI). Included 244 patients, over 18 years old, female and male sex, with physical state ASA I, II, III. Intervened for scheduled major abdominal surgery, assigned in 2 groups. In the Group: A (GA) non-protocolized analgesia (analgesia by treating service) with 116 patients. Group: B (GB) protocolized analgesia 128 patients who received multimodal analgesic treatment.

Sample size calculation: An alpha value risk of 0.05 was considered with a statistical power of 80%, based on previous data for moderate to severe pain intensity, and based on the usual 80% treatment for abdominal surgery, with the intention of reducing 60% pain, establishing a difference of 20% obtaining a sample of 244 patients.

Method. To evaluate the protocolized analgesic program of acute postoperative pain in patients undergoing major abdominal surgery, a questionnaire based on recommendations of the American Pain Society (ASA) was used. To estimate its validity, the Cronbach alpha test was applied, resulting in a coefficient of> 0.7. This questionnaire was applied in the HECMN SXXI (February-May 2011) to post operated patients of various surgeries with the purpose of having a situational diagnosis. The questionnaire was applied 24 hours post surgical intervention to the 2 groups by 1 doctor with over 10 years of experience, and who was trained. The GA included 116 questionnaires of abdominal surgery patients chosen from the history for the situational diagnosis. 128 patients in the GB included all patients undergoing major abdominal surgery in 4 months (July-October 2012). The analgesia that received the GB consisted of 2 treatment schemes:

1) Intravenous analgesia (opioid plus non-steroidal anti-inflammatory analgesic).

2) Epidural analgesia with local anesthetic, applied in the area of pre anesthesia

The questions in the questionnaire referred to the existence of pain, maximum intensity of postoperative pain. Pain was measured with the Analog Numerical Scale (ENA), where "0" absence of pain, and "10" the most intense pain. The patient was asked to choose a number from 0 to 10, where: (0 no pain, 1-3 mild pain, 4-6 moderate and 7-10 severe).

Patient satisfaction related to the degree of analgesia and medical staff was assessed considering the ASA recommendations that consider

the choice between: bad, fair, good, and excellent. The variables that were adjusted were: age, gender, type of surgery (abdominal, pelvic, abomino-pelvic).

The data to be analyzed was extracted from the data collection sheet, and emptied into an Excel sheet coded for each type of variable.

Statistic analysis. The quantitative variables were estimated as: mean, standard deviation. The qualitative ones were expressed in percentages and through contingency tables. Inferential statistics were applied to determine the association between variables of: treatment with type of surgery, presence of pain, treatment, maximum pain intensity at 24 hours and treatment, patient satisfaction with the treatment. Binary logistic regression for the dependent variable "maximum pain intensity at 24 hours" with the independent variables: sex (male-female), age, type of surgery (abdominal, pelvic, abdominal-pelvic) as well as for treatment (not protocolized) -protocolized). The statistical program used was SPSS version 19.

Ethical considerations: The study was approved by the local research committee of the HECM SXXI Approval Number R 2012-3601-214. Informed consent was requested from each patient and the objective of the study was explained before inclusion. The information was handled anonymously and confidentially.

Results. The study included 244 patients assigned in 2 groups. In the GA: 116 patients, and in the GB: 128 patients. Demographic data (table. I). The mean and standard deviation for age in years for GA: 51.88 ± 14.86, in GB: 50.2 ± 14.14; p value <0.3822. Distribution by sex in the GA: men 64 (54%), women 52 (45%), in the GB: men 74 (58%), women 54 (42%); p value <0.8287. Type of surgery: Abdominal: GA: 56%, GB: 50%. Pelvic: GA: 13%, GB: 22.66%. Abdomino-pelvic: GA: 31%, GB: 27.34; p value <0.143.

The evaluation of postoperative pain by groups at 24 hours (Table II) in the GA: 100% of patients with pain, in the GB: 69.94% without pain; p value <0.05. The results of maximum pain at 24 hours in moderate to severe intensity (Table III) in the GA: 93.11%, in the G: B = 23.44%; p value <0.0001.

The relation between maximum pain intensity at 24 hours in the GB (adjusting age, sex and type of surgery) in the binary logistic regression model showed a value of p <0.0001.

Patient satisfaction towards medical staff (table IV) was: Bad: GA: 86% vs. GB: 78%. Regular: GA: 18.97% vs. GB: 3.13%. Good: GA: 45.69% vs. GB: 58.59%. Excellent: GA: 34.48% vs. GB: 37.50%; p value <0.05.

Discussion: In the study, no significant differences were found between GA and GB in demographic variables and type of surgery. The GB patients showed lower pain intensity at 24 hours. Protocolized analgesia showed more favorable results in the evaluation of maximum pain at 24 hours. Some studies that have evaluated protocolized treatments of acute pain services show benefit in pain intensity compared to non-protocolized treatments (31). A study in 3 hospitals in Hunan China in which 128 patients operated on urological surgery, hepatobiliary without analgesic management protocol, reported that 91.4% of patients suffered from moderate to severe pain, 51.6% did not receive analgesic treatment, 14.9% argued lack of capacity of health personnel to control pain, and 20.2% were not satisfied (32). In the United States, in a national study the incidence of postoperative pain in 300 patients was 86%, moderate to severe pain in the immediate postoperative period of 75% (33).

	Group A n=116	Group B n=128	Valor de p
*Age (years)	51.88 ±14.86	50.2 ±15.14	0.3822
**Sex (F/M)	64 (55)/52 (45)	74 (58)/54 (42)	0.8287
Abdominal surgery	65 (56.3)	64 (50)	
Pelvic surgery	15 (13)	29 (22.66)	
Abdominal/ pelvic surgery	36 (31)	35 (27.34)	0.143

Table I. Demographic data of the patients between treatment groups

Group A= non protocolized analgesia. Grupo B= protocolized analgesia.

* Data shown in average and standard deviation.

** Data presented in frequency and absolute percentages (%).

P value <0.05 with significant statistical difference.

In Colombia, in 1050 patients over 18 years of age, the presence of pain was reported in 59.1% in postoperative patients, the authors concluded that the implementation of clinical practice guidelines, training of health personnel and evaluation of results was necessary (34). In India, the prevalence of postoperative pain after abdominal surgery in 120 patients evaluated at 5 hours, 2nd and 3rd day respectively was: 84.17%, 92.5%, 96.66%. Pain management satisfaction related to pain intensity showed a weak correlation (35). A multinational study (40 countries) in 16,868 patients in different types of surgery concluded that the satisfaction of the treatment of postoperative pain is associated with the real experience of the patient's pain, but more with the impression of improving patient care (36).

	*Group A n=116 (%	*Group B n=128 (%)
yes	116 (100%)	50 (39.06%)
NO	0 (0.000%)	78 (60.94%)

Table II Evaluation of postoperative pain using ENA at 24 h

Chi ^{2} statistical test.

ENA= Analog Numerical Scale.

Group A= non protocolized analgesia. Grupo B= protocolized analgesia.

Data presented in frequency and percentages (%).

p value < 0.05 with significant statistical difference.

In Korea, after the implementation of an evidence-based guide in the management of postoperative pain and training of health personnel in patients undergoing abdominal surgery, they observed a decrease in pain levels (37). In the forum of postoperative pain that took place in China in 2014, they emphasized that the future of postoperative pain control should be addressed in the following aspects: improvement of post-operative acute pain services, the patient-doctor relationship and analysis of results. And that acute pain services positively influence postoperative pain and patient satisfaction (38).

	*Group A n=116 (%	*Group B n=128 (%)
No pain	0 (0.00)	34 (26.56)
Mild	8 (6.92)	64 (50)
Moderated	71 (61.21)	24 (18.75)
Severe	37 (31.90)	6 (4.69)

Table III Evaluation of maximum pain intensity at 24 hours between treatment groups

Chi ² statistical test.

Group A= non protocolized analgesia. Grupo B= protocolized analgesia.

Data presented in frequency and percentages (%).

p value < 0.05 with significant statistical difference

	*Group A n=116 (%	*Group B n=128 (%)
Bad	1 (0.86)	1 (0.78)
Regular	22 (18.97)	4 (3.13)
Good	53 (45.69)	75 (58.59)
Excellent	40 (34.48)	48 (37.50)

Chi ² statistical test.

Group A= non protocolized analgesia. Grupo B= protocolized analgesia.

Data presented in frequency and percentages (%).

p value < 0.05 with significant statistical difference.

A weakness of the study is the sample of the non-protocolized analgesia treatment group that corresponded to a historical data source, but the study strengthens its results since in the protocolized analgesia group all patients undergoing abdominal surgery were included for 4 months, and the results obtained in the present study have been reproduced with results similar to ours in other investigations.

The acute postoperative pain service at HECMSXXI has 9 years of experience and uninterrupted services, which makes it a pioneer in the National Health System in Mexico and therefore a reference framework in the management of patients with acute postoperative pain in various surgical modalities

Conclusion: The evaluation of the protocolized analgesic program in patients with acute postoperative pain who underwent major abdominal surgery provided better percentage results with significant statistical difference compared to the group of patients who did not receive it.

The best levels of analgesia in patients who benefited from protocolized analgesia influenced the perception of patient satisfaction in the category of regular to good. We consider it a priority that protocolized analgesic schemes extend beyond abdominal surgery to seek equity and justice in the care of patients with postoperative pain, in addition to their periodic evaluation for continuous improvement

Funding : This work was prepared without any funding.

References

1. De Andrés J, Fischer HBJ, Ivan G, et al. In consultation with European Society of Regional Anaesthesia and Pain Therapy (ESRA). Postoperative Pain Management
2. Good Clinical Practice General recommendations and principles for successful pain management. 2009. Available at: http//www.esraeurope.org/postoperativePainManagement.pdf.Accessed 01-May-2013.
3. Wu CL, Raja SN. Treatment of acute postoperative pain. Lancet. 2011; 377:2215–2225.
4. Rawal N. Organization, function, and implementation of acute pain service. Anesthesiology Clinics of North America. 2005; 23: 211-225.
5. Muñoz, J.M. Manual de dolor agudo postoperatorio. Comisión Hospital sin Dolor. Hospital Universitario La Paz. Madrid. Ergon. 2010.
6. White PF, Kehlet H. Improving postoperative pain management: what are the unresolved issues? Anesthesiology 2010; 112:220–225.
7. International Association for the Study of Pain (IASP) (1994) Part III: pain terms, a current list with definitions and notes on usage. In: Classification of Chronic pain, Second Edition (Merskey H. & Bogduk N., eds.). Seattle WA: IASP Press, p. 209-214.
8. Practice guidelines for acute pain management in the perioperative setting: a report by the American Society of Anaesthesiologists Task Force on Pain Management, Acute Pain Section. October 1994/ update October 2003. En línea. [Consultado Mayo 2012]. Disponible en: http://www.asahq.org/publicationsServices.htm
9. Chaturvedi S, Chaturvedi A. Postoperative pain and its management. Indian J Crit Care Med. 2007; 11:204-11.
10. Loach A. editor. The management of postoperative pain. In: Orthopaedic anaesthesia, 2nd ed. Edward Arnold: London; 1994. p. 65.
11. Aubrun F, Monsel S, Langeron O, Coriat P, Riou B. Postoperative titration of intravenous morphine in the elderly patient. Anesthesiology 2002; 96:17-23.
12. Mangano DT. Assessment of the patient with cardiac disease: an anesthesiologist´s paradigm. Anesthesiology.1999; 91:1521-6.
13. Beaussier M. Frequency, Intensity, development and repercussions of postoperative pain as a function of the type of surgery [in French]. Ann Fr Anesth Reanim. 1998; 17: 471-493.
14. Lewis KS, Whipple JK, Michael KA, Quebbeman EJ. Effect of analgesic treatment on the physiological consequences of acute pain. Am J Hosp Pharm. 1994; 51:1539-54.
15. Rezaiguia S, Jayr C. Prevention of respiratory complications after abdominal surgery. Ann Fr Anesth Reanim; 1996; 15:623-46.
16. Benedetti C. Acute Pain. A review of its effects and therapy with systemic opioids. En: Benedetti C y cols. (eds.). Advances in Pain Reserch and Therapy, New York: Raven Press, 1990; 14.
17. Strandberg A, Tokics L, Brismar B, Lundquist H, Hedenstierna G. Atelectasis during anaesthesia and in the postoperative period. Acta Anaesthesiol Scand 1986; 30: 154-8.

18. Segawa H, Mori K, Kasai K, Fukata J, Nakao K: The role of the phrenic nerves in stress response in upper abdominal surgery. Anesth Analg; 1996; 82:1215-24.

19. Glaser F, Sannwald GA, Buhr HJ, Kuntz CC, Mayer HH, Klee FF. Herfarth CC. General stress response to conventional and cholecystectomy. Ann Surg 1995; 221: 372-80.

20. Muñoz BF, Salmerón J, Santiago J, Marcote C. Complicaciones del dolor postoperatorio. Rev Soc Esp Dolor 2001; 8: 194-211.

21. Liu SS, Wu CL: "Effect of postoperative analgesia on major postoperative complications: a systematic update of the evidence". Anesth Analg 2007; 104:689–702.

22. Werner MU, Soholm L, Rotboll-Nielsen P, Kehlet H: Does an acute pain service improve postoperative outcome? Anesth Analg 2002; 95:1361-72.

23. Buvanendran A, Kroin JS, Della Valle CJ, Kari M, Moric M, Tuman KJ. Perioperative oral pregabalin reduces chronic pain after total knee arthroplasty: a prospective, randomized, controlled trial. Anesth Analg 2010; 110:199-207.

24. Dworkin RH, Backonja M, Rowbotham MC, Allen RR, Argoff CR, Bennett GJ, et al. Advances in neuropathic pain: diagnosis, mechanisms, and treatment recommendations. Arch Neurol. 2003; 60:1524-34.

25. Sommer M, de Rijke JM, van Kleef M, Kessels AG, Peters ML, Geurts JW, Gramke HF, Marcus MA The prevalence of postoperative pain in a sample of 1490 surgical inpatients. Eur J Anaesthesiol. 2008, 25(4):267-74.

26. Vallano A, Aguilera C, Arnau JM, Banos JE, Laporte JR. Management of postoperative pain in abdominal surgery in Spain. A multicenter drug utilization study. Br J Clin Pharmacol 1999; 47(6):667-673.

27. Dawood N, Jo EH, Girish PJ, Gary EH. A survey of acute pain service structure and function in United States Hospitals. Pain Research and Treatment. 2011; 1-8.

28. Kissing I. Preemptive Analgesia. Why its effect is not always obvious. Anesthesiology 1996; 84:1015-9.

29. Lambert DG. Recent advances in opioid pharmacology. Br J Anaesth 1998; 81:1-2.

30. Grass J. Patient-Controlled Analgesia. Anesth Analg. 2005; 101:S44 -S61.

31. Elia N, Lysakowski C, Tramer MR. Does multimogal analgesia with acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors and patient-controlled analgesia morphine offer advantages over morphine alone? Meta-analyses of randomized trials. Anesthesiology. 2005; 103: 1296-304.

32. Breivik H: How to implement an acute pain service. Best Pract Res Clin Anaesthesiol. 2002; 16:527-47.

33. Weiran L, Lei Z, Woo SM, Anliu T, Shumin X. A study of patient experience and perception regarding postoperative pain management in Chinese hospitals. Patient Preference and Adherence. 2013; 8 (7): 1157-62

34. Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. Incidence, patient satisfaction, and perceptions of postsurgical pain:results from a US national survey. Curr Med Res Opin. 2014; 30:149-160.

35. Machado AJ, Ramirez SJ, Salazar OD. Estudio multicéntrico sobre efectividad de control del dolor posquirúrgico en pacientes en Colombia. Revista Colombiana de Anestesiologìa. 2016;44 (2):114-120.

36. Kumar SP, Saikia P, Lahakar M. Prevalence of acute post-operative pain in patients in adult age-group undergoing inpatient abdominal surgery and correlation of intensity of pain and satisfaction with analgesic management: A cross-sectional single institute-based study. Indian J Anaesth 2016; 60:737-43.

37. Schwenklenks M, Gerbershagen HJ, Taylor RS, Pogatzki ZE, Komann M, Rothaug J. Correlates of satisfaction with pain treatment in the acute postoperative period: Results from the international PAIN OUT registry. Pain. 2014; 155:1401-1411.

38. Hong SJ, Lee E. Effect of evidence-based postoperative pain guidelines via web for patients undergoing abdominal surgery in South Korea. Asian Nurs Res. 2014; 8: 135-42.

39. Kuusniemi k, Pöyhiä R. Present-day challenges and future solutions in postoperativa pain management: results from Pain Forum 2014. Journal of Pain Research. 2016; 9:25-36.