

Original Research Article

Management of Postoperative Pain in the Surgical Departments of the National Hospital of Zinder

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Abstract: Introduction: The management of postoperative pain is a public health problem in our context. The aim of this work is to study the management of postoperative pain at Zinder National Hospital. **Patients and method:** This was a prospective cross-sectional study including patients operated on at Zinder National Hospital from June 1 to December 31, 2023 (6 months). **Results:** During the study period, 1349 patients underwent surgery, 250 of whom met our inclusion criteria, i.e. a frequency of 18.53%. The mean age of patients was 40.01 ± 21.05 years, with extremes of 15-88 years. Males predominated in 75% of cases, with a sex ratio (M/F) of 3. General anesthesia (GA) was used in 60.4% of cases. In 54.8% of cases, the classification was ASA I. The most commonly used drug regimen for anesthesia was (fentanyl, Suxamethonium and ketamine) in 38.4% of cases. We selected and assessed our patients using the visual analog scale (VAS). Patients with no postoperative pain at H0, H6, H12, H 24 represented 69.2%; 42.8%; 36.8%; and 55.6% respectively. The most commonly used medications were Paracetamol, Tramadol and Néfopam. Nausea and/or vomiting occurred in 3.6% of cases. The outcome was favorable, with a 92.4% satisfaction rate. **Conclusion:** Postoperative pain management was multimodal and satisfactory with fewer side.

Keywords: Management, postoperative pain, HNZ.

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INTRODUCTION

The International Association of Pain Professionals (IASP) defines pain as an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage [1]. Assessment of pain and the effectiveness of postoperative analgesia (PPA) is mandatory, as it is impossible to predict the level of pain and analgesic consumption for a given patient and procedure [2].

Several studies have been carried out around the world, with the aim of relieving patient's pain. In France, pain assessment by the Société Française d'Anesthésie-Réanimation (SFAR) was based on a visual analog scale (21.1%), a numerical scale (41.2%) and a simple verbal scale (13.8%) [3]. In the USA, a study of postoperative pain (POP) in 23 hospitals on a sample of 5,837 postoperative patients reported significantly less pain in patients who had received analgesics [4].

In Cameroon in 2004, at the Yaoundé General Hospital, the incidence of POP was 93.3%, and 15 to

50% of those operated on suffered postoperative pain despite analgesic treatment [5]. In Mali in 2008, 92% of patients benefited from postoperative analgesia [6] and in another study on the management of postoperative pain in digestive surgical emergencies with injectable Paracetamol (Perfalgan®), pain intensity was more marked on awakening at H12 postoperatively [7]. In Morocco in 2001, a survey of anesthetists attitudes to postoperative pain showed some improvement in the management of postoperative pain [8].

In Niger, at the National Hospital of Niamey, a prospective study on the evaluation of postoperative pain management in the anesthesia and intensive care unit revealed that the EVS scale was used by 72% of patients, the numerical scale by 14.4% and the visual analog scale by 13.6%. The most frequently used analgesics were Tramadol (76.5%), Paracetamol (64.5%), non-steroidal anti-inflammatory drugs (NSAIDs) (12.1%), and Néfopam (2.3%) [9].

To date, no study dealing with the evaluation of postoperative pain in patients hospitalized in a general

surgery unit exists at the Zinder National Hospital, which motivated us to carry out this study, the aim of which is to investigate the management of postoperative pain at the Zinder National Hospital.

PATIENTS AND METHOD

This was a descriptive cross-sectional study with prospective data collection, from June 1 to December 31, 2023, i.e. 6 months. Survey data based on patient interrogation, anesthesia record, postoperative service record and operative report were used. The patients included underwent cold or emergency surgery and were aged 15 or over. The study involved the P.O. (postoperative), intensive care, B-surgery, ENT, Urology, Neurosurgery and Traumatology-orthopedics departments of Zinder National Hospital.

We used simple random sampling to determine the sample. The sample size was determined using Schwartz's formula: $n = 1.96^2 \times P \times Q / d^2$ (n =sample size; $(1 - P) = Q$, P =prevalence z =coefficient equal to 1.96 corresponds to $CI=95\%$; $d=0.05$ =risk of error). Applying the formula, we get $n=220$, rounded to 250.

NB: Given the unavailability of the frequency in Niger, we used the prevalence found in Mali in 2007. $P = 17.32\%$, to calculate our sample size [10].

The variables studied were sociodemographic (age, sex, origin) and clinico-operational (history, type of surgery, surgical procedure, type of anesthesia, ASA classification, drugs used for anesthesia, analgesics used, pain intensity according to VAS, pain complications, degree of pain relief and patient progress).

We recruited our patients according to the schedule of each operating theatre, twice a week for scheduled patients and every day for patients undergoing emergency surgery, in collaboration with the staff of the departments concerned. Patients were assessed at H0, H6, H12 and H24, using an evaluation form.

The data collected were exported and analyzed using Epi-info software version 7.2. Clear and detailed information was provided to all our patients and their parents. Verbal informed consent was obtained for each patient included in the study. Patient anonymity was respected.

RESULTS

Pain was assessed in 250 patients out of a total of 1349 operated patients, i.e. a frequency of 18.53%. The mean age of patients was 40.01 ± 21.05 years, with extremes ranging from 15 to 88 years. The age range ≤ 29 years was the most represented. Males predominated, with a sex ratio (M/F) = 3. Patients from rural areas were predominant (Table 1).

The majority of patients had not reported any medical history, with angina being the most common, followed by hypertension. The majority of patients had no previous surgical history, with laparotomy being the most common, followed by trauma.

Scheduled surgery was the most common, accounting for 68%. Prostatic adenomectomy was the most common surgical procedure (Table 2). General anaesthesia was most frequent, at 62%.

More than half of patients were classified ASA I in 54.8%. Fentanyl was the morphine used for all patients (100%), in combination with other types of anesthetic (hypnotic and curare).

In 27.2% of cases, patients had mild pain at H0, while 3.2% had very severe pain at H6. At H12 and H24, 36.8% and 55.6% of patients respectively were pain-free (Table 3). All patients had received multimodal analgesia based on Paracetamol in combination with another product (Néfopam, Ketoprofen or Tramadol). The Paracetamol-tramadol combination was the most common, at 67.6%.

The only complication noted was nausea-vomiting in nine (9) patients (3.60%). The majority of patients reported pain relief (92.40%). The evolution was favorable, with a good prognosis, and no deaths were noted.

There was a statistically significant association between the degree of pain relief and origin ($p < 0.05$). No correlation was found between the degree of pain relief and the other variables (gender, type of anesthesia, type of surgery, combination of analgesics and VAS at H0 and H24).

Table 1: Sociodemographic characteristics

	Frequency (n)	Percentage (%)
Age (year)		
≤ 29	103	41,20
30-44	48	19,20
45-59	36	14,40
60-74	42	16,80
≥ 75	21	08,40
Sex		
Masculine	188	75 percent

	Frequency (n)	Percentage (%)
Feminine	62	25%
Origin		
Urban	112	44.60
rural	138	55.40

Table 2: Distribution of patients according to the gesture performed

Gestures made	Frequency(s)	Percentage (%)
Prostatic adenomectomy	41	16,40
Osteosynthesis	30	12,00
Amygdalectomy	28	11,20
Removal of the mess	23	09,20
Laparotomy	23	09,20
Evacuation HED/HSD	21	08,40
Exeresis	16	06,40
Others*	68	27,20
Total	250	100.00

*: Laminectomy (n=15), AMOS (n=13), paring (n=13), stripping (n=9), lithotomy (n=7), endoscopic extraction Opium (n=7), hernia cure (n=2), eviventration (n=2).

Table 3: Distribution of patients according to the degree of pain attenuation at H0, H6, H12 and H24

	Frequency (n)	Percentage (%)
EVA (cm) to H0		
0-2: no pain	173	69,2
3-4: low pain	43	27,2
5-6: moderate pain	22	08,8
7-8: intense pain	10	04,0
9-10: very intense pain	02	0,8
EVA (cm) at H6		
0-2: no pain	107	42.80
3-4: low pain	74	29.60
5-6: moderate pain	37	14,80
7-8: intense pain	24	09.60
9-10: very intense pain	08	03,20
EVA (cm) H12		
0-2: no pain	92	36.80
3-4: low pain	76	30,40
5-6: moderate pain	33	13,20
7-8: intense pain	25	10.00
9-10: very intense pain	24	09.60
EVA (cm) H24		
0-2: no pain	139	55.60
3-4: low pain	44	17.60
5-6: moderate pain	32	12.80
7-8: intense pain	12	04.80
9-10: very intense pain	23	09,20

DISCUSSION

The mean age of our patients was 40.01±21.05 years. This result is in line with those of Chaibou *et al.*, [9] in NIGER in 2009 and Diakité Y, *et al.*, [11] in MALI in 2006, who reported 39 and 41.73 years respectively. This result is lower than those of VanDenKerkhof EG *et al.*, [12] in CANADA in 2006, Bergeron DA *et al.*, [13] in CANADA in 2011, Pigot F *et al.*, [14] in FRANCE in 2006 and Tufano et al [15] in ITALY in 2012, who reported 57 years; 51.65 years; 51 years and 51 years respectively. This could be explained by the young age

of the African population in general, and the Nigerian population in particular, as noted by some authors [16, 17]. The sex ratio was 3 M/F. This result is similar to those of Pigot in France in 2006 [14] and Sanogo *et al.*, in BAMAKO in 2003 [18], who respectively reported 2.5 and 2.87, whereas female subjects were in the majority in the series by Lempa M *et al.*, in GERMANY in 2003 [19] and Gross *et al.*, in GERMANY in 2002 [20]. This could be explained by the fact that patients in neurosurgery, urology, traumatology and B surgery were largely male.

Our patients had no previous medical history in 85.6% of cases. This result was similar to those reported by Bengaly [21] in MALI in 2008 and Traore M [22] in MALI in 2010, respectively 82.9% and 78.42% of cases. This could be explained by the high number of generally healthy young subjects. In 94.4% of our patients, there was no previous surgical history.

In our study, scheduled surgery was predominant in 68% of cases. This result is similar to that of Sékou AT *et al.*, [23] in MALI in 2012, who reported 66.31% of cases. Whereas Niaré LJ *et al.*, [24] in BAMAKO in 2012 reported 95.30% of cases. This difference could be explained by the fact that most patients on admission were stable, and that OR activities were generally dominated by cold procedures.

In 54.8% of cases, patients were classified as ASA I, a result in line with those of Sanogo *et al.*, [18] in MALI in 2003 and Niaré LJ *et al.*, [24] in BAMAKO in 2012, who reported a high predominance of patients with ASA I in 84.2% and 78.40% of cases respectively. The extreme youth of the West African population could explain this, as at this age, it is rare to find the presence of other defects in patients.

We reported a predominance of general anesthesia (GA) in 62% of cases. This result is in line with that of Maliki Y *et al.*, [8] in MOROCCO in 2010, who reported 61% of cases. The choice of anesthesia technique is usually dictated by the type of operation. Many surgical indications are related to GA or its predominance.

In 27.2% of cases, patients had mild pain at H0. This result is lower than that of Block [25] in America in 2003, who reported 90% mild pain. This could be explained by the quality of the analgesic used intraoperatively and the type of strategy adapted to prevent postoperative pain (opioid, epidural, etc.). While 3.2% of patients had very severe pain at H6 this result similar to that of Phua DSK *et al.*, [26] in Singapore in 2008 and Ongoiba MO *et al.*, [27] in Mali in 2013 who reported 1.6% and 2.26% of cases respectively. This result is lower than that of Dolin SJ, *et al.*, [28] in the UK in 2002, who reported 10.9% of cases. This difference could be explained by the research methodology applied.

However, at H12, 36.8% of our patients were pain-free. This result is lower than that of Kamndoum GA, *et al.*, [29] in MALI in 2010, who reported 74.4% mild pain. At H24, 55.6% of cases were pain-free. Several authors had reported an absence of pain at H24 according to EVS: Diakité Y, *et al.*, [11] in Mali in 2006, Moizo *et al.*, [30] in Italy in 2004, Gartner *et al.*, [31] in Denmark in 2010, Apfelbaum JL *et al.*, [32] in Chicago in 2003, Galloway S *et al.*, [33] in the USA in 2011 and Ongoiba MO *et al.*, [27] in Mali in 2013 who had respectively reported 86.2%, 70%, 72.5%, 77%, 49% and 90.23% of cases. This could be explained by the fact

that pain perception was related to other parameters such as movement.

In 92.4% of cases, patients' pain was reduced; Kamndoum GA, *et al.*, [29] Mali reported a similar rate of 93%, while Ogboli-Nwasor E *et al.*, [34] in Nigeria in 2001 reported 78.2%. This difference could be explained by the fact that some patients disclose psychological pain, and some drugs are not specialties whose efficacy differs.

We found a statistically significant relationship between the degree of pain relief and rural origin. This has to do with certain African cultures where pain is not to be revealed, but is a sign of bravery and courage.

CONCLUSION

The multimodal analgesia used in all patients in our study, with Paracetamol combined with tramadol being the most widely used, showed that the majority of patients were pain-free within the first 24 hours. Pain was reduced in the majority of cases, with a statistically significant relationship with VAS and origin. The evolution was favorable, with no deaths recorded.

Conflict of Interest: None

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