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Pharmacological management of acute postoperative pain in Spain. Data from the national survey by the Spanish Pain Society (SED)

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ABSTRACT

Introduction: The Spanish Pain Society SED-IASP launched a national survey in order to determine how post-op pain was managed throughout Spain. This article analyses the drugs and routes employed by comparing them according to the existence or not of an Acute Pain Unit (APU) or Acute Pain Management Program (APMP) in hospitals with > 200 beds that participated and answered the survey.

Patients and methods: Members of the Spanish Pain Society and APS/APMP heads were asked to respond to a survey. Responses were stratified by hospital size (< 200 or ≥200 beds) and whether APS/APMP was present or not. Categorical variables were described by percentages and the 95% confidence interval and continuous variables by the median and interquartile range. The drugs used, their associations and routes of administration were also analyzed.

Results: A total of 112/537 hospitals responded to the survey (78 with >200 beds and 34 < 200) which represents a 20.9% response rate). Responses were received from 42.4% of hospitals with ≥ 200 beds (vs. 9.6% of smaller ones). We fully analysed data concerning routes and methods of administration only for the larger hospitals, 57.7% of which had an APS or APMP. Only drugs were analyzed concerning all 112 hospitals.

Oral route is used in 60.3% of hospitals (no differences between those with or without APU), intramuscular (IM) in 15.8%, subcutaneous (SC) in 48.3%, intravenous (IV) bolus in 75.9%, continuous IV in 77.6%, PCA IV in 60,3%, catheters in nerve plexus using bolus 51,7%, nerve plexus catheters with continuous infusion in 56.9%, epidural bolus in 40.4%, continuous epidurals in 75.9%, PCA epidural in 43.1%, (63.8% local anesthetic and opioids and 15.8% local anesthetic with adrenaline/clonidine/opioid). Statistically significant differences were found in the PCA IV route, continuous infusion through nerve plexus catheters and PCA epidural (most used in hospitals with an APU) and IM route (significantly less used by them).

A total of 81.3% hospitals with >200 beds used oral NSAIDs to treat postoperative pain (ibuprofen 38.1% and dexketoprofen 28.6%); paracetamol was used in 68.8 % of cases (associated to NSAIDs in 22%) and 28.1% used oral opioids (tramadol 21.9%). Coadjuvants are only used in 2.3% of 112 hospitals. IV dexketoprofen and oral ibuprofen were the most frequent NSAIDs used. Tramadol is the most commonly used IV and oral opioi. Morphine is the most frequently used strong opioid, especially in PCA IV.

Paracetamol is used in 54.7% (112 hospitals) of IV bolus route of administration. Multimodal analgesia concept, although

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well known, is not widely established among the survey responders (only 30% apply it).

Conclusion: Paracetamol and NSAIDs are used by IV (54.7% and 56,6% respectively) and oral routes (67.4 and 86.1% respectively). Hospitals with >200 beds having an APU or APMP significantly use more PCA IV, continuous infusion nerve plexus catheters and PCA epidural and less IM route to treat postoperative pain. Multimodal analgesia is not widely used in Spanish hospitals.

Key words: Acute pain, postoperative pain, analgesia.

RESUMEN

Introducción: La Sociedad Española del Dolor (SED) y concretamente el Grupo de Trabajo de Dolor Agudo de la misma (GTDASED) llevó a cabo una encuesta a nivel nacional para conocer la situación del manejo del dolor postoperatorio en España, así como las distintas pautas analgésicas empleadas. En este artículo se analizan estas pautas y se comparan atendiendo a la presencia o no de Unidad de Dolor Agudo (UDA) o Programas de Gestión del Dolor Postoperatorio (PGDPO) entre aquellos hospitales de más de 200 beds que participaron en la misma.

Pacientes y métodos: Los miembros de la Sociedad Española del Dolor y todos los responsables del tratamiento del dolor postoperatorio de los hospitales españoles fueron invitados a contestar un cuestionario estructurado. Para el análisis los hospitales se dividieron en 2 grupos: < 200 beds y ≥ 200 beds.

Las variables categóricas fueron descritas como porcentajes con el 95% de intervalo de confianza y las continuas con la mediana y el rango intercuartil. Se analizaron las pautas farmacológicas empleadas, sus asociaciones, así como las vías de administración.

Resultados: En total las respuestas implicaron a 112 (78 con > 200 beds y 34 con < 200 beds) hospitales del Sistema Nacional de Salud Español. Se obtuvieron respuestas del 42,4 % de hospitales con ≥ 200 beds, y del 9,6% de los de < 200 beds, por lo que solo se analizó el primer grupo en lo que respecta a pautas de administración de analgesia, mientras que en el caso aislado de los fármacos empleados se analizaron los 112 hospitales que respondieron la encuesta.

Las pautas orales se emplean en el 60,3% de los hospitales (sin diferencias entre aquellos con y sin UDA), las intramusculares (i.m.) en un 15,8%, subcutáneas (s.c.) 48,3%, intravenosas (i.v) en bolos 75,9%, intravenosas continuas 77,6%, intravenosas PCA 60,3%, catéteres en plexo nervioso a bolos 51,7%, catéteres en plexo nervioso e infusión continua 56,9 %, epidurales en bolos 40,4%, epidurales continuas 75,9%, epidurales en PCA 43,1%, (63,8% anestésico local y opioide y 15,8% anestésico local con otros fármacos [adrenalina/clonidina/opioide]). Solo hubo diferencia estadísticamente significativa en función de la presencia o no de UDA en el centro, en las pautas: intravenosas en PCA, catéteres en plexo nervioso con infusión continua y epidural en PCA (más empleadas en los hospitales con UDA) e intramusculares (menos empleadas en los hospitales con UDA).

De los centros con > 200 beds un 81,3% utilizaron NSAID en sus prescripciones orales (ibuprofeno 38,1% y dexketoprofeno 28,6%); un 68,8% utilizó paracetamol (asociado a NSAID en un 22%) y un 28,1% empleó opioides orales (tramadol en el 21,9%). Las pautas intramusculares fueron utilizadas por un 15,8% de los encuestados. En 55 centros (de los 112 encuestados independientemente del número de beds hospitalarias) aún se utilizan pautas subcutáneas para tratar el Dolor Agudo postoperatorio y de ellos el 58,3% emplea cloruro mórfico. La protocolización de coadyuvantes es del 2,3%. El NSAID más empleado es el Dexketoprofen por vía endovenosa y el ibuprofeno por vía oral. El opioide débil más empleado es el tramadol tanto por vía oral como endovenosa. La morfina es el opioide potente más empleado, especialmente en PCA endovenosa (i.v.). El paracetamol se emplea en el 54,7% (112 hospitales) de las pautas i.v. a bolos. El concepto de analgesia multimodal, aunque es conocido, no se práctica de modo mayoritario entre los encuestados (solo un 30% de los centros que respondieron la encuesta lo hacen).

Conclusión: El paracetamol y los NSAID se emplean tanto por vía oral (67,4 y 86,1%, respectivamente) como endovenosa (54,7 y 56,6%, respectivamente). Cuando los hospitales de > 200 beds disponen de UDA o PGDPO utilizan significativamente más las pautas: intravenosas en PCA, catéteres en plexo nervioso e infusión continua y epidural en PCA y menos las pautas i.m. La aplicación de analgesia multimodal es baja.

Palabras clave: Dolor agudo, dolor postoperatorio, analgesia.

INTRODUCTION

Acute postoperative pain refers to a series of unpleasant sensorial, emotional and mental feelings, associated with autonomous, psychological and behavioral responses, which appear as a consequence of surgery (1). Its control is necessary to inhibit a series of nociceptive stimuli that trigger an autonomous, somatic reflex in response to such pain. This response may increase the rate of postoperative complications, costs and unnecessary suffering for the patient. By controlling postoperative pain, it is possible to accelerate the patient's recovery, allow them to breathe, cough, and move more easily, which reduces the incidence of pulmonary, cardiovascular and thromboembolic complications, among others, secondarily leading to better postoperative results and increasingly early clinical discharge. Acute postoperative pain can become chronic. The incidence of Post-Surgical Chronic Pain (PSCP) varies according to the type of surgical intervention carried out (inguinal herniorrhaphy 13.6%, thoracotomy 37.6%, abdominal hysterectomy 25.1%, vaginal hysterectomy: 11.8%) (2). The prevalence of intense pain after 1 year is 2.2%-13.2% (2).

In recent years, the management of acute postoperative pain has substantially improved with the inclusion of new

analgesic techniques (mainly related with nerve blocks with local anesthetics) and the combination of different types of analgesics that allow a personalized design of the chosen drug, the administration route and technique according to the requirements that each case presents (3). This set of synergic pharmacological associations and analgesic techniques in each surgical intervention is known as MULTIMODAL analgesia. However, the real impact obtained in terms of the prevalence of postoperative pain remains low (4,5) if we compare data from 2001 and 2012 obtained by GTDASED members.

Since the early nineties, national and international surveys have been published that analyze some of the aspects relating to postoperative pain management. Most of these surveys were carried out mainly on the basis of questionnaires sent by mail to healthcare institutions or professionals, although some authors consider that the information they obttained overestimates the quality of care provided (6,7).

After the implementation of organizational structures to manage postoperative pain, the last fifteen years have seen the publication of guides on action and recommendations for managing postoperative pain. Many of them have coincided on the advisability of creating an APU as the main structure for organizing treatment of postoperative pain. However, a number of studies have questioned both the efficiency of the APU (8), and also the wide range of models that are covered by these initials (9,10) or even under new denominations ("Acute Pain Program" or "Postoperative Pain Management Program" [POPMP]) that rely on greater involvement of hospital professionals in managing pain and not only members of the APU (11). These same studies bring to light significant inter-centre variability as regards the analgesic Prescription used in the different surgical procedures without knowing whether they influence them with or without the existence of an APU.

OBJECTIVE

The main objective of this study was to describe the different Prescription of pharmacological treatment of acute postoperative pain, as well as the routes and methods of administration (analgesic treatment) used in Spanish hospitals, by means of a survey at national level promoted by the Spanish Pain Society (SED Spanish IASP Chapter) (Acute Pain Working Party). The secondary objective was to analyze whether the existence of an APU or POPMP determines differences in the types of analgesia used.

PATIENTS AND METHOD

A retrospective, descriptive and observational study of the indications regarding pharmacological treatment of acute postoperative pain used in hospitals over the entire Spanish territory.

All hospitals were identified with surgical activity as from the "National Catalog of Hospitals 2011" updated as of 31 December 2010 (http://www.msssi.gob.es/ciudadanos/prestaciones/centrosServiciosSNS/hospitales/docs/CNH2011.pdf). Of the 794 centers registered in the "National Catalog of Hospitals 2011", 537 carried out surgical activity.

Data collection was carried out by means of a structured questionnaire (Schedule 1) which was answered online through the website of the Spanish Pain Society (SED). Access to the questionnaire was made by personal identification. This questionnaire was designed by members of the SED's Working Party following the advice of the company Demométrica®, dedicated to researching markets and public opinion (www.demometrica.com). All SED members had access to answer the questionnaire, and they were sent the relevant information in 3 different emails during the period when the study was carried out, involving all managers of APUs and POPMPs in hospitals with surgical activity, who were personally informed and by means of information leaflets. Data collection was carried out from 1 October to 23 November 2012.

The questionnaire included 24 closed-response questions, except 1 open question stating the analgesic treatment carried out (question 20g of the Schedule). The questions analyzed the following aspects: pain management structures and resources available information to patients, pain assessment, treatment administered, documentation regarding the pain and indicators used, healthcare personnel's training and overall evaluation of pain treatment.

The confidentiality of the person reporting was ensured by excluding their name from the database. When several people from the same hospital responded to the questionnaire, the only answers considered valid were those that coincided.

The hospitals were divided into 2 groups: those with ≥ 200 beds (n = 184), and with <200 beds (n = 353). The first group represents 69% of all beds (111,106 from a total of 161,022) of hospitals with surgical activity. It was also considered whether they were public, public-private, or private hospitals, and whether or not they had a training program (teaching hospitals). Hospitals with APUs or POPMPs were compared with those that did not.

The main options for treatment prescribed were reported according to the following types of treatment regime:

- Oral treatment regime.
- Intramuscular treatment regime.
- Subcutaneous treatment regime.
- Intravenous bolus treatment regime.
- Continuous intravenous treatment regime.
- PCA intravenous treatment regime.
- Plexus catheter bolus treatment regime.
- Continuous plexus catheter treatment regime.
- Epidural bolus treatment regime.
- Continuous epidural administration.
- PCA epidural treatment regime.
- Treatment regime with local epidural anesthetic with opioids.
- Treatment regime with mixed local epidural anesthetic.

RESULTS

A total of 144 professionals responded to the study's survey, corresponding to 112 hospitals. In total, the responses involved 112 (78 with >200 beds and 34 with <200 beds) hospitals from the Spanish National Health System. The study obtained responses from 42.4% of hospitals with >200 beds, and 9.6% from hospitals with <200 beds, so only the first group was analyzed as regards the administration of analgesia, while in the isolated case of drugs used, 112/537 hospitals that responded to the survey were analyzed .

Of these, 57.7% have an APU or OPOMP with fully dedicated members (doctors: 28.6%, and nurses: 25%). Consensual protocols exist in 80.8% of them. The overall assessment of pain treatment is very good/good in 46.4%.

Table I shows the different treatment regime options used in the 78 hospitals with >200 beds, differentiating them according to whether or not they have an APU/POPMP. The global results of the analgesic techniques reflected in the survey (SCHEDULE I) are presented as percentages with confidence intervals of 95

TABLE I

ANALGESIC TREATMENT REGIMES USED IN POSTOPERATIVE PAIN IN HOSPITAL CENTERS ≥ 200 ACCORDING TO WHETHER OT NOT THEY HAVE AN APU/POPMP

	APU or POPMP						
	No		*Yes*		*Total*		
	n = 33		*n = 45*		*n = 78*		
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*	*p_value*
Treatments for postoperative pain							
Oral treatment regime	56.5	(36.2-76.8)	62.9	(46.9-78.9)	60.3	(47.7-72.9)	0.629
Intramuscular treatment regime	30.4	(11.6-49.2)	5.9	(0.0-13.8)	15.8	(6.3-25.3)	0.023*
Subcutaneous treatment regime	39.1	(19.2-59.0)	54.3	(37.8-70.8)	48.3	(35.4-61.2)	0.259
Intravenous bolus treatment regime	78.3	(61.5-95.1)	74.3	(59.8-88.8)	75.9	(64.9-86.9)	0.729
Continuous intravenous treatment regime	82.6	(67.1-98.1)	74.3	(59.8-88.8)	77.6	(66.9-88.3)	0.457
PCA intravenous treatment regime	30.4	(11.6-49.2)	80.0	(66.7-93.3)	60.3	(47.7-72.9)	< 0.001*
Plexus catheter bolus treatment regime	43.5	(23.2-63.8)	57.1	(40.7-73,5)	51.7	(38.8-64.6)	0.308
Continuous plexus catheter treatment regime	26.1	(8.2-44.0)	77.1	(63.2-91.0)	56.9	(44.2-69.6)	< 0.001*
Epidural bolus treatment regime	43.5	(23.2-63.8)	38.2	(21.9-54.5)	40.4	(27.7-53.1)	0.692
Continuous epidural administration	78.3	(61.5-95.1)	74.3	(59.8-88.8)	75.9	(64.9-86.9)	0.729
PCA epidural treatment regime	17.4	(1.9-32.9)	60.0	(43.8-76.2)	43.1	(30.4-55.8)	0.001*
Treatment regime with local epidural anesthetic with opioids	65.2	(45.7-84.7)	62.9	(46.9-78.9)	63.8	(51.4-76.2)	0.855
Treatment regime with mixed local epidural anesthetic	17.4	(1.9-32.9)	14.7	(2.8-26.6)	15.8	(6.4-25.2)	> 0.999

Confidence interval (CI) corrected (substitution of negative limits by 0 and substitution of limits >100 by 100).

(CI 95%).

Oral treatment regime is used in 60.3% of hospitals (without differences between those with and without an APU/POPMP), intramuscular (IM) in 15.8%, subcutaneaous (SC) 48.3%, intravenous (IV) in bolus 75.9%, continuous intravenous 77.6%, PCA intravenous 60.3%, nerve plexus catheters in bolus 51.7%, nerve plexus catheters in continuous infusion 56.9%, epidurals in bolus 40.4%, continuous epidurals 75.9%, PCA epidurals 43.1%, (63.8% local anesthetic and opioid and 15.8% local anesthetic with other drugs [adrenaline / clonidine / opioid]). There was only statistically significant difference according to the existence or or not of an APU/POPMP in the following treatment regimes: PCA intravenous, nerve plexus catheters with continuous infusion and PCA epidural (in hospitals with APU/POPMP) and intramuscular (less used in the hospitals with APU/POPMP).

Table II shows the different routes of administration, and the analgesic drugs used in hospitals > or <200 beds. "Missing" has been assigned to all medications in hospital centers that did not respond to any of the questions on medication for postoperative pain. Centers that responded to some of the questions were also classified as "missing" in the questions they left blank.

TABLE II
ANALGESIC TREATMENT REGIMES USED IN TOTAL HOSPITALS (< AND > 200 BEDS)

"Missing" has been assigned to all medications in hospital centers that did not respond to any of the questions on medication for postoperative pain. Centers that responded to some of the questions were also classified as "missing" in the questions they left blank.

	< 200 beds		*≥ 200 beds*		*Total*	
	n = 34		*n = 78*		*n = 112*	
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*
Oral treatment regime						
NSAID	100.0	(100.0-100.0)	81.3	(67.7-94.8)	86.1	(75.7-96.4)
Dexketoprofen	60.0	(17.1-100.0)	28.6	(9.2-47.9)	34.6	(16.3-52.9)
Diclofenac	0.0	(0.0-0.0)	4.8	(0.0-13.9)	3.9	(0.0-11.2)
Ibuprofen	60.0	(17.1-100.0)	38.1	(17.3-58.9)	42.3	(23.3-61.3)
Buscopan	9.1	(0.0-26.1)	0.0	(0.0-0.0)	2.3	(0.0-6.8)
Adjuvant	0.0	(0.0-0.0)	3.1	(0.0-9.1)	2.3	(0.0-6.8)
Metamizol	18.2	(0.0-41.0)	34.4	(17.9-50.8)	30.2	(16.5-44.0)
Opioid	45.5	(16.0-74.9)	28.1	(12.5-43.7)	32.6	(18.6-46.6)
Weak Opioid	40.0	(9.6-70.4)	25.0	(10.0-40.0)	28.6	(14.9-42.2)
Codeine	0.0	(0.0-0.0)	3.1	(0.0-9.1)	2.4	(0.0-7.2)
Tramadol	33.3	(2.5-64.1)	21.9	(7.6-36.2)	24.4	(11.2-37.5)
Strong Opioid	10.0	(0.0-28.6)	3.1	(0.0-9.1)	4.8	(0.0-11.2)
Paracetamol	63.6	(35.2-92.1)	68.8	(52.7-84.8)	67.4	(53.4-81.4
Intramuscular treatment regime						
NSAID	33.3	(2.5-64.1)	25.0	(6.0-44.0)	27.6	(11.3-43.9)
Dexketoprofen	0.0	(0.0-0.0)	11.1	(0.0-25.6)	8.0	(0.0-18.6)
Diclofenac	14.3	(0.0-40.2)	11.1	(0.0-25.6)	12.0	(0.0-24.7)
Metamizol	11.1	(0.0-31.6)	0.0	(0.0-0.0)	3.6	(0.0-10.4)
Opioid						
Strong Opioid						
Meperidine	22.2	(0.0-49.4)	10.5	(0.0-24.3)	14.3	(1.3-27.3)

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TABLE II (CONT.)
ANALGESIC TREATMENT REGIMES USED IN TOTAL HOSPITALS (< AND > 200 BEDS)

	< 200 beds		*≥ 200 beds*		*Total*	
	n = 34		*n = 78*		*n = 112*	
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*
Subcutaneous treatment regime						
Opioid	69.2	(44.1-94.3)	80.7	(66.7-94.6)	77.3	(64.9-89.7)
Weak Opioid						
Tramadol	16.7	(0.0-37.8)	0.0	(0.0-0.0)	4.8	(0.0-11.2)
Strong Opioid	66.7	(40.0-93.3)	80.0	(65.7-94.3)	76.2	(63.3-89.1)
Meperidine	25.0	(0.5-49.5)	27.6	(11.3-43.9)	26.8	(13.3-40.4)
Methadone	9.1	(0.0-26.1)	16.7	(3.3-30.0)	14.6	(3.8-25.4)
Morphine	54.6	(25.1-84.0)	60.0	(42.5-77.5)	58.5	(43.5-73.6)
Intravenous bolus treatment regime						
NSAID	55.6	(32.6-78.5)	57.1	(40.7-73.5)	56.6	(43.3-69.9)
Dexketoprofen	50.0	(25.5-74.5)	35.5	(18.6-52.3)	40.4	(26.4-54.5)
Ketorolac	6.3	(0.0-18.1)	3.3	(0.0-9.8)	4.4	(0.0-10.2)
Ketamine	0.0	(0.0-0.0)	2.9	(0.0-8.6)	1.9	(0.0-5.6)
Metamizol	33.3	(11.6-55.1)	38.2	(21.9-54.6)	36.5	(23.5-49.6)
Opioid	72.2	(51.5-92.9)	82.4	(69.5-95.2)	78.9	(67.8-89.9)
Weak Opioid	44.4	(21.5-67.4)	32.3	(15.8-48.7)	36.7	(23.2-50.2)
Dextropropoxifeno	5.9	(0.0-17.1)	0.0	(0.0-0.0)	2.1	(0.0-6.1)
Tramadol	35.3	(12.6-58.0)	32.3	(15.8-48.7)	33.3	(20.0-46.7)
Strong Opioid	44.4	(21.5-67.4)	61.3	(44.1-78.4)	55.1	(41.2-69.0)
Fentanyl	0.0	(0.0-0.0)	6.5	(0.0-15.1)	4.2	(0.0-9.8)
Meperidine	5.9	(0.0-17.1)	19.4	(5.4-33.3)	14.6	(4.6-24.6)
Methadone	5.9	(0.0-17.1)	6.5	(0.0-15.1)	6.3	(0.0-13.1)
Morphine	41.2	(17.8-64.6)	58.1	(40.7-75.4)	52.1	(37.9-66.2)
Paracetamol	66.7	(44.9-88.4)	48.6	(32.0-65.1)	54.7	(41.3-68.1)
Continuous intravenous treatment regime						
NSAID	76.5	(56.3-96.6)	48.7	(32.5-64.8)	57.4	(44.2-70.6)
Dexketoprofen	53.9	(26.8-80.9)	33.3	(16.5-50.2)	39.5	(24.9-54.1)
Ketorolac	15.4	(0.0-35.0)	0.0	(0.0-0.0)	4.7	(0.0-10.9)
Metamizol	29.4	(7.8-51.1)	37.8	(22.2-53.5)	35.2	(22.5-47.9)
Opioid	77.8	(58.6-97.0)	97.4	(92.3-100.0)	91.1	(83.6-98.5)
Weak Opioid	61.1	(38.6-83.6)	63.2	(47.8-78.5)	62.5	(49.8-75.2)
Oxycodone	6.3	(0.0-18.1)	3.3	(0.0-9.8)	4.4	(0.0-10.2)
Tramadol	56.3	(31.9-80.6)	51.6	(34.0-69.2)	53.2	(38.9-67.5)
Strong Opioid	44.4	(21.5-67.4)	70.3	(55.5-85.0)	61.8	(49.0-74.7)
Fentanyl	6.7	(0.0-19.3)	0.0	(0.0-0.0)	2.2	(0.0-6.5)
Meperidine	0.0	(0.0-0.0)	10.0	(0.0-20.7)	6.7	(0.0-14.0)

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TABLE II (CONT.)
ANALGESIC TREATMENT REGIMES USED IN TOTAL HOSPITALS (< AND > 200 BEDS)

	< 200 beds		*≥ 200 beds*		*Total*	
	n = 34		*n = 78*		*n = 112*	
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*
Subcutaneous treatment regime						
Continuous intravenous treatment regime						
Morphine	31.3	(8.5-54.0)	62.5	(45.7-79.3)	52.1	(37.9-66.2)
Paracetamol	5.9	(0.0-17.1)	15.8	(4.2-27.4)	12.7	(3.9-21.5)
PCA intravenous treatment regime						
NSAID	28.6	(4.9-52.2)	9.7	(0.0-20.1)	15.6	(5.0-26.2)
Dexketoprofen	16.7	(0.0-37.8)	6.7	(0.0-15.6)	9.5	(0.6-18.4)
Local anesthesia	0.0	(0.0-0.0)	2.0	(0.0-6.0)	1.3	(0.0-3.9)
Ketamine	0.0	(0.0-0.0)	3.2	(0.0-9.5)	2.2	(0.0-6.5)
Metamizol	7.1	(0.0-20.6)	3.2	(0.0-9.5)	4.4	(0.0-10.5)
Opioid	85.7	(67.4-100.0)	87.5	(76.0-99.0)	87.0	(77.2-96.7
Weak Opioid	28.6	(4.9-52.2)	15.6	(3.0-28.2)	19.6	(8.1-31.0)
Oxycodone	0.0	(0.0-0.0)	6.7	(0.0-15.6)	4.8	(0.0-11.2)
Tramadol	16.7	(0.0-37.8)	6.7	(0.0-15.6)	9.5	(0.6-18.4)
Strong Opioid	85.7	(67.4-100.0)	81.3	(67.7-94.8)	82.6	(71.7-93.6)
Fentanyl	16.7	(0.0-37.8)	6.7	(0.0-15.6)	9.5	(0.6-18.4)
Morphine	66.7	(40.0-93.3)	80.0	(65.7-94.3)	76.2	(63.3-89.1)
Plexus catheter bolus treatment regime						
Local anesthesia	75.0	(50.5-99.5)	85.2	(71.8-98.6)	82.1	(70.0-94.1)
Bupivacaine	45.5	(16.0-74.9)	33.3	(13.2-53.5)	37.5	(20.7-54.3)
Levobupivacaine	27.3	(1.0-53.6)	23.8	(5.6-42.0)	25.0	(10.0-40.0)
Lidocaine	0.0	(0.0-0.0)	14.3	(0.0-29.3)	9.4	(0.0-19.5)
Mepivacaine	0.0	(0.0-0.0)	4.8	(0.0-13.9)	3.1	(0.0-9.1)
Ropivacaine	18.2	(0.0-41.0)	45.5	(24.6-66.3)	36.4	(19.9-52.8)
Opioid						
Strong Opioid	8.3	(0.0-24.0)	14.8	(1.4-28.2)	12.8	(2.3-23.3)
Fentanyl	8.3	(0.0-24.0)	11.1	(0.0-23.0)	10.3	(0.7-19.8)
Meperidine	0.0	(0.0-0.0)	3.7	(0.0-10.8)	2.6	(0.0-7.5)
Continuous plexus catheter treatment regime						
Local anesthesia	91.7	(76.0-100.0)	87.5	(76.0-99.0)	88.6	(79.3-98.0)
Bupivacaine	27.3	(1.0-53.6)	28.6	(11.8-45.3)	28.2	(14.1-42.3)
Levobupivacaine	54.6	(25.1-84.0)	39.3	(21.2-57.4)	43.6	(28.0-59.2)
Ropivacaine	18.2	(0.0-41.0)	46.4	(28.0-64.9)	38.5	(23.2-53.7)
Opioid						
Strong Opioid						
Fentanyl	0.0	(0.0-0.0)	9.4	(0.0-19.5)	6.8	(0.0-14.3)

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TABLE II (CONT.)
ANALGESIC TREATMENT REGIMES USED IN TOTAL HOSPITALS (< AND > 200 BEDS)

	< 200 beds		*≥ 200 beds*		*Total*	
	n = 34		*n = 78*		*n = 112*	
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*
Subcutaneous treatment regime						
Epidural bolus treatment regime						
Local anesthesia	57.1	(31.2-83.1)	62.5	(43.1-81.9)	60.5	(45.0-76.1)
Bupivacaine	16.7	(0.0-37.8)	28.6	(9.2-47.9)	24.2	(9.6-38.9)
Levobupivacaine	30.8	(5.7-55.9)	23.8	(5.6-42.0)	26.5	(11.6-41.3)
Lidocaine	0.0	(0.0-0.0)	9.5	(0.0-22.1)	6.1	(0.0-14.2)
Ropivacaine	16.7	(0.0-37.8)	14.3	(0.0-29.3)	15.2	(2.9-27.4)
Opioid						
Strong Opioid	46.2	(19.1-73.2)	50.0	(30.0-70.0)	48.7	(32.5-64.8)
Fentanyl	8.3	(0.0-24.0)	20.0	(2.5-37.5)	15.6	(3.0-28.2)
Methadone	8.3	(0.0-24.0)	10.0	(0.0-23.1)	9.4	(0.0-19.5)
Morphine	25.0	(0.5-49.5)	19.1	(2.3-35.8)	21.8	(7.3-35.2)
Continuous epidural treatment regime						
Local anesthesia	88.2	(72.9-100.0)	97.4	(92.3-100.0)	94.6	(88.6-100.0)
Bupivacaine	18.8	(0.0-37.9)	41.9	(24.6-59.3)	34.0	(20.5-47.6)
Clonidine	6.3	(0.0-18.1)	0.0	(0.0-0.0)	2.0	(0.0-6.0)
Levobupivacaine	56.3	(31.9-80.6)	45.2	(27.6-62.7)	48.9	(34.6-63.2)
Ropivacaine	12.5	(0.0-28.7)	41.9	(24.6-59.3)	31.9	(18.6-45.2)
Opioid	58.8	(35.4-82.2)	65.8	(50.7-80.9)	63.6	(50.9-76.4)
Weak Opioid						
Tramadol	6.3	(0.0-18.1)	0.0	(0.0-0.0)	2.1	(0.0-6.1)
Strong Opioid	56.3	(31.9-80.6)	60.6	(43.9-77.3)	59.2	(45.4-72.9)
Fentanyl	50.0	(25.5-74.5)	55.9	(39.2-72.6)	54.0	(40.2-67.8)
Morphine	12.5	(0.0-28.7)	8.8	(0.0-18.4)	10.0	(1.7-18.3)
PCA epidural treatment regime						
Local anesthesia	78.6	(57.1-100.0)	72.4	(56.1-88.7)	74.4	(61.4-87.5)
Bupivacaine	15.4	(0.0-35.0)	20.8	(4.6-37.1)	18.9	(6.3-31.5)
Levobupivacaine	61.5	(35.1-88.0)	29.2	(11.0-47.4)	40.5	(24.7-56.4)
Mepivacaine	7.7	(0.0-22.2)	0.0	(0.0-0.0)	2.7	(0.0-7.9)
Ropivacaine	0.0	(0.0-0.0)	25.0	(7.7-42.3)	16.2	(4.3-28.1)
Opioid	71.4	(47.8-95.1)	48.3	(30.1-66.5)	55.8	(41.0-70.7)
Weak Opioid						
Tramadol	7.7	(0.0-22.2)	0.0	(0.0-0.0)	2.6	(0.0-7.5)
Strong Opioid	69.2	(44.1-94.3)	42.3	(23.3-61.3)	51.3	(35.6-67.0)
Fentanyl	61.5	(35.1-88.0)	40.7	(22.2-59.3)	47.5	(32.0-63.0)
Morphine	15.4	(0.0-35.0)	7.4	(0.0-17.3)	10.0	(0.7-19.3)

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TABLE II (CONT.)
ANALGESIC TREATMENT REGIMES USED IN TOTAL HOSPITALS (< AND > 200 BEDS)

	< 200 beds		*≥ 200 beds*		*Total*	
	n = 34		*n = 78*		*n = 112*	
	%	*CI 95%*	*%*	*CI 95%*	*%*	*CI 95%*
Treatment regime with local epidural anesthetic with opioids						
Bupivacaine	21.4	(0.0-42.9)	60.9	(40.9-80.8)	46.0	(29.9-62.0)
Clonidine	0.0	(0.0-0.0)	4.4	(0.0-12.7)	2.7	(0.0-7.9)
Levobupivacaine	57.1	(31.2-83.1)	30.4	(11.6-49.2)	40.5	(24.7-56.4)
Ropivacaine	14.3	(0.0-32.6)	21.7	(4.9-38.6)	18.9	(6.3-31.5)
Tramadol	7.1	(0.0-20.6)	0.0	(0.0-0.0)	2.7	(0.0-7.9)
Fentanyl	78.6	(57.1-100.0)	91.3	(79.8-100.0)	86.5	(75.5-97.5)
Morphine	21.4	(0.0-42.9)	17.4	(1.9-32.9)	18.9	(6.3-31.5)
Treatment regime with mixed local epidural anesthetic						
Adrenaline	0.0	(0.0-0.0)	6.3	(0.0-18.1)	4.4	(0.0-12.7)
Bupivacaine	0.0	(0.0-0.0)	18.8	(0.0-37.9)	13.0	(0.0-26.8)
Levobupivacaine	28.6	(0.0-62.0)	6.3	(0.0-18.1)	13.0	(0.0-26.8)
Mepivacaine	14.3	(0.0-40.2)	0.0	(0.0-0.0)	4.4	(0.0-12.7)
Ropivacaine	14.3	(0.0-40.2)	12.5	(0.0-28.7)	13.0	(0.0-26.8)
Opioid						
Strong Opioid	28.6	(0.0-62.0)	31.3	(8.5-54.0)	30.4	(11.6-49.2)
Fentanyl	28.6	(0.0-62.0)	25.0	(3.8-46.2)	26.1	(8.1-44.0)
Morphine	0.0	(0.0-0.0)	6.3	(0.0-18.1)	4.4	(0.0-12.7)

Oral treatment regime

Of the centers with >200 beds, 81,3% used NSAIDs in their oral prescriptions (ibuprofen 38.1% and Dexketoprofen 28.6%); 34,4% use metamizol; 68.8% use paracetamol (associated with NSAID in 22%) and 28.1% use oral opioids (mostly tramadol in 21.9%). No center was found to use adjuvants.

Intramuscular treatment regime

Intramuscular treament regimes are protocolized in 15.8% of hospitals and significantly is used more in centers without an APU/POPMP than in those that have one (30.4 vs. 5.9%) (Table I). IM meperidine is used more in centers with <200 beds (22,2%) than in those with >200 beds (10.5%) and in total in 14,3% of the hospitals that answered the survey. The other drugs used by IM route were NSAIDs nd metamizol (this is not used in hospitals with >200 beds).

Subcutaneous treatment regime

In 55 centers (of the 112 interviewed regardless of the number of hospital beds) subcutaneous treatment regimes are used to treat APP and of these 58.5% uses morphine hydrochloride. By this route of administration only opioids were used. Of the 55 hospitals that said they use them, 12.7% (n = 7) did not specify which they used, while of the remaining 48, 58.5% (n = 28) used morphine hydrochloride, 26.8% (n = 13) meperidine, 14.6% (n = 5) methadone and 4.8% (n = 2) tramadol.

Intravenous bolus treatment regime

Opioides represented 78.9% of the total (morphine and tramadol especially); within this group, 42% (n = 53 were prescribed unassociated, 4,8% (n = 6) associated with NSAIDs and 3.2% (n = 4) with paracetamol and NSAIDs. Of the total, 56.6% of those interviewed (n = used NSAID; associated with paracetamol 10.4%, with opioids 4.8% and with paracetamol and opioids 3,2%. Paracetamol is used in 54.7% of total centers and without association it is prescribed in 13.6% of centers that used intravenous bolus treatment. Ketamine was prescribed in only one center.

Continuous intravenous treatment regime

Opioids were the most used drug (91.1%); of which 37.9% did so without combination, 32.6% in combination with NSAIDs and 1.1% with NSAIDs and paracetamol. In turn, NSAIDs were used by 57.4% of centers; of these, mostly in combination with opioids (32.6% as mentioned above), 22.1% without combination and 2.1% and 1,1% together with paracetamol and paracetamol plus opioids, respectively.

PCA intravenous treatment regime

Intravenous treatment by PCA was used by 80% of hospitals with an APU and only by 30.4% of those that do not (statistically significant difference), opioids being the treatment most used. 91.5% included them, either non-combined (83.1%) or with NSAIDs (8,5%). In turn, NSAIDs were also prescribed in 15.6% of all hospitals and non-combined by 6.8%. Morphine is the strong opioid most used, especially in endovenous PCA (IV). Ketamina was, among the drugs used, the least frequent with 1.7%.

Plexus catheter bolus treatment regime

This route was used for different local anesthetics in combination with or without fentanyl. 51.7% of those interviewed reported its use, of which most corresponded to bupivacaine and ropivacaine (30.8%, respectively) followed by levobupivacaine (17.9%) and lidocaine (7.7%). Mepivacaine was used by a 2.6%. As regards local anesthetics associated with fentanyl, centers used bupivacaine (5.1%), levobupivacaine (2.6%) and ropivacaine (2.6%).

Continuous plexus catheter treatment regime

This treatment was significantly more used by hospitals with an APU/POPMP than by those without (77.1% *vs.* 26.1%). Local anesthetics in combination with opioids (fentanyl) are only used in 6.1% of the cases while most are used without combination (93.9%). Ropivacaine was not used in association with opioids, representing 36.7% of all continuous treatment by plexus catheter. Levobupivacaine without association is used by 34.7% and in combination with fentanyl by 2%. Bupivacaine without association by 22.4% and with fentanyl by 4,1%.

Epidural bolus treatment regime

40.4% of all centers used epidural bolus and 72.9% of these did so with local anesthetics: levobupivacaine 26.5%, bupivacaine 24.2%, ropivacaine 15.2%, lidocaine 6.1%, bupivacaine in association with fentanyl 5.4%, ropivacaine in association with fentanyl 2.7%. Morphine 21.8% and fentanyl 15.6% were the opioids most used in association. Apart from the associations described, opioides were also used without association: morphine hydrochloride 13.5%, methadone 8.1% and fentanyl 5.4%.

Continuous epidural treatment regime

75.9% of all the hospitals used this treatment regime, including local anesthetics and opioids, both associated and non-associated. Local anesthetics were used in 94.6% of cases; non-associated local anesthetics were reported in 53.2% of centers with levobupivacaine representing 26.5%, bupivacaine 14% and ropivacaine 12,5%.

Non-associated opioids were used by 11% (n = 7); as fentanyl 6.3% (n = 4), as morphine hydrochloride 3.1% (n = 2) and tramadol 1.6% (n = 1).

The associations were bupivacaine with fentanyl in 14.1%, levobupivacaine with fentanyl 10.9% and ropivacaíne with fentanil 9.4%.

The combination of levobupivacaine with clonidine was used in 2% of all centers.

PCA epidural treatment regime

PCA epidural was significantly more used in the centers with an APU than in centers that did not (60% vs. 17.4%). By PCA epidural route, the following treatment regimes were reported:

Local anesthetics without association: bupivacaine 19.4%, levobupivacaine 19.4%, ropivacaine 5.6%.

Local anesthetics in association: levobupivacaine with fentanyl 25%, bupivacaine with fentanyl 5.6%, ropivacaine with fentanyl 5.6%, mepivacaine with fentanyl 2.8%. Fentanyl was the most associated opioid, almost 5 times more than morphine at 47.5% vs. 10%, in all hospitals. Apart from the association with local anesthetics mentioned, opioids were prescribed without association: morphine hydrochloride 10%, fentanyl 5.6% and tramadol 2.8%.

Treatment regime with local epidural anesthetic with opioids

This combination cannot be assessed, as no valid answers were obtained in the data collection register and they overlap the bolus, continuous and PCA epidural treatment regimes.

Treatment regime with mixed local epidural anesthetic

This combination cannot be assessed, as no valid answers were obtained in the data collection register.

Neither anticonvulsivants (gabapentin) nor anti-NMDAs (ketamine) are used. The most-used NSAID is Dexketoprofen by endovenous route and ibuprofen by oral route. The most-used weak opioid is tramadol by both oral and endovenous route. Morphine is the most-used strong opioid, especially in PCA endovenous (IV). Paracetamol is used in 54.7% of IV bolus treatment regimes.

DISCUSSION

This survey shows how the treatment of postoperative pain is currently managed in Spain, also providing an analysis of its evolution in order to draw comparisons with data from the audit carried out by Puig et al. (12) in 2001.

Although we cannot rule out the existence of bias in the results, the percentage of hospitals with >200 beds represented in the survey (42.4%) is lower than the response rate obtained in the survey by Puig et al. (53,0%), but unlike that study, the data is also presented globally, differentiated by hospitals with or without APU/POPMP, so as to analyze the impact of their existence in the different aspects of managing postoperative pain.

The percentage of hospitals with an APU/POPMP has increased in the last fifteen years (57.7 vs. 29.8%); this is a trend that has been shown in other countries like the USA (13), United Kingdom (UK) (14) Holland (15), Canada (16), although they have decreased in Denmark (17). Nevertheless, the personnel resources in hospitals with an APU have diminished (full-time doctors: 28.6% vs. 48%) (full-time nurses: 25% vs. 32.7%), a fact that has also been demonstrated in a recent audit carried out in Germany (Erlenwein J, unpublished data); and even in 6.8% of hospitals there is no specifically assigned personnel, a fact that is probably related with the implementation of Postoperative Pain Management Programs without personnel expressly dedicated to such programs.

Since the collection of data on postoperative pain carried out in Spain in 2001 (12) up to the present (5) the existence of APUs or POPMPs in Spanish hospitals seem to suggest a clear series of improvements in managing this type of pain. The GTDASED has given priority to data obtained in hospitals with >200 beds as the most representative sample of responses to the survey made from the SED. Among all the data obtained, the following points are highlighted:

- The existence of an APU/POPMP is significantly associated with less use of intramuscular treatment and a greater frequency of PCA IV, PCA epidural and continuous nerve plexus infusions in controlling acute postoperative pain.
- The IM route continues to use more meperidine than morphine despite its high risk of addiction.

The analgesic drugs and treatment regimes used are similar to those used in other EU countries (13-19) and the United States. Morphine is the strong opioid most used, especially in intravenous PCA (IV).

In Spain, fentanyl is mostly used as an opioid associated with local anesthetics. Other countries use sufentanil but its introduction in Spain is still very recent. The rest of drugs, techniques, routes and methods of administration are similar to other countries, except metamizol, which is little-used in Anglo-Saxon countries.

The rate of analgesic combinations is not very high, along with the introduction of the concept of multimodal analgesia. Oral adjuvants (gabapentine, ketamine, clonidine) are used in a very low proportion, despite being recommended at present in certain surgical procedures (20).

CONFLICYS OF INTEREST

The authors declare they have no conflicts of interest.

SCHEDULE 1 POSTOPERATIVE PAIN QUESTIONNAIRE

Presentation of the study.

– Letter from SED (Acute Pain Working Group) presenting the survey and requesting information to fill in the questionnaire.

Before beginning this questionnaire we need you to fill in certain information regarding your healthcare center. These questions are essential in order to analyze the responses subsequently as the survey is completely anonymous.

Q. 1. In which province is your hospital located? Please select one of the following options:

(A list is shown with all Spanish provinces ordered alphabetically).

Q. 2. In order to use other variables included in the National Catalog of Hospitals, select the name of your center from the following list. Please select only one of the following options:

(To make the search easier, centers are ordered by province).

Q.3. Please state the size of your hospital according to number of beds in operation:

1. Less than 200. 2. Between 200 and 600.
3. More than 600.

Q. 4. As far as you know and approximately, how many surgical interventions in one week do you carry out according to the following classification?

	Number of interventions	*NR*
With hospitalization		9.999
Major Ambulatory Surgery (MAS)		9.999
Minor Ambulatory Surgery (MAS)		9.999

Q. 5. As far as you know, please state the approximate number of interventions in one week in the following specialities:

	Number of interventions	*NR*
General surgery		999
OTS		999
Cardiac surgery		999
Plastic suregy		999
Thoracic surgery		999
Vascular surgery:		999
Gynecology/Obstetrics		999
Maxillofacial		999
Neurosurgery		999
OR.		999
Urology		999

Q.6.State type of hospital according to functional dependency:

1. Public.
2. Subsidized private.
3. Non-subsidized private.

Q.7. State type of hospital according to training provided:

1. University with post-graduate training (at least with Resident Medical Intern in Anesthesiology, General Surgery, MAS).
2. University without post-graduate training.
3. Non-university.

Q.8. What service/unit do you currently work in? (múltiple response):

1. Anesthesiology service.
2. Pain unit
3. Acute pain unit.
4. Other (specify).

Q. 9. ¿ Does your center have, in an institutional way, an Acute Pain Unit (APU) or a Postoperative Pain Management Program?:

1. Yes → Q.9b.
2. No.

Q. 9b. What is the level of coverage of the APU? (multiple answer):

1. Cares for all surgical patients.
2. Cares for most surgical patients (> 70%).
3. Cares for more than half of surgical patients (50-70%).
4. Cares for less than half of surgical patients (21-49%).
5. Cares for few (<20%).
6. Cares for acute pain in non-surgical patients.

Q. 10 How is pain treatment structured in your hospital?:

1. Anesthesiology Service.
2. Acute Pain Unit.
3. Chronic Pain Unit.

Q. 11. As regards postoperative pain management, are all operated patients attended or only some?:

1. Everyone.
2. Only some types of patients.

Q. 12. Is there specific personnel for managing postoperative pain? Multiple answer:

1. Yes, full-time doctors.
2. Yes, part-time doctors.
3. Yes, full-time nurses.
4. Yes, part-time nurses.
5. No.
6. Other situations (note).

Q. 13. Do you work or intervene directly in postoperative pain management?:

1. Yes.
2. No.

We will now discuss information and registration of postoperative pain.

Q.14. In your hospital, is any written information provided regarding postoperative pain before intervention?:

1. Yes→ Q. 14 b.
2. No → Q. 15.

Q. 14 b. When do you provide this written information?:

1. Surgical visit.
2. Pre-anesthetic visit.
3. Hospitalization ward.
4. Other (specify).

Q. 15 Among the patient's printed or digital documentation, is there any space devoted to registering postoperative pain as a fifth vital sign?:

1. Yes.
2. No.

Q. 16. Does your hospital have consensual scales for evaluating postoperative pain?:

1. Yes → Q. 16b.
2. No → Q. 17.

Q. 16b. If so, tick the corresponding options:

1. Categorical scale (descriptive terms).
2. VRS (Verbal Rating Scale).
3. VAS (Visual Analog Scalel).
4. Face scale to Q.16c.

Q.16c. You answered that you use the face scale, for what type of patients do you usually use it? Please, tick the corresponding options:

1. Children.
2. Elderly.
3. Others (specify).

Q. 17. Does the institution have scales for assessing pain?:

1. Yes.
2. No.

Q. 18. Are there defined intervals for assessing postoperative pain?:

1. Yes → Q. 18b.
2. No → Q. 19.

Q. 18b. If so, what are these intervals? Please choose one of the following options:

1. 4 hours.
2. 6 hours.
3. 8 hours.
4. 12 hours.
5. 24 hours
6. Other (specify).

We will now discuss reporting and registration of postoperative pain.

Q. 19 Apart from assessment, is postoperative pain registered?:

1. Yes → Q. 19b.
2. No → Q. 20.

Q. 9b. Where is it registered?:

1. In the clinical record together with vital signs.
2. In a specific document.

Q. 19c. Is this register digitalized?:

1. Yes.
2. No.

Q. 19d. Is there a value on the pain scale used that requires analgesic rescue and/or contacting someone responsible (surgeon / anesthesiologist / APU?:

1. Yes→ Q. 19e/ Q. 19e2/ Q. 19e3/ Q. 19e4.
2. No → P.
3. 20.

Q. 19e. If so, what is this value for the VAS? Select the value:

(Only for those where Q. 16b = 3 and Q 19d =1)

1	2	3	4	5	6	7	8	9	10

Q. 19e2.If so, what is this value for the VAS? Select the value:

(Only for those where Q. 16b = 2 and Q 19d =1)

1	2	3	4	5	6	7	8	9	10

Q. 19e3. If so, what is this value for the categorical scale?:

(Only for those where Q.16b = 1and Q P19d =1)

1. Slight.
2. Moderate.
3. Serious.
4. Unbearable.
5. Dk/Da.

Q. 19e4. If so, whast is this value for the face scale?:

(only for those where Q. 16b = 4 and Q 19d = 1)

1	2	3	4	5
				

Q. 20. Are there protocols for treating postoperative pain?:

1. Yes → Q. 20b
2. No Q. 20d.

Q. 20b Are they agreed with other departments?:

1. Yes, state with which (state departments).
2. 2. No □ Q. 20b1.

Q. 20b1. In such case, is the anesthesia service responsible for carrying it out?:

1. Yes.
2. No.

20c. Are these protocols applied according to pain intensity? For example: slight, moderate or intense pain

1. Yes.
2. No.

Q. 20d. Are there surgical procedures with specific analgesic protocols?:

(for all)
1. Yes → Q. 20d1.
2. No.

Q. 20d1. Please state the protocols:

1. EPI Bolus.
2. EPI continuous.
3. EPI PCA.
4. EPI AL + Opis.
5. Others (clonidine, ketamine, etc.).
6. Others (specify).

Q. 20e. Accordance to protocols, what service applies treatment of the protocol upon finalizing surgical intervention?:

(Only for those where Q. 20 = 1)
1. Anesthesiology.
2. Surgery.
3. Pain Unit.
4. Other (specify).

Q. 20f. According to protocols, what service prescribes pain treatment in the Hospitalization Ward?

(Only for those where Q. 20 = 1).
1. Anesthesiology.
2. Surgery.
3. Pain Unit.
4. The service attending the patient.
5. Other (specify).

Q. 20g. State below which treatments are carried out according to regimes. You may leave blank the questions where you do not know the answer.

Pautas orales
Pautas intramusculares
Pautas subcutáneas
Pautas intravenosas bolus
Pautas intravenosas continuas
Pautas intravenosas PCA
Pautas por catéteres en plexo bolus
Pautas por catéteres en plexo vontinuas
Pautas epidurales bolus
Pautas epidurales vontinuas
Pautas epidurales PCA
Pautas epidurales anestésico local con opioides
Pautas epidurales anestésico local mezcla

Q. 21 Is the data on registration of acute postoperative pain analyzed to make improvements?:

1. Yes.
2. No.

Q. 22 ¿ Are pain management indicators analyzed?:

1. Yes.
2. No.

Q. 23 Are there meetings or courses regarding regarding postoperative pain in your hospital?:

1. Yes → Q. 23b.
2. No → Q. 24.

Q. 23b Who receives them? Multiple answer:

1. Anesthesiology service.
2. Surgery service.
3. Residents in anesthesiology.
4. General residents.
5. Nurses.
6. Other (specify).

Q. 23c Who provides them? Multiple answer.

1. Anesthesiology service.
2. The acute pain unit itself.

3. The chronic pain unit.
4. Other (specify).

Q. 23d. Are the training activities accredited?

1. Yes.
2. No.

Q. 24. Lastly, we you to provide an overall assessment of how you think postoperative pain is managed in your hospital:

1. Very well.
2. Well.
3. Average.
4. Poorly.
5. Very poorly.

Thank you very much for your collaboration. Kind regards

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