Bilateral Pudendal Nerves Block for Postoperative Analgesia

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ABSTRACT

Background: *Haemorrhoidal disease is a common anorectal condition. The aim of this study was to evaluate the results of pudendal nerve block for conventional open haemorrhoidectomyand lateral internal sphincterotomy.* ***Methodology:*** *This is a Prospective study that had been conducted in Cairo University hospitals in the period between February 2014 and September 2014. The study included 50 patients with 4th degree piles and chronic anal fissures, to whom, conventional open hemorrhoidectomy and lateral internal sphincterotomy had been performed with or without Pudendal nerve block.* ***Results:*** *Postoperative pain, the need of additional analgesic therapy are reduced with less effect on restoration of bowel motionsandon the duration of hospital stay.* ***Conclusion:*** *Pudendal nerve block anaesthesia with local infiltration is effective as a postoperative analgesia in performing open haemorrhoidectomy.*
Keywords: *Haemorrhoids, Haemorrhoidectomy, Pudendal nerve block.*

INTRODUCTION

Hemorrhoids and anal fissures are common problems throughout the world and are symptomatic in 4.4% of the population [(1).] Approximately 90% of anorectal procedures can be performed as an outpatient procedure [(2).]

Among all treatments for these diseases, surgical procedures seem to be

the best to eliminate symptoms and improve quality of life [(3).]However, severe postoperative pain may prolong hospital stay [(4).]

Several analgesic methods have been proposed for post-operative pain

relief, such as subcutaneous morphine with infusion pump [(5),] transcutaneous electric stimulation [(6),]dexametazone infiltration [(7),] perianal infiltration with bupivacaine [(8)], posterior perineal block [(9)] and of the ischiorectal fossa [(10).]

In theory, pudendal nerve block may provide perineal analgesia or anesthesia being often used by surgeons and obstetricians. This study aims at evaluating post-operative analgesia using 0.5% bupivacaine bilaterally injected for blockage of the pudendal nerves.

PATIENTS & METHODS

This Prospective controlled clinical trial had been conducted in Cairo University hospitals in the period between February 2014 and September 2014 after approval from the surgical department at Cairo University hospitals. The study comprised 50 patients with 4th degree piles and chronic anal fissures, to whom, conventional open hemorrhoidectomy and lateral internal sphincterotomy had been performed. Patients were divided into two groups:-

- Control group: 25 patients to whom, conventional open hemorrhoidectomy and lateral internal sphincterotomy operations or both were performed without Pudendal nerve block.
- Study group: 25 patients to whom, conventional open hemorrhoidectomy and lateral internal sphincterotomy operations or both were performed with Pudendal nerve bloc

All cases were chosen from 20 to 50 years old with 4th degree piles and chronic anal fissures who were scheduled for conventional open hemorrhoidectomy and lateral internal sphincterotomy.excluding patients with associated GIT pathology (complete rectal prolapse, carcinoma,),neuropathic disorders, allergic to local anesthetics, with bleeding disorders and patients with infection near the site of the injection.

All patients were subjected to full clinical preoperative evaluation as well as investigations to assess indications and contraindications to surgery .Informed consent for bilateral Pudendal nerve block was obtained from the study group.

Intra-operative period:-

- Positioning of the patient in lithotomy position after anesthesia either general or spinal.

- Preparation and draping of the skin at the site of the operation.
- Performing the operation either conventional open hemorrhoidectomy or lateral internal sphincterotomy operations.
- Then Pudendal nerve block was performed as follows:
  - Kits for pudendal block include a 20 gauge disposable spinal needle.
  - 10 mL syringe with an 18- to 20-gauge needle for drawing up anesthetic solution.
  - Local anesthetic: We used 0.5% bupivacaine without epinephrine with a dose of 1 ml / kg for both sides.
  - Theischial spines can be palpated as bony protrusions distinct from the rest of the pelvic sidewall and located anterolateral to the anal sidewall. The sacrospinous ligament is a firm band running medially and posteriorly from theischial spine to the sacrum.
  - The right index finger was used to palpate the right ischial spine. With the left hand, the needle is advanced transperineally to a distance of approximately 1 cm below ischial spine. After aspiration to confirm the absence of an intravascular location (the pudendal and inferior gluteal vessels lie adjacent to the pudendal nerve), 5 mL of local anesthetic are injected.
  - The left index finger was used to palpate the left ischial spine. With the right hand, the needle is advanced transperineally to a distance of approximately 1 cm below ischial spine. Aspiration was again performed to confirm the absence of an intravascular position and then the remaining 5 mL of anesthetic are injected. Fig (1).
- Detection of any intra-operative complications as hypotension, arrhythmia, bradycardia, allergic reaction [(4)].

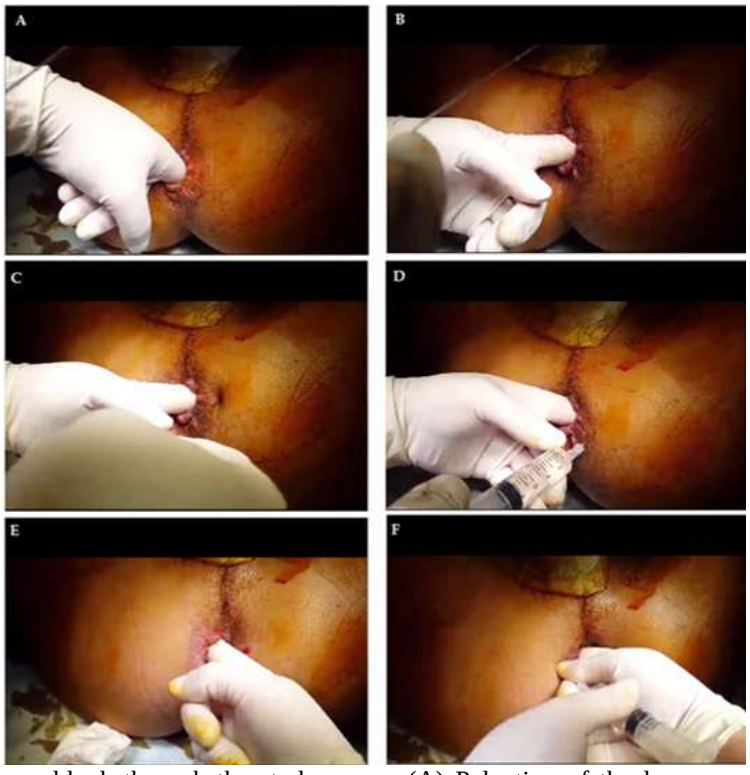

Fig.1: Pudendal nerve block through the study group. (A) Palpation of the lower sacrum& coccyx. (B) Palpation of the Ischial spine in the anal sidewall. (C) Entry point of the needle (D) Needle advancement to the level of ischial spine and injection of local anesthetic. (E) Palpation of the Ischial spine on the other side. (F) Needle advancement to the level of ischialspine and injection of local anesthetic on the other side.

RESULTS

Clinical Diagnosis:

The Study included 50 Patients distributed into 2 groups:

- Control Group: 25 patients with age ranged between 21 – 47 with 13 males(13 patients with 4th degree piles + 10 patients with chronic anal fissure+ 2 patients with both piles and anal fissures) with a percent of piles 52.0 % compared to 40.0 % for fissures and 8% for both piles and fissures (Table 1) (Fig.2).
- Study Group: 25 patients with age ranged between 22 – 46 with 21 males (19 patients with 4th degree piles + 5 patients with chronic anal fissure+ patient with both piles and anal fissures) with a percent of piles 76.0 % compared to 20.0 % for fissures and 4% for both piles and fissures (Table 1).
- The percent of patients with piles was 76.0 % among study group compared to m52.0 % among control group, while the percent of patients with fissures was 20.0 % among study group compared to 40.0 % among control group and the percent of patients with both piles and fissures was 4.0 % among study group compared to 8.0 % among control group (Table 1).

Table 1: Clinical Diagnosis distribution through the thesis.

		Study group N=25	Control group N=25	Total N=50
Diagnosis	**4th deg. Piles n (%)**	19(76.0)	13(52.0)	32(64.0)
	Anal fissure n (%)	5(20.0)	10(40.0)	15(30.0)
	Both n (%)	1(4.0)	2(8.0)	3(6.0)

Type of operation:

- Control Group: 25 patients (13 patients underwent conventional open hemorrhoidectomy + 10 patients underwent lateral internal sphincterotomy +2 patients underwent both open hemorrhoidectomy and lateral internal sphincterotomy) with a percent of hemorrhoidectomy 52.0% compared to 40.0 % for sphincterotomy and 8% for both hemorrhoidectomy and sphincterotomy(Table 2) (Fig.3).
- Study Group: 25 patients (19 patients underwent conventional open hemorrhoidectomy + 5 patients underwent lateral internal sphincterotomy + patient underwent both open hemorrhoidectomy and lateral internal sphincterotomy) with a percent of hemorrhoidectomy 76.0 % compared to 20.0% for sphincterotomy and 4% for both hemorrhoidectomy and sphincterotomy (Table 2) (Fig.3).
- The percent of hemorrhoidectomy was 76.0% among study group compared to 52.0% among control group, while the percent of lateral sphincterotomy was 20.0 % among study group compared to 40.0 % among control group and the percent of both hemorrhoidectomy and lateral internal sphincterotomy was 4.0% among study group compared to 8.0% among control group (Table 2) (Fig.3).

Table 2: Type of operation distribution through the thesis.

		Study group N=25	Control group N=25	Total N=50
Type of operation	**Hemorrhoidectomy n (%)**	19(76.0)	13(52.0)	32(64.0)
	Sphincterotomy n (%)	5(20.0)	10(40.0)	15(30.0)
	Both n (%)	1(4.0)	2(8.0)	3(6.0)

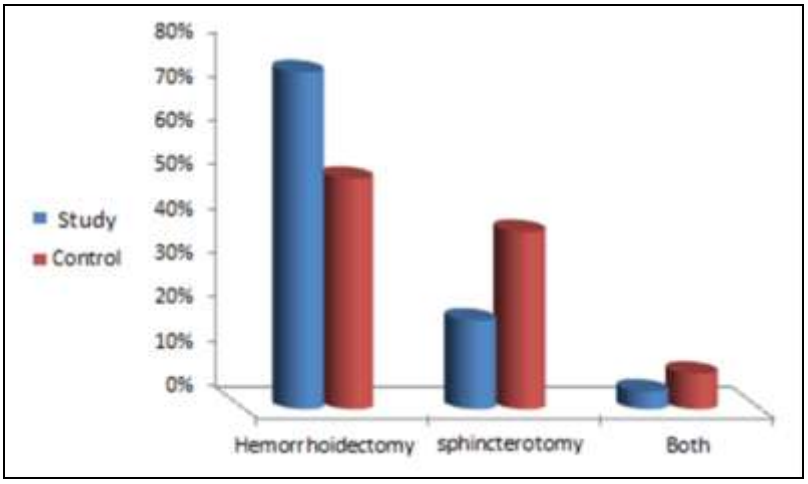

Fig. 2: Type of operation distribution through the thesis

Type of Anesthesia:

- Control Group: 25 patients (6 patients underwent operations under general anesthesia + 19 patients underwent operations under spinal anesthesia (Table3) (Fig.4).
- Study Group: 25 patients (9 patients underwent operations under general anesthesia + 16 patients underwent operations under spinal anesthesia (Table 3) (Fig.3).
- The percent of patients who underwent operations under general anesthesia was 36.0 % among study group compared to 24.0 % among control group, while the percent of patients underwent operations under spinal anesthesia was 64.0 % among study group compared to 76.0 % among control group (Table 3) (Fig.3).

Table 3: Type of Anesthesia distribution through the thesis.

		Study group N=25	**Control group N=25**	**Total N=50**
Type of Anesthesia	**General n (%)**	9(36.0)	6(24.0))	15(30.0)
	Spinal n (%)	16(64.0)	19(76.0)	35(70.0)

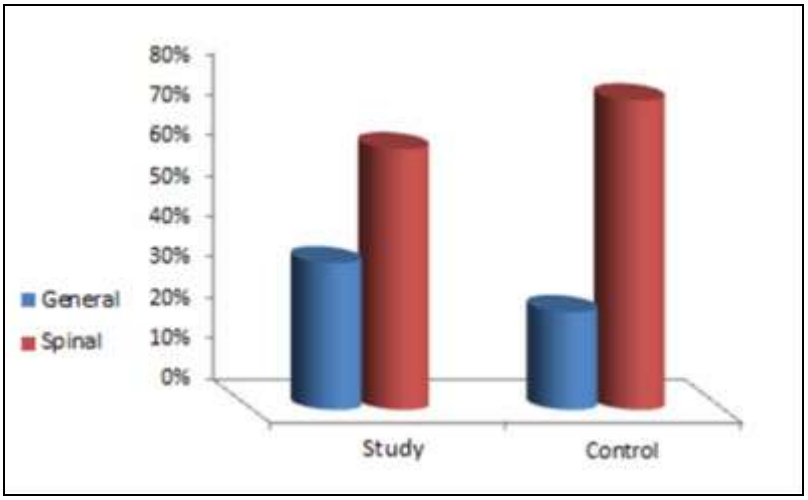

Fig. 3: Pain severity at 3 hours postoperatively

Pain severity at 6 hours postoperatively:

- Control Group: 25 patients (5 patients had moderate pain + 20 patients had mild pain with a maximum pain score of 6) (Table 4) (Fig.5).
- Study Group: all 25 patients had very mild pain with a maximum pain score of 3) (Table 4) (Fig.4).

Table 4: Pain severity at 6 hours postoperatively

	Study group N=25	Control group N=25	Total N=50
Mild pain n (%)	25(100.0)	20(80.0)	45(90.0)
Moderate pain n (%)	0(0.0)	5(20.0)	5(10.0)

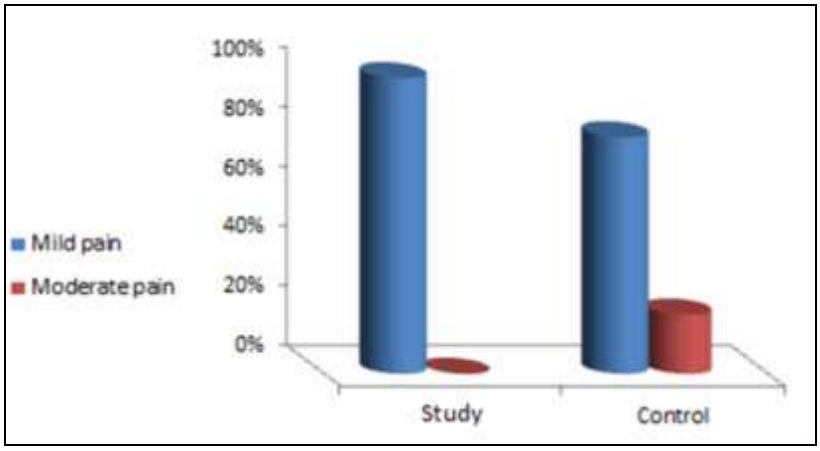

Fig. 4: Pain severity at 6 hours Postoperatively Pain severity at 9 hours postoperatively:

- Control Group: 25 patients (6 patients had moderate pain + 19 patients had mild pain a maximum pain score of 6) (Table 5) (Fig.6).
- Study Group: all 25 patients had very mild pain a maximum pain score of 3) (Table 5) (Fig.5).

Table 5: Pain severity at 9 hours postoperatively

	Study Group N=25	Control group N=25	Total N=50
Mild pain n (%)	25(100.0)	19(76.0)	44(88.0)
Moderate pain n (%)	0(0.0)	6(24.0)	6(12.0)

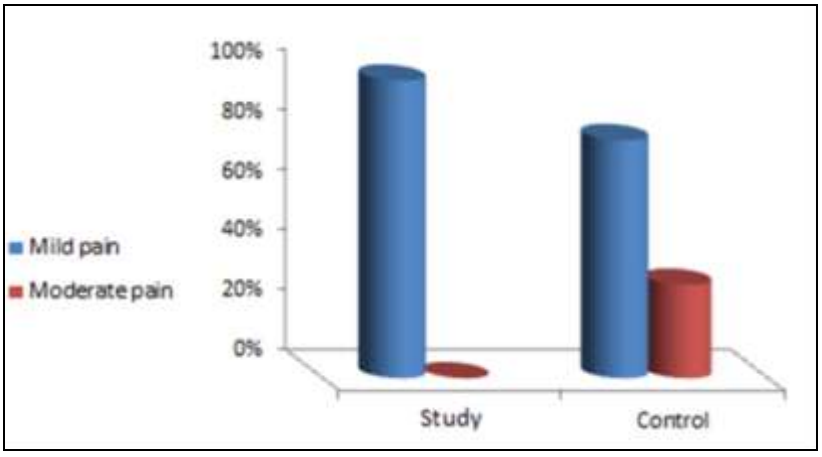

Fig. 5: Pain severity at 9 hours Postoperatively

Pain severity at 12 hours postoperatively:

- Control Group: 25 patients (13 patients had mild pain + 10 patients had moderate pain +2 patients had severe pain with a maximum pain score of 8) (Table5) (Fig.6).
- Study Group: 25 patients (18 patients had mild pain + 7 patients had moderate pain with pain a maximum pain score of 6) (Table 6 (Fig.6).

Table 6: Pain severity at 12 hours postoperatively

	Study Group N=25	**Control group N=25**	**Total N=50**
Mild painn(%)	18(72.0)	13(52.0)	31(62.0)
Moderate pain n(%)	7(28.0)	10(40.0)	17(34.0)
Severe pain n (%)	0(0.0)	2(8.0)	2(4.0)

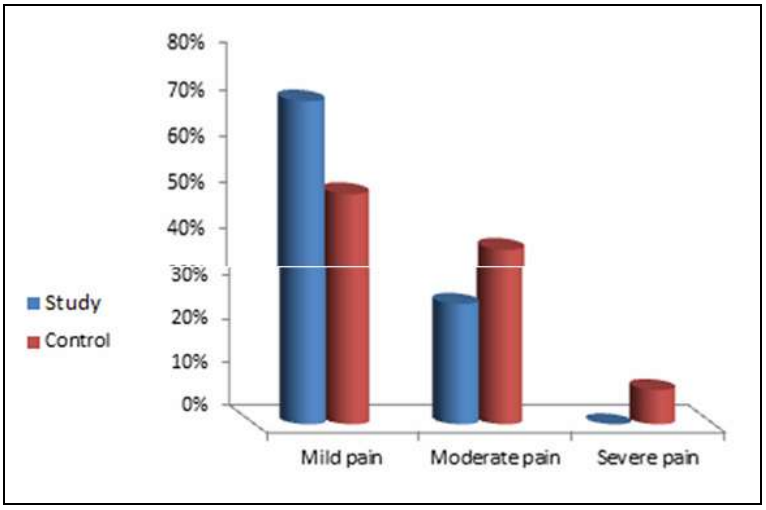

Fig. 6: Pain severity at 12 hours Postoperatively.

Assessment of the pain:

Pain score was measured at 3, 6, 9, 12 hours post-operatively and the results were as follows:

- Pain score at 3 hours postoperatively: the mean pain score for the control group was 2.5±0.7 VS. 1.5±0.7 for the study group with a significant difference in pain score distribution (P value ≤0.001) (Table 7) (Fig.8).
- Pain score at 6 hours postoperatively: the mean pain score for the control group was 3.4±1.0 VS. 2.3±0.7 for the study group with a significant difference in pain score distribution (P value ≤0.001) (Table 7) (Fig.8).
- Pain score at 9 hours postoperatively: the mean pain score for the control group was 3.4±1.0 VS. 2.3±0.7 for the study group with a significant difference in pain score distribution (P value ≤0.001) (Table 7) (Fig.8).
- Pain score at 12 hours postoperatively: the mean pain score for the control group was 4.2±1.5 VS. 3.6±1.0 for the study group with no significant difference in pain score distribution (P value >0.05) (Table 7) (Fig.7).

Table 7: Pain scores at 3, 6, 9, 12 hours postoperatively

	Control group	Study group	P value
3 hrs post-operative M ±SD **Median(IQR*)**	2.5±0.7 3.0(2.0:3.0)	1.5±0.7 1.0(1.0-2.0)	≤ 0.001
6 hrs post-operative M ±SD **Median(IQR)**	3.4±1.0 3.0(3.0:3.0)	2.3±0.7 2.0(2.0-3.0)	≤ 0.001
9 hrs post-operative M ±SD **Median(IQR)**	3.4±1.0 3.0(3.0:3.0)	2.3±0.7 2.0(2.0-3.0)	≤ 0.001
12 hrs post-operative M ±SD **Median(IQR)**	4.2±1.5 3.0(3.0:5.0)	3.6±1.0 3.0(3.0:5.0)	0.124

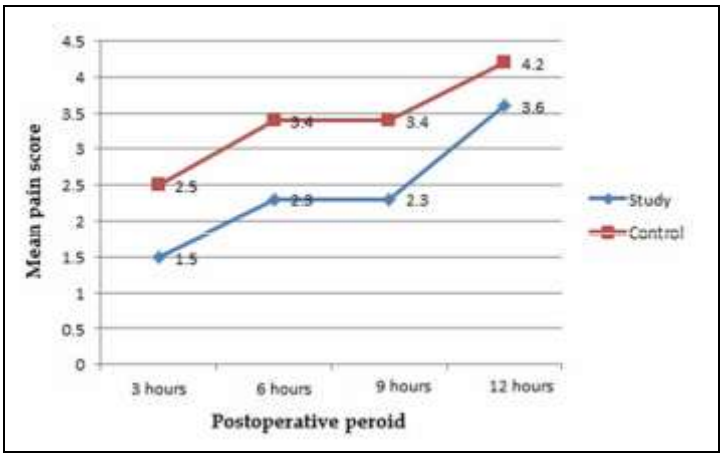

Fig. 7: Mean pain scores at 3, 6, 9, 12 hours postoperatively

Additional analgesic therapy:

Pain score was recorded at 3, 6, 9, 12.hours post-operatively and the need for Additional analgesic therapy in the form of Diclofenac sodium 75 mg amp. I.M. was recorded as follows:

- Control Group: 25 patients (22 patients had additional analgesic therapy with a percentage of 88% of their total number + 3 patients had no any additional analgesic therapy) (Table 8).
- Study Group: 25 patients (7 patients had additional analgesic therapy with a percentage of 28% of their total number + 18 patients had no any additional analgesic therapy) (Table 8).

Table 8: No. of patients who needed additional analgesic therapy

	Study group	Control group	Total	P value
No need for analgesics	18(72.0)	3(12.0)	21(42.0)	0.002
Need for analgesics	7(28.0))	22(88.0	29(58.0)	

Bowel motions:

Intestinal sounds had been followed post-operatively and showed that intestinal sounds appeared at a mean of 3.2±1.0 hours for the control group VS. 3.1±1.0 hours for the study group, with no significant difference between both groups (P value =0.798) (table 9).

Table 9: Average hours for appearance of intestinal sounds.

	Study group	Control group	P value
Intestinal sounds M ±SD Median(IQR)	3.1±1.0 3.0(2.5:3.5)	3.2±1.0 3.0(3.0:3.5)	0.798

DISCUSSION

Postoperative pain following minor anal operations is usually very intense and the pain at the first postoperative defecation has been described "like passing bits of broken glass".

Excellent surgical anesthesia and also good initial postoperative analgesia can be accomplished by the use of caudal or spinal anesthesia but the postoperative analgesia is short-lived and is also associated with disturbing sideeffects e.g., urinary retention. Finding a method that can reduce postoperative pain substantially and, thus, would allow a more rapid recovery would be of great importance both for the patient and society in general.

Pudendal nerve block has been widely used to provide postoperative analgesia following many minor anal interventions; Complications include unintentional sciatic nerve block, intravascular injection, retro-peritoneal hematoma and retropsoas or subgluteal abscess[(11)].

This study shows that the combination of Pudendal nerve block with either general or spinal anaesthesia after open hemorrhoidectomy and lateral internal sphincterotomy operations provides an excellent analgesic effect and is associated with better pain-relief and improves patient satisfaction in the first 12 hours postoperatively, this is because that the sensory nerve supply of the anal canal is through the inferior rectal nerve, a branch of the pudendalnerve,and provides an excellent analgesia with maximal effect in the first 9 hours post-operatively (P value $\leq$ 0.001) and less effect at 12 hours post-operatively (P value =0.798), this may be attributed to the diminished action of the local anesthetic (bupivacaine) which need addition of epinephrine and reduces the need of additional analgesic therapy among the study group compared to the control group (P value= 0.002) and has less effect on restoration of bowel motions (Pvalue= 0.798).

CONCLUSION

In this study the use bilateral pudendal block using bupivacaine 0.5 % to treat post hemorrhoidectomy or post-sphincterotomy pain and the results provide superior pain-relief and decreased consumption of analgesics

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