



ORIGINAL RESEARCH PAPER

Anaesthesiology

PARIETAL INFILTRATION WITH BUPIVACAINE ON PAIN MANAGEMENT POST CESAREAN SECTION

KEY WORDS: caesarean section - multimodal analgesia - pain - parietal infiltration - spinal anesthesia.

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ABSTRACT	Objective: To evaluate the interest of parietal infiltration with bupivacaine of the surgical wound under spinal anesthesia on the prevention of post caesarean section pain.
	Material and methods: This is a prospective, comparative and analytical study over a period of 5 months from November 2014 to March 2015 in the department of anesthesiology-resuscitation and maternity of teaching hospital Tambohobe Fianarantsoa. Randomly, a group of parturients operated on spinal anesthesia received postoperatively a single parietal infiltration of 20 mL of bupivacaine (WIG) and another group non-infiltrated (NIG). The average visual analogue scale (VAS), the consumption of analgesics, the delay of recovery of the intestinal transit and the cost of hospitalization were studied.
	Results: Eighty parturients were included in the study. They were divided into 2 groups, 40 in the group without infiltration (NIG) and 40 in the group with infiltration of 20 mL of bupivacaine 0.5% at the end of intervention (WIG). The mean VAS and the postoperative analgesic consumption were significantly reduced in the WIG compared to the NIG, with p values of 0.001 and 0.042, respectively. The return of transit was observed in less than 24 hours in 47.5% of the WIG against 25% of the NIG (p = 0.007) and the cost of hospitalization was increased by Ar 50 000, or \$ 23 for the NIG.
	Conclusion: These results showed the interest of parietal infiltration with bupivacaine in the management of pain after caesarean section with a reduction in analgesic consumption and the cost of hospitalization.

Introduction

Caesarean section is a frequent procedure with severe and intense pain during the first 48 hours. Its management is essential for the comfort and the early ambulation of the patients. Different processes have been evaluated. Parietal infiltration is one of the techniques to prevent this pain. This is a simple technique that involves injecting an analgesic agent into a subcutaneous space, musculoskeletal muscle in the immediate vicinity of the operative site to block the transmission of painful impulses by distal nerve endings. It fits into the concept of multimodal analgesia. The objective of this study is to evaluate the interest of parietal infiltration with bupivacaine of the surgical wound on the prevention of post caesarean section pain.

Material and methods

This is a prospective, comparative and analytical study of emergency cesarized parturients or programmed under uncomplicated spinal anesthesia. The study extends over a period of 5 months from November 1, 2014 to March 31, 2015 and is performed at the anesthesiology-resuscitation and maternity unit of the teaching hospital Tambohobe Fianarantsoa. All parturients who benefited from a cesarean operation under emergency or programmed spinal anesthesia, classified as ASA 1 and 2 were included. We exclude parturients aged under 18, parturients who refused to participate in the study, those with per and / or postoperative complications (use of sedation, conversion to general anesthesia, postpartum haemorrhage) and those whose protocol record is not correctly completed. After the indication for Caesarean section and after consent, patients were randomized into two groups: an infiltration group (WIG) which receives a single parietal infiltration of 20 mL of bupivacaine and a non-infiltrated group (NIG). All parturients received 500 mL of lactated ringer (RL) before spinal anesthesia. The spinal anesthesia protocol is identical for both groups. For parturients of the NIG, a parietal infiltration of 20 mL of 0.5% bupivacaine is performed by the surgeon before the cutaneous closure (10 mL each side). After the lifting of the sensory block and after the evaluation of the pain, 1 g of paracetamol was systematically injected and then relayed with 1 g

of paracetamol intra-rectally every 6 hours. The evaluation of the pain was carried out from the 3rd hour postoperative and then per hour during the first 6 hours, then every 3 hours for 12 hours and every 6 hours from the 18th hour until the 72nd hour. If the visual analogue scale (VAS) is between 30 to 50 mm, 20 mg of nefopam is administered as a 100 ml perfusette and then administered every 6 hours. When the VAS is greater than 50 mm, morphine titration is administered. In case of postoperative nausea and vomiting (PONV), 4mg Ondansetron is administered intravenously and 25mg Hydroxyzine if there is pruritus. Demographic parameters, postoperative pain with VAS, morphine and nefopam intake, length of stay, hospitalization cost, transit delay, PONV, and pruritus were assessed. All data was collected from a questionnaire. The data from the collection tools were stored in Excel version 2007 and then processed and analyzed with the SPSS statistics 20 software. The results obtained were interpreted in terms of size, proportion and average. The Chi-square test was used for statistical analysis and was significant if the p-value was less than 0.05.

Results

At the end of the study, 125 parturients were recruited of which 80 were retained in the study. They were divided into 2 groups, 40 in the group without infiltration (NIG) and 40 in the group with infiltration (WIG) 20 mL of bupivacaine 0.5% at the end of the intervention. The mean age of our patients was 27.03 ± 7.01 years in the NIG group and 25.83 ± 5.77 years in the WIG group. The average age between the two groups was comparable. The age range between 20-30 years is the most represented. The BMI of the two groups does not differ. The average was 22.89 ± 2.62 kg.m² for the NIG and 23.42 ± 2.89 kg.m² for the WIG. Only 22.5% for NIG and 25% for WIG were overweight and moderately obese. Emergency cesarean sections were the most frequent compared to those scheduled, with 90% for the NIG and 92.5% for the WIG. Thirty percent of NIG patients had a surgical history and 35% for WIG. In the majority of cases, the intervention lasted between 30 to 45 minutes. The mean resting VAS was significantly reduced in the WIG compared to the NIG, with p values equal to

0.001 during the first 24 hours. For the average VAS in dynamic tests, this reduction in the WIG exists but not significant (Figures 1 and 2). Before the 48th postoperative time, the NIG had consumed more major analgesics compared to WIG with a p value equal to 0.042. The occurrence of PONV showed no significant difference between the two groups with a value of $p = 0.606$ and $\chi^2 = 0.267$. The return of transit was observed in less than 24 hours in 47.5% of the WIG against 25% of the NIG ($p = 0.007$) and the cost of hospitalization was increased by Ar 50 000, or about \$ 23 for the NIG.

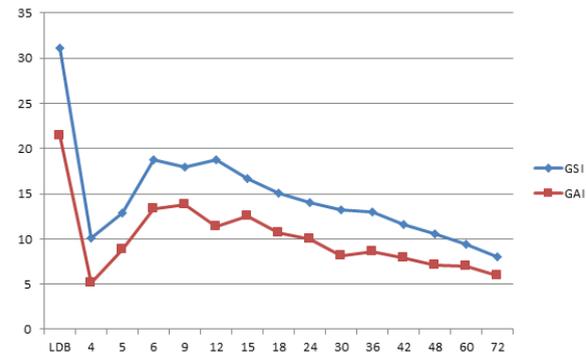


Figure 1: Mean VAS of the two groups at rest during the first 72 hours

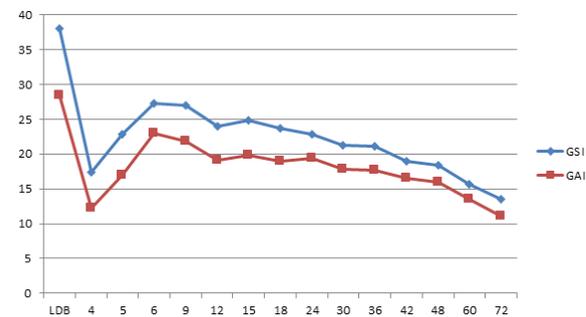


Figure 2: Mean VAS of the 2 groups at the dynamic tests during the first 72h

Table I: Characteristics of patients

Parameters		NIG	WIG	P
		Moyenne ± ET	Moyenne ± ET	
Age (years)		27,03±7,015	25,83±5,773	NS
BMI (kg / cm ²)		22,89 ± 2,62	23,42 ± 2,89	NS
Gestational age (SA)		38,78 ± 1,22	39,25 ± 0,96	NS
Duration of intervention (min)		42,53±12,73	44,18±13,58	NS
Stay in SSPI (min)		131,5±56,85	121,35±37,16	0,343
Transit delay time (hour)		27,99 ± 8,70	23,80 ± 3,93	0,007
		n (%)	n (%)	
School level	0	9 (22,5)	6 (15)	NS
	I	7 (17,5)	6 (15)	
	II	7 (17,5)	9 (22,5)	
	III	11 (27,5)	12 (30)	
	IV	6 (15)	7 (17,5)	
Caesarean section	No	28 (70)	26 (65)	NS
	Yes	12 (30)	14 (35)	
Profession	Farmer	14 (35)	11 (27,5)	NS
	Student	4 (10)	6 (15)	
	Official	5 (12,5)	4 (10)	
	Household	13 (32)	17 (42,5)	
	Saleswoman	4 (10)	2 (5)	
PONV	No	29 (72,5)	31 (77,5)	NS
	Yes	11 (27,5)	9 (22,5)	

Table II: Evaluation of pain according to the VAS

	NIG	WIG	p
VAS resting at D0 (mm)	31,13 ± 13,1	21,43 ± 14,61	0,002
Dynamic VAS at D0 (mm)	38,00 ± 11,91	28,43 ± 14,93	NS
VAS resting at D1 (mm)	14,08 ± 3,89	11,05 ± 2,95	0,001
Dynamic VAS at D1 (mm)	22,85 ± 4,98	20,43 ± 4,29	NS
VAS resting at D2 (mm)	10,58 ± 3,86	9,1 ± 2,26	0,041
Dynamic VAS at D2 (mm)	18,4 ± 4,66	16,93 ± 4,28	NS

Table III: Distribution of the two groups according to the consumption of analgesic

Analgesic	NIG		WIG	
	Effective n=40	Frequency (%)	Effective n=40	Frequency (%)
Paracetamol	18	45	29	72,5
Paracetamol + Nefopam	17	42,5	9	22,5
Paracetamol + Nefopam + Morphine	5	12,5	2	5

Discussion

Currently, improving postoperative pain in adults and children is one of the clinicians' goals. Post-caesarean section pain is considered strong. And it is moderate to intense during the first forty-eight hours [1]. The suppression of pain at rest, but also in dynamic conditions (mobilization, coughing, removal of drains ...) improves comfort, reduces perioperative stress, postoperative morbidity, length of hospital stay and the cost of care of the patient [2]. Infiltrating a local anesthetic in the operative wound allows a benefit in many circumstances because the parietal pain represents for many surgical acts the major component of the postoperative pain. The parietal origin of postoperative pain predominates after many surgeries. Blockage may have a preventive effect on long-term pain, exceeding the expected duration of action of local anesthetics [3]. In our study, the average age of the two groups is comparable. The patients in our sample from both groups were between 18 and 41 years of age with an average age of 27.03 ± 7 years for the NIG and 25.83 ± 5 years for the WIG. These results are similar to those of Bengshir et al [4], who found an average age of 28 ± 3 years for the NIG against 28 ± 3 years for the infiltrated groups. In our study, there was no significant difference between the 2 groups in terms of pain and age of parturients. But, we observed that the younger the patients, the greater the postoperative pain. These data are consistent with those in the literature, which emphasize that younger patients represent additional risk factors for postoperative pain development [5]. The two groups are comparable according to BMI. We observed that most parturients had a normal weight: 77.5% for the NIG and 75% for the WIG have a normal weight with an average of 22.89 ± 2.62 for the NIG and 23.42 ± 2.89 for the WIG. In contrast to our findings, Corsini et al [6] found an average BMI of 29 ± 5 for NIG and 29 ± 6.5 for WIG. This study showed that parietal infiltration of the surgical incision significantly reduced the average resting VAS during the first 48 hours postoperatively. This decrease in mean resting VAS is observed mainly until the 24th hour postoperatively. Bengshir et al [4] found similar cases with a significant decrease in pain intensity until 24 hours postoperatively, using ENS as a pain assessment and using ropivacaine as a local anesthetic. The data in the literature are discordant with an analgesic effect of parietal infiltrations over a limited period of four to 12 hours. Ducarme et al [7] showed a significant decrease in mean resting VAS but ranging from 4 hours post-caesarean using ropivacaine as a local anesthetic. However, Samaké et al [8] showed that there was no significant difference between the mean resting VAS for the first 48 hours but the doses of analgesics were reduced. In our study, we used paracetamol, nefopam and morphine as postoperative analgesia. We did not use NSAIDs. Practitioners in the Maternity Department of Fianarantsoa do not recommend the use of NSAIDs as a post caesarean analgesic. NSAIDs would have delayed the milky rise. While NSAIDs (mainly ketoprofen) are essential in the management of post-caesarean pain in the first 48 hours: indeed, they are not detectable, or very weakly detected in colostrum and then milk [9]. In our study, we observed a significant decrease in postoperative analgesic consumption during the first 48 hours for

WIG. This result is comparable to that of Samaké BM et al [8] who showed a significant reduction in post-operative analgesic consumption in the infiltrated groups. Some studies also [4, 6, 7] have shown this reduction but using other analgesic products (ropivacaine, levobupivacaine) as parietal infiltrations. In our study, nausea and / or vomiting were not significantly different between the two groups. Eleven parturients or 27.5% for the NIG against 9 or 22.5% for WIG experienced nausea and / or vomiting during the 48th hour post operative. For the improvement of the postoperative rehabilitation, in addition to parietal infiltration, we suggest to add in the protocol the prevention of PONV.

Conclusion

Cesarean section is a provider of postoperative pain. Optimizing the management of early postoperative pain is an inescapable goal. The present study shows the major interest of the parietal infiltration in the prevention of pain after cesarean section, the return of transit and the reduction of the cost of hospitalization. A large-scale study would bring even more conclusive results.

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