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不同浓度罗哌卡因用于蛛网膜下腔阻滞在剖宫产手术中的效果分析*

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摘要 目的:探讨不同浓度罗哌卡因用于蛛网膜下腔阻滞在剖宫产手术中的效果。**方法:**选择 2015 年 7 月到 2017 年 12 月在本院进行剖宫产的初产妇 89 例作为研究对象,根据随机数字表法分为观察组 44 例与对照组 45 例,两组都给予蛛网膜下腔阻滞麻醉。观察组注入罗哌卡因 15 mg,对照组注入罗哌卡因 17.5 mg。比较两组麻醉开始前(T0)、麻醉开始后 2 min(T1)、10 min(T2)的呼吸频率(Respiration Rate, RR)和心率(Heart Rate, HR),两组的最高感觉阻滞时间、最高阻滞平面、感觉阻滞起效时间,术后 2 h、4 h 与 24 h 的 VAS 疼痛评分,产妇不良反应情况的发生情况进行新生儿评价。**结果:**所有产妇在不同时间点的呼吸频率和心率均正常波动,组间与组内对比差异均无统计学意义($P>0.05$)。两组的最高感觉阻滞时间、最高阻滞平面、感觉阻滞起效时间对比差异无统计学意义($P>0.05$)。两组术后 2 h、4 h 与 24 h 的疼痛评分比较差异无统计学意义($P>0.05$)。所有新生儿都顺利分娩,1 min 和 5 min Apgar 评分都为 9-10 分;观察组产妇的不良反应发生率为 4.5%,显著低于对照组的 27.3%($P<0.05$)。**结论:**剖宫产手术经蛛网膜下腔阻滞中应用 15 mg 罗哌卡因也能保持产妇循环功能稳定,具有良好的镇痛与阻滞效果,且安全性更高。

关键词:剖宫产;蛛网膜下腔阻滞;浓度;罗哌卡因

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Analysis of the Different Ropivacaine Concentrations Effects in Subarachnoid Block for the Cesarean Section*

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ABSTRACT Objective: To investigate the effect of different concentrations of ropivacaine for subarachnoid block in cesarean section. **Methods:** 89 cases of primiparas who underwent cesarean section in our hospital from July 2015 to December 2017 were selected as subjects. They were divided into observation group (44 cases) and control group (45 cases) according to the random number table method. Both groups of women were given anesthesia via subarachnoid block. The observation group received 15 mg of ropivacaine and the control group received 17.5 mg of ropivacaine. The respiratory rate (RR) and heart rate (HR) of the two groups of women before the start of anesthesia (T0), 2 min (T1), and 10 min (T2) after anesthesia were compared. The highest sensory block time, the highest block plane, the onset time of sensory block, the VAS pain score at 2 h, 4 h, and 24 h after surgery and maternal adverse reactions were recorded. The newborn is evaluated. **Results:** The respiratory rate and heart rate of all women at normal time fluctuated normally, and there was no significant difference between the groups and in the group ($P>0.05$). There was no significant difference in the onset time of sensory block, the highest block plane, the highest sensory block time between the two groups ($P>0.05$). There was no significant difference in pain scores between the two groups at 2 h, 4 h and 24 h after surgery ($P>0.05$). All newborns were delivered successfully. The Apgar scores were 9-10 points at 1 min and 5 min. The incidence of adverse reactions in the observation group was 4.5%, which was significantly lower than that in the control group (27.3%)($P<0.05$). **Conclusion:** 15 mg ropivacaine can also maintain stable maternal circulation during anesthesia with cesarean section. It has good analgesic and retarding effects, and its safety is higher.

Key words: Cesarean section; Subarachnoid block; Concentration; Ropivacaine

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前言

目前,临床上实施剖宫产的产妇越来越多,需要尽量提高剖宫产术前的麻醉效果,才能缩短孕妇分娩产程时间,从而保

障母婴安全^[1,2]。蛛网膜下腔阻滞是椎管内麻醉的重要组成部分,其是通过穿刺于蛛网膜下腔将局部麻醉药剂注入人体椎管内蛛网膜下腔,麻痹肌体相关部位的痛觉神经和运动神经,阻断或减弱人体脊神经的应激传导功能,达到消除或减弱肌体疼

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痛效果的麻醉方式^[3,4],具有镇痛效果好、肌松效果好、对新生儿影响小等优点^[5-7]。罗哌卡因是一种新型的酰胺类局麻药物,具有收缩内在血管活性的作用,可逆分离阻滞效果较好,能促进产妇早期恢复,且具有更低的毒副作用^[8,9,11,12]。但所有局麻药均具有潜在的神经毒性,局麻药浓度过大会增加神经毒性反应的发生几率,不利于产妇康复;浓度过小可能阻滞效果不佳^[10,11,13,14]。本研究兼顾保证罗哌卡因麻醉效果和降低不良反应发生率,选择了两个不同剂量分别应用于两组剖宫产产妇的麻醉,主要探讨与分析了剖宫产手术蛛网膜下腔阻滞中应用不同浓度罗哌卡因的效果,力求提高阻滞效果,现将结果报道如下。

1 资料与方法

表 1 两组产妇一般资料的对比

Table 1 Comparison of the general information between two groups of women

Index	Control group(n=45)	Observation group (n=44)	χ^2/t	P
Height(cm)	162.34± 2.49	162.18± 3.14	0.067	0.855
Age(Y)	25.02± 2.48	24.93± 3.11	0.133	0.683
Weight(kg)	68.39± 8.19	66.39± 6.91	0.655	0.311
Weeks of delivery(Weeks)	39.12± 1.44	39.33± 0.87	0.189	0.714
transfusion volume(mL)	1309.24± 245.20	1335.23± 398.14	0.294	0.656
operation time(min)	41.08± 5.33	40.94± 4.44	0.276	0.682

1.2 麻醉方法

麻醉方法产妇入室后开放上肢静脉通路,30 min 内静脉输注羟乙基淀粉 130/40-氯化钠注射液 500 mL。左侧卧位,予 L3-4 间隙行蛛网膜下腔穿刺,当见脑脊液流出后(此时内针刺入蛛网膜下腔),匀速注入配置好的局麻药,观察组注入 0.5% 的罗哌卡因 2.5 mL,对照组注入 0.75% 的罗哌卡因 2.5 mL,罗哌卡因都用生理盐水稀释,速率 0.1 mL/s,15 min 后开始手术。术后接镇痛泵,两组患者均在用相同的镇痛药液。

1.3 观察指标

(1)采用多功能自动监护仪对麻醉开始前(T0)、麻醉开始后 2 min(T1)、10 min(T2)的呼吸频率(Respiration Rate,RR)和心率(Heart Rate,HR)。(2)记录两组的最高感觉阻滞时间、最高阻滞平面、感觉阻滞起效时间。(3)在术后 2 h、4 h 与 24 h 采用 VAS 疼痛评分标尺评定,分数越高,疼痛越严重。(4)记录产妇不良反

1.1 研究对象

选择在本院进行剖宫产的初产妇 89 例作为研究对象,纳入标准:产妇在本院建档,择期行剖宫产手术;经过医院医学伦理委员会批准;产妇签署了知情同意书;产妇单胎妊娠,妊娠足月,年龄 20-40 岁;羊水量、羊水颜色、胎盘功能显示正常,胎儿发育正常;既往无手术史、无药物过敏史;医院伦理委员会批准了此次研究;临床资料完整。排除标准:长期服用镇静剂或抗抑郁药物产妇;严重心肝肾异常产妇;合并中枢神经系统疾病产妇;临床资料缺乏者。根据随机数字表法分为观察组 45 例与对照组 44 例,两组一般资料(手术时间、输血量、分娩周数、体重、身高、年龄)对比无显著差异($P>0.05$),具有可比性,见表 1。

应情况,不良反应是正常用法与用量下,在疾病预防、诊断和治疗中,发生的与治疗目的不相关的反应,麻醉的不良反应主要包括包括低血压、心动过缓、恶心呕吐、呼吸抑制、寒战等,同时进行新生儿评价。

1.4 统计学分析方法

用 SPSS22.00 对数据进行统计学分析,计数资料用百分比表示,组间比较采用 χ^2 检验,计量资料以均数±标准差($\bar{x} \pm s$)表示,组间比较采用 t 检验,以 $P<0.05$ 为差异具有统计学意义。

2 结果

2.1 两组不同时间点呼吸频率和心率的变化对比

所有产妇不同时间点的呼吸频率和心率均正常波动,组间与组内对比差异均无统计学意义($P>0.05$),见表 2。

表 2 两组产妇不同时间点的呼吸频率和心率变化对比(次/min, $\bar{x} \pm s$)

Table 2 Comparison of the respiratory rate and heart rate at different time points between two groups of women (time / min, $\bar{x} \pm s$)

Index	Groups	Cases(n)	T0	T1	T1/T2
HR	Observation group	45	85.98± 11.33	86.30± 12.09	79.74± 10.67
	Control group	44	87.94± 10.98	85.67± 12.91	81.03± 11.78
RR	Observation group	45	14.53± 2.78	16.11± 1.94	16.42± 1.44
	Control group	44	15.02± 1.49	15.82± 1.56	16.55± 1.50

2.2 两组术后不同时间点疼痛评分的对比

观察组术后 2 h、4 h 与 24 h 的疼痛评分与对照组相比差异均无统计学意义($P>0.05$),见表 3。

2.3 两组感觉阻滞指标的对比

两组的最高感觉阻滞时间、最高阻滞平面、最高感觉阻滞时间对比差异均无统计学意义($P>0.05$),见表 4。

表 3 两组术后不同时间点疼痛评分对比 (分, $\bar{x} \pm s$)

Table 3 Comparison of the pain scores at different time points after operation between the two groups (minutes, $\bar{x} \pm s$)

Groups	Cases(n)	At 2 h after operation	At 4 h after operation	At 24 h after operationh
Observation group	45	1.84 $\pm$ 1.09	1.69 $\pm$ 0.44	1.38 $\pm$ 0.67
Control group	44	1.92 $\pm$ 1.22	1.67 $\pm$ 0.89	1.32 $\pm$ 0.45
t		0.244	0.089	0.145
P		0.693	0.814	0.766

表 4 两组感觉阻滞指标的对比 ($\bar{x} \pm s$)

Table 4 Comparison of the sensory block indicators between the two groups ($\bar{x} \pm s$)

Groups	Cases(n)	Sensory block onset time (s)	Highest block plane	Maximum sensory arrest time (min)
observation group	45	33.78 $\pm$ 4.51	T6(T3-T8)	14.53 $\pm$ 3.19
control group	44	33.20 $\pm$ 2.95	T6(T4-T8)	14.20 $\pm$ 2.99
t		0.533	0.167	0.322
P		0.492	0.693	0.599

2.4 两组新生儿与产妇评价

所有新生儿都顺利分娩,1 min 和 5 min Apgar 评分都为 9-10 分。观察组产妇的恶心呕吐、呼吸抑制、寒战、心动过缓、低

血压等不良反应发生率为 4.5%, 显著低于对照组的 27.3% ($P<0.05$),见表 5。

表 5 两组术后不良反应的发生情况对比(n)

Table 5 Comparison of the incidence of postoperative adverse reactions between the two groups (n)

Groups	Cases(n)	Nausea and vomiting	Respiratory depression	Shiver	Bradycardia	Hypotension	Total
Observation group	45	1	1	0	0	0	2(4.5%)
Control group	44	3	3	1	2	3	12(27.3%)
χ^2							8.746
P							0.004

3 讨论

随着围产医学技术理论的不不断提高,麻醉在剖宫产的价值得到了广泛重视^[15,16]。剖宫产手术有多种麻醉方式,蛛网膜下腔阻滞操作简单,便于调节肌体麻醉平面和维持麻醉时效,可借助脑脊液的进一步扩散直接作用于脊髓、脊神经根,阻滞人体部分交感神经纤维、感觉神经,致使人体相应区域痛觉降低甚至消失^[17-19]。罗哌卡因作为一种新型的酰胺类局麻药,其具有显著的感觉运动分离、更稳定的血流动力学、更小的神经与心脏毒性等优点与特点^[20]。有研究显示鞘内高浓度局麻药和低浓度局麻药相比,前者更显著地降低了产妇的血压和增加产妇的心输出量^[20-24]。本研究显示所有产妇在不同时间点的呼吸频率和心率均正常波动,组间与组内对比都无统计学意义,表明不同浓度罗哌卡因在剖宫产手术经蛛网膜下腔阻滞中应用都有很好的安全性。

剖宫产手术的最佳镇痛效果要求麻醉平面比较高,最好维持在 T6-T8 左右。但镇痛效果不仅仅需要评估感觉阻滞平面,还需要考虑感觉阻滞情况^[25]。剖宫产手术除一般影响阻滞平面调节因素外,感觉阻滞平面还与产妇宫高、腹围有显著相关性^[26,27]。

蛛网膜下腔麻醉能够促使局部肌肉保持良好的松弛效果,能够有效避免麻药过量吸收,具有麻醉作用起效快速,麻醉效果确切等优势^[28]。本研究显示两组的最高感觉阻滞时间、最高阻滞平面、感觉阻滞起效时间对比差异无统计学意义,表明不同浓度的罗哌卡因都可以取得较好的麻醉效果,镇痛时间短、感觉阻滞持续时间短,可促进产妇康复。

剖宫产术后疼痛比较常见,产妇产内分泌失调、代谢功能变化等均可能由术后疼痛引起,进而影响产妇的康复^[29]。本研究显示观察组术后 2 h、4 h 与 24 h 的疼痛评分与对照组对比差异都无统计学意义。特别是随着近年来导管针具的应用,连续蛛网膜下腔镇痛麻醉效果更加优良,但是相关医师必须严谨麻醉药剂的用药种类、浓度与时机选择,以改善麻醉效果^[30]。

蛛网膜下腔阻滞作为其中之一的麻醉方式,曾经一度因为术后不良反应发生率较高而被认为不适合用于剖宫产手术中。相关研究表明小浓度的局麻药用于剖宫产腰麻虽然可以降低低血压的发生率,但是也可能伴随其他并发症的发生。本研究显示所有新生儿都顺利分娩,1 min 和 5 min Apgar 评分都为 9-10 分;观察组产妇发生恶心呕吐、呼吸抑制等一些列不良反应发生率显著低于对照组,表明小浓度罗哌卡因的应用能减少

不良反应的发生。不过剖宫产手术对麻醉的要求较为严格,因尽量减小或避免对胎儿的抑制影响,实施穿刺时应准确定位穿刺点,严格无菌操作,手术后应加强产妇产后镇痛护理。同时,本研究也有一定的不足,研究样本数量较少,两组产妇产后用药剂量差别不是很大,较小剂量的罗哌卡因会显著降低不良反应的发生率之外,两组感觉阻滞指标是没有显著差异的。并且麻醉的作用机制还不明确,这些将对后续进行深入研究分析提供很好的参考,以期临床上提供最佳的麻醉方法。

综上所述,剖宫产手术蛛网膜下腔阻滞中应用低浓度罗哌卡因也能保持产妇产后循环功能稳定,具有良好的镇痛与阻滞效果,且安全性更高,用于剖宫产麻醉较为理想。

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