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COMBINED SPINAL EPIDURAL BLOCK VERSUS CONTINUOUS EPIDURAL BLOCK FOR LABOR ANALGESIA: A COMPARATIVE STUDY

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ABSTRACT **Introduction:** The combined spinal-epidural block offers the advantage of employing smaller dosages of local anesthetics and a faster onset of analgesia than the lumbar epidural block, which is an effective and often used treatment for labor pain reduction. The goal of this study was to compare the effectiveness and safety of two anesthetic methods for labor analgesia in pregnant women: combined spinal-epidural block and continuous epidural block.

Methods: 60 ASA II and III patients with cephalic presentation and cervical dilatation between 5 and 6 cm were divided into two groups based on anesthetic technique: combined spinal-epidural (GI) and continuous epidural (GII). Pain severity prior to the blockade, time to complete analgesia, degree of motor blockade, time to full cervical dilation, duration of the second stage of labor, pain severity during the first and second stages of labor, type of delivery, use of oxytocin during labor, maternal cardiocirculatory and respiratory parameters and adverse events, and neonatal repercussions were all documented.

Results: The level of discomfort in both groups was similar at the time of anesthesia. Pain relief was faster in GA (4.3±1.3 minS) than in GB (11±3.4mins) p=0.02; pain scores in the first and second stages of labor were lower in GA (1.2±0.4and 1.8±0.8, respectively) than in GB (1.8±0.9and 2.1±0.6, respectively), with p=0.01 only in the first stage of labor; there was a need for local anesthetics supplementation in GB; there were more spontaneous deliveries in GA (80 percent)

In conclusion the combination blockade was found to be beneficial in terms of analgesia quality and comfort for pregnant women, making it a viable choice for obstetric analgesia.

KEYWORDS : Fetal and obstetric outcomes; Combined spinal epidural; Continuous epidural; Analgesia during labor; fetal and obstetrical outcomes;

INTRODUCTION

In addition to enhancing maternal comfort, pain relief during labor helps to avoid the negative effects of stress. The block lumbar epidural, a type of regional anesthesia, is a successful and common treatment for relieving labor pain, regardless of cervical dilation. It does, however, illustrate how inconvenient the sensory block's installation is.[1]

The combined spinal-epidural block (CRP) technique for labor analgesia has the advantages of using low-dose local anesthetics, a faster onset of analgesia, and a lower incidence of motor block, in addition to allowing access to the epidural space through a catheter, which ensures analgesic complementation if needed.[1]

The goal of this study was to compare the efficacy and safety of two anesthetic methods in nulliparous pregnant women receiving childbirth analgesia: combined spinal epidural block (CRP) and continuous epidural block (CP).

MATHODS

A randomized, double-blind clinical trial comparing two anesthetic techniques for delivery analgesia: Group A (CRP- combined spinal epidural block) and Group B (CP- continuous epidural). The study was approved by the Institution's Ethics Committee, and 60 participants signed informed consent form.

Full-term pregnant women with an ASA 2 or 3 physical status, a single pregnancy, cephalic presentation, and cervical dilatation of 5 to 6 cm. Patients with fetal distress prior to analgesia, an urgent obstetric situation, regional anesthesia contraindications, a history of drug hypersensitivity, and previous opioid administration were included. Excluded from the research

We calculated the sample size based on the difference in mean values of the time elapsed between the installation of analgesia and the attainment of total cervical dilation (CRP = 3.8 h vs. PC = 5.1 h) between the two groups (CRP = 3.8 h vs. PC = 5.1 h). Using Student's t test and a 5% significance level (= 0.05) and a test power of 80% (= 20%), the sample size was 30 subjects in each group.

All patients were continuously monitored in the operating room with a fetoscope, a pulse oximeter, and a non-invasive blood pressure monitor, and infusion of Lactate Ringer's solution after obstetric indication of labor analgesia. The anesthesiologist who evaluated the parameters studied and made the lock was unaware that one of the authors had prepared the solution to be used. In Group A (CRP), epidural block was performed in the L2-L3 interspace with a 16G Tuohy needle, followed by identification of the epidural space through the sign of loss of resistance, and then introduction of the 16G epidural catheter in the cephalic direction. At the L3-L4 interspace, a 25G Quincke needle was inserted by dripping CSF into the subarachnoid space and injecting a mixture of 0.5 percent bupivacaine weighed (2.5 mg) + sufentanil into the subarachnoid space (5 g). After identifying the epidural space as described in Group A, 0.125 percent bupivacaine with epinephrine (12.5 mg) + sufentanil (20 g) was administered, followed by the introduction of the catheter.

The pregnant women were placed in horizontal dorsal decubitus after the blockade, with the Crawford wedge used to shift the uterus to the left until the blockade was fixed. Following that, the patients were placed in a left lateral decubitus and inclined position, with the ability to alternate decubitus as needed. With the help of a nasal catheter, oxygen supplementation (2-3 L. min1) was performed.

The obstetrician monitored the parturient' progress through childbirth, including uterine contractility and fetal heartbeat, clinically and/or with the use of a fetal monitor. The return of painful contractions with a score of 3 (Verbal Numerical Scale of Pain ENV) was a criterion for a second injection of local anesthetic through the catheter (0.25 percent bupivacaine with epinephrine 12.5 mg) in the two groups. When the perineal dose needed to be supplemented, 0.25 percent bupivacaine mixed with adrenaline was used (12.5 mg).

The following variables were assessed:

1) Pain intensity prior to the blockage assessed using a numerical verbal pain scale;
2) Time to complete analgesia the time between the end of the anesthetic solution injection and the presence of a painless uterine contraction (0 and 1 ENV);
3) The degree of motor block is determined using the modified Bromage scale: 0 = complete immobility of lower limbs, every five minutes during the first 30 minutes after injection of the anesthetic solution and in the expulsive period, before assuming the position of lithotomy; 1 = ability to flex your knees and move your feet; 2 = capacity in only flexing your feet; 3 = complete immobility of lower limbs, every five minutes during the first 30 minutes after injection of the anesthetic solution and in the expulsive period
4) Duration of the 2nd stage of labor, time between total cervical

dilatation and birth; 5) Pain Intensity (ENV) during the 1st and 2nd stages of labor;

5) Maternal side effects include nausea, vomiting, itching, drowsiness, hypotension, bradycardia, and respiratory depression (Sat.O2 90% and respiratory rate 10 incursions per minute).

The obstetrician considered the initial cervical dilatation (cm) at the time of analgesia indication; the pain intensity immediately before the block (ENV). Pregnant women were asked to report the intensity of their pain (ENV) at the end of each stage of labor. The epidural catheter would be used to administer 0.5 percent bupivacaine (75 mg) in cases where a caesarean was indicated. To ensure that the control and dependent variables in the groups were comparable, the frequencies of distribution of the control and dependent variables in the groups were analyzed. Fisher's exact test was used to study categorical variables; the t of Student or the Mann-Whitney test was used to study numerical variables; and the Anova test was used to study variables with repeated measures. The significance level was set at 5%.

RESULTS

The analysis of anthropometric data and cervical dilatation (cm) at the time of anesthesia showed that there was no significant difference (p = 0.07) between the groups. Mean values and standard deviations and number of patients were comparable between both groups (table 1). In relation to physical status (ASA), there was a predominance of ASA 2 patients in both groups.

At the time of anesthesia, pain intensity was similar in both groups (p = 0.075). The time between the blockade and the contraction reference uterine pain-free was significantly lower in Group A in relation to Group B (p = 0.02). The degree of motor block ranged between 0 and 2, with a predominance of grade 0 in all the stages of labor. Pain scores evaluated between the initial dose and the total cervical dilatation (end of 1st stage of labor) were significantly lower in Group A compared to Group B (p = 0.012). The elapsed times between the installation of analgesia and the total cervical dilatation, total dilatation and childbirth, like that such as pain scores during the second stage of labor, were lower in Group A in relation to Group B, but without significant difference (p = 0.067; p = 0.056 and p = 0.058; respectively) (table 2). In the second stage of labor, in 4 cases of Group B, there was a need for complementation with local anesthetic through the catheter.

The occurrence of vomiting and drowsiness was higher in Group A, but with no significant difference in relation to Group B. Itching was observed in ten patients in Group A (25%) with a significant difference (p = 0.02) in relation to Group B (Table 3). No cases of headache were registered in Group A (CPR).

Table 1: Patient characteristics and parameters obstetrics

Indices	Group A(CRP)	Group B(CP)
Age (years)	20.3 ±4.9	19.4 ± 1.9
Weight (kg)	68±9.9	69.5±10.1
ASA (2/3)	24:06	22:08
Cervical dilatation (cms)	5.3±0.6	5.4±0.5

Table 2: Characteristics of the spinal block and the evolution of labor

Indices	Group A (CRP)	Group B (CP)	P value
Pain scores in the induction of analgesia	9.6±0.7	9.4±1.2	0.075
Time for complete analgesia (min)	4.3±1.3	11±3.4	0.023
Time for total cervical dilatation	85.3±11.4	93±7.5	0.067
Time between full dilation to childbirth (mins)	28.4±3.7	32.4±2.5	0.056
Analgesia-delivery time (min)	112±9.4	125±8.8	0.058
Grade of motor blockade 0 1 2 3	 24 4 2 0	 26 2 2 0	
Pain scores during the first stage of labor	1.2±0.4	1.8±0.9	0.012
Pain scores during the second stage of labor	1.8±0.8	2.1±0.6	0.069

Table 3: Maternal Side Effects

Indices	Group A (CRP)	Group B (CP)	P value
Vomiting	01	01	0.34
Pruritus	08	00	0.03
Somnolence	04	02	0.43

DISCUSSION

The introduction of combined blockade (CRP) for analgesia of childbirth has gained popularity as an option to block conventional epidural (BP), due to its rapid onset of Comfort and ambulation for the pregnant woman are provided by analgesics and little motor block. [1] Although the epidural block is still extensively used in clinical practice and has proven benefits in terms of pain reduction, understanding its implications on the evolution of delivery work is critical.

There are conflicting findings in the literature, with block epidural having a decrease, increase, or no effect on the duration of stages of labor. [3] In this study, it was discovered that the time elapsed between analgesia and entire cervical dilation and delivery was clinically shorter in the CRP Group. However, statistical analysis revealed no significant difference between the groups, a finding similar to that of Singh et al., who compared analgesia provided by a combined block (spinal epidural) with 0.5 mL of 0.2 percent ropivacaine associated with 0.5 mL of 25 mcg intrathecal fentanyl (followed by continuous infusion of 0.0625 percent ropivacaine associated with 2 mcg.mL Singh et al. [6] then compared combined spinal epidural block with pharmacological techniques by inhalation and IM of labor analgesia, finding no significant differences during the two stages of labor. However, our findings differ from Singh et al.'s, as these authors found no significant differences between the groups in the birth rates spontaneous and instrumental, whereas in our study, our groups did. Our groups also showed a difference in the frequency of caesarean sections, which was larger for GII, which differed from what was previously reported. (Singh et al.)[6]

Although Leighton BL et al. [4] found a reduction in the phases of labor in pregnant women who had a block epidural compared to opioid analgesia parenteral, their study was methodologically different from ours. A study conducted in Australia, which extrapolated to other methodologies and evaluated the duration of the delivery stages with epidural analgesia, [5] revealed that the results in relation to obstetricians' perceptions of the evolution of labor are antagonistic, as 21% of the participating obstetricians describe a reduction in the duration of the first stage and 29% believe that the BP prolongs labor. The most recent findings are comparable to those reported by Taneja et al. [7], who found that 30% of obstetricians mention extended labor duration without specifying at what point this occurs.

Although the internship lengths of the group were marginally longer in our study, the epidural block did not differ statistically from the combination block. This finding was comparable to those of other researchers who recently published a study comparing systemic labor analgesia with a combination block followed by continuous infusion of local anesthetic with opioids in the epidural area. [6] However, these findings contradict those of Tsen et al. [2], who found that cervical dilatation was faster in nulliparous pregnant women undergoing analgesia for early delivery using the CRP approach than in pregnant women who got an epidural block.

Although the exact cause of this incident is unknown, it could be linked to the combination block using a smaller anesthetic mass than the epidural block. Motor block, early relaxation of the perineum, and impaired reflex in the second stage of labor, all of which are related to higher concentrations of local anesthetics used, may explain the longer duration of labor, the greater need for oxytocin, and the higher frequency of instrumental vaginal births described when the traditional epidural technique is used in childbirth analgesia. The effect of local anesthetics on uterine activity was demonstrated in vitro, with an increase in tonus but a decrease in the frequency and severity of uterine contractions. Another theory relates to the rapid pain alleviation experienced by pregnant women who are undergoing blocking. Combined. Evidence suggests that epinephrine and maternal norepinephrine levels rise during labor, resulting in a rapid onset of analgesia and a decrease in maternal epinephrine levels, which can explain the shorter labor periods reported with the combination block. [2] Changes in uterine activity caused by a drop in epinephrine levels, according to laboratory and clinical research, are attributable to its tocolytic effect, and its reduction may be able to increase uterine contraction. [8] The lowest frequency of vaginal deliveries instruments in pregnant women who received combined block may be linked to a shorter installation time from complete analgesia to the smallest mass

of local anesthetic used, as well as a lower need for local anesthetic supplementation during labor, according to this study.

Despite the fact that our findings are contentious, they are consistent with those of other authors[8], who found a higher and lower rate of births in pregnant women who got CRP spontaneously and instrumentally, respectively, compared to those who received CP. The anesthetic approach had no effect on the delivery outcome in other investigations.[6]

When epidural analgesia continuous is mostly used at the beginning of the work, labor and, as a result, the rate of caesarean sections may be raised, as stated in the literature[10]. In this study, the incidence of caesarean sections was 10% in the CRP group and 20% in the PC group, with statistical significance, despite the fact that other authors found no rise in these fees.[11] However, contrary to Nageotte et al.[9]'s findings, our findings demonstrated greater analgesic quality in the CRP group, as evidenced by reduced pain scores within the first hour, in comparison to the CP group, there was no requirement for supplementation with local anesthetic during the second stage of labor. The low pain scores found in the CP group during the second stage of labor, with no significant difference in comparison to the CRP group, can be related to the addition of local anesthetic via the catheter, which is required for pain relief during this time.

With the exception of pruritus, which was considerably more common in the CRP group, the distribution of adverse effects was similar in both groups. Although temporary, this impact can cause significant discomfort to patients; nonetheless, the opioid dose is the decisive factor in this effect. However, by taking smaller doses of these drugs, side effects including nausea, vomiting, and itching can be reduced.[12] The findings of this study show that the combined block has a higher efficacy during labor, with faster pain relief, greater comfort for pregnant women, better analgesia quality, and a higher frequency of spontaneous deliveries, and can be recommended as a good option for obstetric analgesia practice.

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