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INDICATORS OF GENERAL HEMODYNAMICS AND OCCUPANCY TRAUMATISM UNDER PREMATURE LABOR CONDITIONS WITH DIFFERENT VARIANTS OF ANESTHESIOLOGICAL SUPPORT

Fomichev V.A.
Novosibirsk State Medical University, Russia, Novosibirsk
Oktyabrskaya E.V.
Novosibirsk State Medical University, Russia, Novosibirsk
Mezueva A.S.
Novosibirck State Medikal University, Russia, Novosibirck

ГЕМОДИНАМИКА И РОДОВОЙ ТРАВМАТИЗМ ПРИ ПРЕЖДЕВРЕМЕННЫХ РОДАХ В УСЛОВИЯХ РАЗЛИЧНЫХ ВАРИАНТОВ АНЕСТЕЗИИ

Фомичев В.А.
Новосибирский Государственный медуниверситет, Россия, Новосибирск
Октябрьская Е.В.
Новосибирский Государственный медуниверситет, Россия, Новосибирск
Межуева А.С.
Новосибирский Государственный медуниверситет, Россия, Новосибирск

ANNOTATION

On the basis of a random sample, 150 women in labor with spontaneous premature birth were selected into three clinical groups, comparable according to the ASA, the Fisher scale, and a number of anthropometric parameters. In the main group (n = 69), single-stage sacral anesthesia with 0.2% bupivacaine solution was used, in the 1st comparison group (n = 49), prolonged epidural anesthesia with 0.125% bupivacaine solution was performed, and in the 2nd group (n = 32), labor was compared with using pudendal anesthesia and subcutaneous injection of 2% promedol. In these groups, the parameters of systemic hemodynamics, birth traumatism and the number of operative births were analyzed. It was found that the proposed variant of sacral anesthesia, while providing adequate nociceptive protection, does not cause clinically significant depression of the parameters of systemic hemodynamics; at the same time, birth traumatism and the number of operative deliveries are reduced.

АННОТАЦИЯ

На основе случайной выборки в три клинических группы отобраны 150 рожениц с самопроизвольными преждевременными родами, сопоставимые по ASA, шкале Fisher и ряду антропометрических параметров. В основной группе (п=69) применялась одномоментная сакральная анестезия 0,2% раствором бупивакаина, в 1 группе сравнения (п=49) проводилась продленная эпидуральная анестезия 0,125% раствором бупивакаина, а во 2 группе(п=32) сравнения роды велись с использованием пудендальной анестезии и подкожной иньекции 2% промедола. В этих группах проанализированы параметры системной гемодинамики, родовой травматизм и число оперативных родов. Выявлено, что предложенный вариант сакральной анестезии, обеспечивая адекватную ноцицептивную защиту, не вызывает клинически значимой депрессии параметров системной гемодинамики; при этом снижается родовой травматизм и количество оперативных родов.

Key words: indicators of general hemodynamics, preterm labor, birth traumatism, regional anesthesia.

Ключевые слова: показатели общей гемодинамики, преждевременные роды, родовой травматизм, региональная анестезия.

`Changes in hemodynamic parameters during preterm labor are not only a response to pharmacological drugs used for anesthesia, but also a stress response to birth trauma (1, 3). In this regard, when assessing the adequacy of labor pain relief - the main is definition of the limits of deviation of physiological functions in women in labor (2).

Research task. To assess the adequacy and safety of anesthetic protection, parameters of general hemodynamics and birth traumatism in women in labor under conditions of preterm birth with various options for anesthetic management.

Material and method. 150 women in labor were selected into three clinical groups on the basis of a

random sample in accordance with the following criteria: 1. Gestation period 28-36 weeks; 2. Spontaneous onset of premature labor; 3. Risk class according to the ASA 1-2 scale, the sum of the fetal state of the fetus according to Ficher is at least 6 points.

Depending on the type of anesthesia, the following groups were identified: the main group (n = 69) in which one-stage sacral anesthesia was performed with a 0.2% bupivacaine solution, 1 comparison group (n = 49) in which prolonged epidural anesthesia (PEA) was performed with a 0.125% solution bupivacaine, comparison group 2 (n = 32), where labor was carried out using pudendal anesthesia and subcutaneous injection of promedol 2% -1.0. The groups were comparable in terms of age, height, body weight, gestational age, physiological ASA status.

The study did not include women in labor whose condition was decompensated in the course of pregnancy and somatic pathology, with a risk class of ASA 3 and higher, as well as with critically expressed intrauterine fetal hypoxia with a Ficher score of less than 6 points, as this could affect the study results.

The evaluation of the research data was carried out at stages: 1 stage - before the beginning of anesthesia; stage 2 - 40 minutes after the injection of the anesthetic; stage 3 - the end of the first stage of labor.

During the entire period of anesthesia, the parameters of systemic hemodynamics of women in labor were monitored using the MS 1151 Hewlett Paccard (USA). The observation protocol included: non-invasive blood pressure measurement after 5 minutes, continuous monitoring of the heart rate (HR), recording one standard ECG lead (2 or AVL) and a respiratory curve.

The course of anesthesia, the calculation of the total dose of local anesthetics used in women in labor during sacral anesthesia and PEA, the duration of anesthesia was determined by analyzing the protocols for labor pain relief.

Results.

The indicators of systemic hemodynamics at the stages of anesthesia in the main group of parturient women are presented in table. 1.

One of the disadvantages of PEA is systemic arterial hypotension and a decrease in the volumetric uteroplacental blood flow, which develop as a result of sympathetic blockade. In this regard, the parameters of systemic hemodynamics were determined in women in labor of the 1st comparison group at the stages of labor pain relief under PEA conditions and they are presented in table. 2.

Changes in systemic hemodynamics reflect the body's response to the activation of the sympatho-adrenal system due to stress experienced by a woman in labor. Narcotic analgesics (AN), acting at the suprasegmental level, reduce the level of the autonomic response caused by nociceptive impulses. Promedol used

in obstetrics in doses not exceeding 0.3-0.5 mg / kg does not cause respiratory depression and, in addition, has a certain laborstimulating activity. In this regard, in women in labor of the 2nd comparison group (n = 32), the parameters of systemic hemodynamics were determined at the stages of labor pain relief using narcotic analgesics. The data are presented in table. 3.

Table 1

Indicators of systemic hemodynamics at the stages of anesthesia in the main group of women in labor (M ± m)

	Outofthescrum	During the scrum	Growth
	1 stage	research	
Syst.BP (mmHg)	119,0±0,77	138,1±0,87	19,1±0,81
Diast.DP (mmHg)	76,9±0,75	93,9±1,09	17,0± 1,09
BPaver. (mmHg)	90,9±0,7	108,6±0,91	17,9±0,85
Heartrate (beats / min)	81,1±0,99	114,8±1,25	33,6±1,32
RRate(br/min)	15,89±0,18	27,92±0,39	12,03±0,41
	2 stage	research	
Syst.AP (mmHg)	117,5±0,62	128,9±0,59*	11,4±0,61*
Diast.AP (mmHg)	65,3±0,6*	77,1±0,88*	11,83±0,93*
APaver. (mmHg)	82,69±0,51	94,3±0,73*	9,68±0,75*
Heartrate (beats / min)	82,2±0,57	99,2±0,84	17,1±1,02*
RRate(br/min)	15,5±0,15	22,1±0,34*	6,61±0,3*
	3 stage	research	
Syst.AP (mmHg)	120,4±0,46	129,9±0,47	9,5±0,01*
Diast.AP (mmHg)	71,2±0,66*	80,2±0,79*	9,0±0,12*
APaver. (mmHg)	87,6±0,54*	97,7±0,65	10,13±0,13
Heartrate (beats / min)	84,4±0,84	101,4±0,7*	17,0±0,11
RRate(br/min)	15,3±0,14	25,6±0,3*	10,2±0,05*

*p<0,05compared to the original data

Table 2

Indicators of systemic hemodynamics at the stages of anesthesia in women in labor of the 1st comparison group

	Outofthescrum	During the scrum	Growth
Syst.AP (mmHg)	188,7±1,02	140,5±1,27	21,8±1,66
Diast.AP (mmHg)	72,4±0,93	91,3±1,81	18,9±2,04
APaver. (mmHg)	87,8±1,19	107,8±1,43	19,97±1,83
Heartrate (beats / min)	83,8±0,79	117,0±1,58	33,15±1,8
RRate(br/min)	15,7±0,22	26,85±0,48	11,08±0,49
	2 stage	research	
Syst.AP (mmHg)	112,3±0,76*	123,1±0,7*	10,8±0,61*
Diast.AP (mmHg)	64,9±0,73*	80,4±1,13*	15,5±0,93
APaver. (mmHg)	80,7±1,06*	94,6±0,93*	13,9±0,7*
Heartrate (beats / min)	82,1±0,65	118,6±0,76	36,5±1,02*
RRate(br/min)	15,4±0,18	22,2±0,7*	6,87±0,3*
	3stage	reasearch	
Syst.AP (mmHg)	118,4±0,56	124,7±0,59*	6,3±0,66*
Diast.AP (mmHg)	65,0±0,81	83,7±0,97*	8,7±1,16*
APaver. (mmHg)	82,8±0,97*	45,0±0,64	14,5±0,13
Heartrate (beats / min)	86,3±0,63*	99,3±0,3*	13,0±0,11*
RRate(br/min)	15,4±0,18	24,8±0,34	8,5±0,05

P<0,05 compared to the original data

Table 3

Indicators of hemodynamics at the stages of pain relief in women in labor in 2nd comparison group

	Outofthescrum	During the scrum	Growth
	1 stage	research	
Syst.AP (mmHg)	118,4±1,13	136,4±1,44	17,9±1,98
Diast.AP (mmHg)	71,9±1,18	93,5±1,71	21,6±1,85
APaver. (mmHg)	87,4±0,85	107,7±1,5	20,3±1,58
Heartrate (beats / min)	81,1±1,5	115,2±1,75	34,1±2,02
RRate(br/min)	15,7± 0,29	27,2±0,66	11,5±0,77
	2 stage	research	
Syst.AP (mmHg)	128,6±0,9*	152,2±1,3*	23,6±1,14*
Diast.AP (mmHg)	75,9±1,2*	100,4±1,66*	24,5±1,7*
APaver. (mmHg)	93,5±1,02*	117,2±1,5*	23,7±1,39*
Heartrate (beats / min)	85,1±1,1*	109,2±1,2	23,5±1,65
RRate(br/min)	16,1±0,26	28,1±0,51	12,0±0,56
	3 stage	research	
Syst.AP (mmHg)	132,9±0,81	153,9±1,03	21,0±0,96
Diast.AP (mmHg)	77,3±0,98	100,8±1,57	23,5±1,6
APaver. (mmHg)	95,8±0,79	115,2±1,34	19,4±1,2
Heartrate (beats / min)	86,5±0,85	128,5±1,1*	42,0±1,5*
RRate(br/min)	16,0±0,26	28,3±0,51	12,3±0,55

*p<0,05reliable difference from the original data

The influence of options for anesthesia during labor on the parameters of systemic hemodynamics and external respiration was manifested in the following. After the implementation of sacral anesthesia, there was a decrease in the increase in SBP and DBP during contractions by 40.3 and 30.4% (p <0.05). These changes persisted at the 3rd stage of the study - the increase in SBP and DBP during the contraction was 52.2 and 47.0% (p <0.05), while the pulse pressure, reflecting tissue perfusion and filling of the placenta vessels, was maintained at a constant level. The difference between the systemic hemodynamic parameters before and during the contraction indicated adequate nociceptive protection.

In the conditions of PEA use, the increase in SBP and DBP during contractions at the 2nd stage of the study decreased by 50.4 and 18% (p <0.05), respectively, at the 3rd stage by 71.1 and 54.1%, which also indicated adequate nociceptive protection. At the same time, SBP also decreased outside contractions by 5.4% of the initial (p <0.05). We registered a decrease in pulse pressure outside the contraction, due to the implementation of the sympatholytic effect of PEA and a predominant decrease in SBP. Such fluctuations in pulse pressure, in our opinion, can have a negative effect on the intrauterine state of the fetus.

Parenteral administration of NA in the 1st stage of labor in the 2nd group of comparison did not provide sufficient nociceptive protection, as evidenced by the increase in the increase in SBP and DBP indicators before and during the contraction by 31.8 and 13.6% (p <0.05) at the 2nd stage of the study and by 17.3 and

9.0% (p <0.05) at stage 3. At the same time, there was an increase in SBP outside contractions by 8.6 and 12.2% (p <0.05), DBP by 5.6 and 7.5% (p <0.05) from the initial level, according to the stages of the study. Pronounced fluctuations in systemic hemodynamics can also adversely affect the intrauterine state of the fetus.

Analyzing the effect of sacral anesthesia on the function of external respiration in women in labor, the following regularities were revealed: after the implementation of the regional blockade in the main group and in the 1st comparison group, there was a 45% decrease in the increase in NPV during labor. In the second group of comparison, the administration of HA had no effect on this indicator.

Thus, single-stage sacral anesthesia provided adequate nociceptive protection and did not cause depression of systemic hemodynamic parameters. PEA, along with effective nociceptive protection, caused hemodynamic effects in women in labor, unfavorable for the fetus, in the form of a decrease in SBP outside and during contractions, as well as a decrease in pulse pressure during contractions. Parenteral administration of NA did not allow achieving adequate stress protection in women in labor, which is manifested in an increase in the increase in systemic hemodynamic parameters during labor and in an increase in SBP outside labor.

Injuries to the birth canal received by women during childbirth, as well as childbirth completed by surgery, are one of the reasons for the development of purulent-inflammatory complications in the early postpartum period. In the study groups, a quantitative and qualitative analysis of injuries sustained by women during childbirth was carried out. The research results are shown in table. 4.

Table 4

Birth traumatism in women in labor in the study groups

Birthinjury	Main group (n=69) 100%	1 groupof comparing (n=49) 100%	2 group ofcomparing (n=32) 100%
Rupture of the cervix 1 degree	10,15% (7)	24,48% (12)	34,37% (11)
Rupture of the cervix 2 degree	4,35% (3)	10,2% (5)	9,38% (3)
Episiotomy	57,97% (40)	67,35% (33)	68,75% (22)
Operative labor	10,15% (7)	16,32% (8)	21,9% (7)
Injuryrate	0,82	1,16	1,28

Analyzing the data presented in table 4, we can conclude that the injury rate in the main group for all types of injury was lower than in other groups. The injury rate in this group was also lower than in the 1st and 2nd comparison groups. Especially important is the decrease in the number of operative deliveries in the main group, in comparison with the 1st and 2nd comparison groups by 6.18% and 11.75%, respectively.

A comparative analysis of the results of the use of regional analgesia variants revealed clinically significant advantages of simultaneous sacral anesthesia using a 0.2% bupivacaine solution and PEA compared to pudendal anesthesia in combination with AN. This was expressed in adequate nociceptive

protection of the woman in labor during the 1st stage of labor, which was assessed by the effect on the parameters of systemic hemodynamics. The advantage of sacral anesthesia is that due to the smaller number of blocked segments, it has less effect on the indicators of systemic hemodynamics, reduces birth traumatism and the number of operative deliveries performed due to the weakness of labor.

Findings

1. The optimized version of sacral anesthesia with 0.2% bupivacaine solution, providing adequate nociceptive protection, does not cause clinically significant depression of systemic hemodynamic parameters.

2. Optimized sacral anesthesia in preterm labor reduces birth traumatism and the number of operative deliveries performed due to weakness of labor.

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