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Opioids, allies in musculoskeletal pain management

Abstract

Pain management is a fundamental pillar of medical practice. The most commonly controversial drugs used for its treatment are opioids. It is of utmost importance to know how to use them. The aim of this study was to describe the characteristics of treatment with opioids in a third level attention hospital on patients hospitalized in Internal Medicine, during a four months period. A total of 202 patients were evaluated. Most of them, experienced moderate (85/202, 42.08%) to severe (106/202, 52.48%) acute (160/202, 79.21%), somatic nociceptive (93/202, 46.04%) and mixed pain (105/202, 51.98%). In the vast majority of the cases, the opioid indication was adequate to the pain intensity (191/202, 94.55%), and the doctor who indicated the treatment took this into consideration before deciding what type of drug to use (177/202, 87.62%). Opioids were mainly indicated for musculoskeletal postoperative pain (68/202, 33.66%), neoplasms (31/202, 15.35%) and muscular and osteoarticular system disorders (28/202, 13.86%). The most widely used was tramadol (142/202, 70.30%), followed by morphine (48/202, 23.76%) and methadone (10/202, 4.95%). Intervals, rotations and dosis in patients with renal and hepatic dysfunction were, mostly, correct. Rescue therapy and its drawbacks were also analyzed. Antiemetics and cathartic medicaments were prescribed in less than half of the cases (86/202, 42.57% y 90/202, 44.55% respectively). Most frequent side effects were constipation (80/202, 39.60%), nausea (43/202, 21.28%), vomiting (28/202, 13.86%), sedation, drowsiness and lethargy (38/202, 18.81%). Pain must be understood as a multidimensional area and a correct and complete approach must take a wide variety of possibilities into account.

Keywords: opioids, rescues, adverse effects, third level attention

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Introduction

Pain, cited by the American Society of Pain as the "fifth vital sign",[1] is one of the disorders that most worries the patient and that motivates consultations. The International Association for the Study of Pain (IASP) defined it in 1994: "Pain is an unpleasant sensory and emotional experience related to potential or actual tissue damage, or described in terms of such damage. Pain is always subjective and, as such, it is a communication phenomenon.[2] "Pain is what the patient says it is. It is what the patient describes and not what others think it should be".[3] Pain treatment is a fundamental pillar of medical practice in general, becoming essential in the hospital setting. The drugs that commonly generate the most controversies for their treatment are opioids. For this reason, it is important to know how they are used, to detect problems in their use and adverse reactions in a timely manner, changing behaviors if necessary. It is also relevant to banish myths and prejudices about its use.[4,5]

The objective of this study was to describe the characteristics of opioid treatment in patients with musculoskeletal pain admitted to the Internal Medicine Department in a tertiary care hospital.

Materials and methods

It was an observational, descriptive-analytical, longitudinal (prospective) study, carried out over a period of four months. 202 patients admitted and hospitalized in the Internal Medicine Department who used opioids were included. The project was approved by the Teaching and Research Committee and the Bioethics Committee of the hospital. Patients were followed-up from the first 48 hours in which they received opioids to the last day of the treatment or until they stopped being under the care of the Medical Clinic. Data collection, with prior informed consent, was carried out by daily medical interviews with the patient and a daily review of the medical clinical records.

Inclusion criteria: patients who agreed to enter the study with informed consent, admitted to the Internal Medicine Department, over 18 years of age, without alteration of the sensorium (evaluated by the Glasgow Coma Scale with a score of 15/15), without cognitive alterations, who received opioids and who remained hospitalized for more than 48 hours to be able to continue the evaluation during hospitalization.

Exclusion criteria: patients hospitalized for less than 48 hours or in whom follow-up was interrupted, sensory, mental and / or cognitive disturbances (disorientation in person, time or space, memory disturbances) that prevented answering the questions requested.

A descriptive analysis of the recorded data was carried out. The average is presented along with the standard deviation (SD) for the description of the continuous variables evaluated or the median along with the interquartile range, as appropriate. In some cases the range is included as a minimum value - maximum value. For the description of the categorical variables, the absolute and percentage frequencies are presented.

Results

During the evaluation period, 202 patients entered the study, of them 145 were men (71.78%) and the average age was 42 years (range: 18-89 years). The reasons why opioids were indicated in order of frequency were 68 orthopaedic musculoskeletal postoperative pain (33.66%), 31 neoplasms (15.35%) 28 muscular and osteoarticular system disorders (secondly to rheumatic diseases), 24 postoperative orthopaedics infections (11.88%) (Table 1), 16 headaches in the context of myofascial syndromes (7.92%), 15 polytraumas (7.43%), 13 burns (6.44%), 3 nonspecific abdominal pain (1.48%) and 4 other causes (1.98%). The Palliative Care Department was consulted on 24 occasions (11.88%) for a joint approach. The characteristics of the pain that motivated the indication of opioids were analyzed. Thus, a

predominance of acute pain was evidenced in 160 patients (79.21%), followed by chronic cancer pain in 26 (12.87%) and chronic non-cancer pain in 16 (7.92%). The most frequent pain syndromes were mixed pain in 105 (51.98%) and somatic nociceptive in 93 (46.04%). As pure findings, only 3 manifested neuropathic pain (1.49%) and 1 visceral nociceptive (0.50%). Regarding the intensity of pain, evaluated according to the Numerical Pain Scale and the Visual Analog Scale, 106 expressed severe pain (52.48%) and moderate pain in 85 (42.08%), with a lower percentage of mild pain (11 patients, 5.45%), referring to the pain they presented before starting the opioid. A 62.38% of the individuals (126) received education on the use of opioids during hospitalization.

Table 1 Description of the most frequent conditions that required opioids

Orthopaedic musculoskeletal postoperative pain	**N=68 (%)**
Primary total hip arthroplasty	15 (22%)
High tibial osteotomy	7 (10%)
Primary total knee arthroplasty	7 (10%)
Lower limb amputation	6 (9%)
Removal osteosynthesis surgery	6 (9%)
Ankle arthrodesis	5 (8%)
Foot arthrodesis	4 (6%)
Shoulder arthroplasty	4 (6%)
Revision hip arthroplasty	4 (6%)
Distal radius osteotomy	3 (4%)
Wrist arthrodesis	3 (4%)
Revision knee arthroplasty	2 (3%)
Elbow arthroplasty	2 (3%)
Musculoskeletal neoplasms	**N=31 (%)**
Bone neoplasms	
Osteochondroma	7 (23%)
Enchondroma	4 (13%)
Simple bone cyst	4 (13%)
Osteosarcoma	3 (10%)
Chondrosarcoma	2 (6%)
Soft tissue neoplasms	
Lipomas	6 (19%)
Liposarcoma	4 (13%)
Schwannoma	1 (3%)
Muscular and osteoarticular system disorders	**N=28 (%)**
Septic Arthritis	14 (50%)
Chronic Osteomyelitis	10 (35%)
Osteonecrosis	4 (15%)
Postoperative orthopaedics infections	**N=24 (%)**
Chronic fracture osteosynthesis infections	7 (30%)
Soft tissue surgery	4 (17%)
Lowe limb amputation (traumatic and non-traumatic)	4 (17%)
Chronic hip arthroplasty	3 (12%)
Acute fracture osteosynthesis infections	3 (12%)
Acute hip arthroplasty	2 (8%)
Chronic knee arthroplasty	1 (4%)
Polytraumas	N=15 (%)
Tibial fracture	4 (27%)
Humerus fracture	3 (20%)
Hip fracture	3 (20%)
Pelvis fracture	2 (13%)
Femur fracture	2 (13%)
Acetabular fracture	1 (7%)

In 94.55% of the total (191), the correlation of pain intensity (before starting the opioid and evaluated by the investigating physician in the first interview) and the opioid indication was correct. On the other hand, the treating physicians assessed the intensity of pain before indicating the opioid in 87.62% of the indications (177). In all cases in which methadone was indicated, the patient rated the pain as severe. Morphine was also indicated more frequently in severe / acute pain, while tramadol predominated in moderate pain. Fentanyl was used in two cases of severe / acute pain.

Tramadol and morphine were used mainly for acute pain and methadone for chronic pain. Regarding the use of adjuvants, 42 cases (35.90%) of a combination of adjuvants were recorded, mainly a combination of NSAIDs or paracetamol with antidepressants or antiepileptic drugs. Corticosteroids followed in 20 (17.09%), NSAIDs in 17 (14.53%), paracetamol in 14 (11.97%), antiepileptic drugs in 9 (7.69%), antidepressants in 8 (6.48%), benzodiazepines in 3 (2.56%), baclofen in 3 (2.56%) and bisphosphonates in 1 (0.85%). 86 (42.57%) and 90 (44.55%) patients received metoclopramide and lactulose, respectively.

Discussion

Of the population admitted by the Internal Medicine Department Medical Clinic during the stipulated period, 33.61% received opioids. It was observed that the most used was tramadol, a weak opioid, without reaching the maximum dose of 400 mg in any case. With regard to strong opioids, in order of frequency, morphine, methadone and fentanyl were indicated. The latter was preferred in cases of severe / acute pain with renal failure and inability to use the oral route. It is evident that, not only were the maximum doses of tramadol not used, but also that the strong opioids (which do not have a ceiling dose), did not reach too high doses for the most part. This may be because the doses chosen were adequate for the patients for pain relief, but it may also suggest a reluctance to use high doses, for fear of adverse effects.

Machado et al., Evaluated patients with pain in the immediate postoperative period, highlighting that 38.8% of the patients did not present adequate pain control. The author then postulated that the dose of analgesia was suboptimal. He also stood out as an independent variable in his series, statistically significant for pain control, was compliance with the interval between doses.[6] It is then desired to prioritize its relevance when indicating opioids.

The opioid rotation was mostly at the correct dose. According to Kraychete et al., The most common errors are related to the titration and conversion of the dose to a new route of administration.[7] Adjuvants are defined as those drugs that are used in conjunction with opioids, in order to enhance the analgesic effect, without increasing the dose of opioid, thus reducing adverse effects. They were used in more than half of the population. The combination of more than one adjuvant was the one that was recorded most frequently, especially paracetamol with an antiepileptic or antidepressant. Depending on the adjuvant, other beneficial effects can be obtained, such as neuropathic pain, insomnia, anxiety, etc.[8] More than half of the patients did not receive metoclopramide or lactulose at the start of treatment, increasing the likelihood of adverse effects. Pastor and Lagrutta also found little addition of cathartic and antiemetic in this same hospital[9]. The need to reinforce these indications in future interventions is emphasized.

The use of opioids for acute pain, described as that with a duration of less than twelve weeks, transitory, but with great adrenergic discharge, was the predominant one in the study, mainly using tramadol and morphine. Pain intensity was mostly severe / acute and moderate pain, to a lesser extent mild pain. Fentanyl, methadone and morphine were used mostly for severe / acute pain, while tramadol predominated for moderate.

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The Analgesic Ladder of the World Health Organization (WHO) proposes that for mild pain the first step be used, paracetamol with or without non-steroidal anti-inflammatory drugs (NSAIDs), with or without adjuvants. For moderate pain, the second step, weak opioids with or without NSAIDs, paracetamol or adjuvants. Finally, for severe / acute pain, strong opioids with or without NSAIDs, paracetamol, or adjuvants are suggested. It is desired to emphasize that the step that the patient needs must be entered. In this study, the division of weak or strong opioids was not considered, but opioids in general were stipulated as adequate treatment for moderate to severe / acute pain.[10,11]

According to this, it was analyzed whether the opioid indication was adequate to the intensity of the pain, the response being positive in the vast majority. The reason why it was not adequate in some cases was due to patients who reported mild pain and, in the same way, tramadol or morphine were indicated. The degree of pain should not be preconceived just from the underlying disease without asking the patient. Pain is an individual experience.[12]

The rescues, additional doses among those previously regulated, are essential for pain control. Disadvantages with its use should be detected in a timely manner and the basal dose should be adjusted and / or adjuvants added, ideally within 24-48 h of its request.[13]

On the other hand, the indications for "SOS" opioids are the administration of a dose of any opioid without regulating it during the day (within an analgesic scheme without opioids. This practice is not recommended, since, if the patient has pain such as to request the "SOS", it means that the scheme without opioids is not enough. An exception would be a single dose, for example, before the healing of a painful wound.[14] Adverse effects were observed in approximately 60% of opioid-treated patients.[15] The same patient could have had more than one adverse effect. The Naranjo Algorithm, recommended by the National Administration of Drugs, Food and Medical Technology (ANMAT),[16] was used to analyze causality. Thus, adverse effects were classified as proven, probable, possible and doubtful, according to the score achieved. Each particular case was analyzed.

The main adverse effects were gastrointestinal (constipation, nausea, vomiting) and neurological (sedation, drowsiness and lethargy), findings similar to those published by Jason et al.[14] and Kalso et al.[17]

Regarding acute opioid neurointoxication (NITO), it occurred in patients with common characteristics, all with morphine. In five of them, an association with psychoactive medications such as benzodiazepines and antidepressants was found, and in the remainder, impaired kidney function. The behaviors taken in these cases were the reduction of the dose and / or the rotation of the opioid. Risk factors for neurological adverse effects, including NITO, are high doses of opioids, prolonged exposure to these drugs, dehydration, kidney or liver failure, the elderly, and the concomitant use of psychoactive drugs.[18]

The most frequent adverse reactions are due to the mechanism of action of the opioid on the receptor, and therefore can be anticipated. Nausea and vomiting are due to stimulation in the trigger chemoreceptor zone of the vomiting center in the medulla oblongata, also to the slowing of gastric emptying, to the total increase in the pyloric sphincter and to the sensitization of the vestibular system. Constipation occurs due to the suppression of excitability and inhibition of the release of neurotransmitters in enteric neurons, with a decrease in intestinal peristalsis, intestinal secretions and a delay in gastric emptying. On the other hand, drowsiness is secondary to the effect at the central level of the pathways related to wakefulness, being dose dependent.[15–20]

Due to the low percentage of interconsultations to the Palliative Care Department, the question of a possible sub-intervention arises. The objective is not only to relieve pain, but also to improve the quality of life of patients as much as possible, with a global vision of them. Ellershaw et al. highlighted that their participation not only improved pain and accompanying symptoms, but also favored the understanding of the disease and its prognosis by the patient and their family.[21]

In this series, a high percentage of patients were educated about the use of opioids within the first five days of hospitalization. In principle, the basic notions of the drug were considered, reinforcing later if necessary. Those who receive education about their pain and their medication will have better prescription compliance, less worry and anxiety, with possibly lower pain intensity.[22–24]

The "total pain" should be understood as multidimensional. A correct and complete approach to the suffering patient implies valuing all their spheres (bio-psycho-social).[25–27] The IASP stated that "Pain relief should be a human right"[4]. This assessment correctly measures how important it is to deal with pain. When opioids are used accordingly to the pain, the benefits outweigh the risks most of the times.

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Conflicts of interest

The authors declare no conflicts of interest.

References

1. MA Erazo, L Pérez, CC Colmenares, et al. Prevalence and characterization of pain among hospitalized patients. Rev *Soc Esp Dolor*. 2015;22:241–248.
2. Extraordinary Chair of Pain "Grunenthal Foundation" of the University of Salamanca, Evaluation and diagnosis of pain, meeting of experts. October 22 and 23, 2007.
3. Bolíbar I, Catala E, Cadena R. Pain at the hospital, from standards of prevalence to standards of quality. *Rev Esp Anestesiol Reanim*. 2005;52:131–140.
4. Human Rights watch. Please, do not make us suffer anymore, access to pain treatment. March 2009.
5. Vicens J. Pain characteristics of hospitalized patients within a community hospital of high complexity. XXXI World Congress of Internal Medicine, Chile, 2012.
6. Machado J, Machado M, Calderón V, et al. Control of postoperative pain in patients in a tertiary hospital. *Rev Fac Med*. 2013;21(1):46–53.
7. Kraychete D, Tesseroli de Siqueira J, Santos Garcia J. Recommendations for the use of opioids in Brazil: Part I. *Rev Dor São Paulo*. 2013;14:295–300.
8. Mohammed I, Declan W, Norman B. Opioid and adjuvant analgesics: compared and contrasted. *Am J Hosp Palliat Care*. 2011;28(5):378.
9. Pastor E, Lagrutta M. Prevalence and management of pain in a third level hospital.

10. World Health Organization. Cancer pain Relief. Geneva, Switzerland: World Health Organization 1986. 2018.

11. Romero J, Gálvez R, Ruiz S. It is sustainable the WHO analgesic ladder? *Rev Soc Esp Dolor*. 2008;15(1):1–4.

12. Arbonés E, Montes A, Riu M, et al. Pain in hospitalized patients: cross-sectional study on information, evaluation and treatment. *Rev Soc Esp Dolor*. 2009;16(6):314–322.

13. Sebastiano Mercadante, Lukas Radbruch, Augusto Caraceni, et al. Episodic (Breakthrough) Pain consensus conference of an expert working group of the european association for palliative care. *Cancer.* 2002;94(3):832–839.

14. Jason W Busse, Samantha Craigie, David N Juurlink, et al. Guideline for opioid therapy and chronic noncancer pain. *CMAJ*. 2017;189(18):659–666.

15. Alfred Gilman, Louis S. Goodman, Lauren L Brunton, et al. Parker Goodman & Gilman: Therapeutics pharmacologic basis. 11th edition. Capítulo 21. p. 547–590.

16. Guía de buenas prácticas en farmacovigilancia. Ministerio de Salud Secretaría de Políticas, Regulación e Institutos A.N.M.A.T. 2009.

17. Kalso E, Edwards JE, Moore A, et al. Opioids in chronic non-cancer pain: systematic review of efficacy and safety. *Pain.* 2004;112(3):372–380.

18. Cid ML. Sindrome de neurotoxicidad inducido por opioides (NITO). *Rev Soc Esp Dolor* 2008;15(8):521–526.

19. Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain. National Opioid Use Guideline Group. 2017.

20. Safety practices for the use of opioids in patients with chronic pain. Sanity inform 2015. Ministerio de Sanidad, Servicios sociales e igualdad. Spain Government.

21. Ellershaw J, Peat S, Boys L. Assessing the effectiveness of a hospital palliative care team. *Palliative Medicine*. 1995;9(2):145–152.

22. A Jacox, DB Carr, R Payne. New clinical-practice guidelines for the management of pain in patients with cancer. *N Engl J Med.* 1994;330(9):651–655.

23. Currow D, Phillips J, Clark K. Using opioids in general practice for chronic non-cancer pain: an overview of current evidence. *Med J Aust*. 2016;204(8):305–309.

24. Opioids for pain management. Latin-American manual.

25. Mehta A, Lisa C. Understanding the Concept of "Total Pain" A Prerequisite for Pain Control. *J Hos Pal Nurs*. 2008;10(1):26–32.

26. Bendinger T, Plunkett N. Measurement in pain medicine. *BJA.* 2016;16(9):310–315.

27. Breivik P, PC Borchgrevink, SM Allen, et al. Assessment of pain. *British Journal of Anaesthesia.* 2008;101(1):17–24.

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