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不同浓度罗哌卡因复合右美托咪定在肛肠疾病日间手术中的麻醉效果研究*

谢玉琼 郑俊奕[△] 蔡淑玲 李廷芳 刘美燕

(广州中医药大学第一附属医院日间手术病区 广东 广州 510405)

摘要 目的:研究不同浓度罗哌卡因复合右美托咪定在肛肠疾病日间手术中的麻醉效果。**方法:**选取 2016 年 5 月~2018 年 5 月期间于我院行肛肠疾病日间手术的患者 123 例为研究对象。根据随机数字表将患者分成 A、B、C 三组,每组各 41 例,其中 A 组麻醉时注入右美托咪定复合 0.375%罗哌卡因 20 mL,B 组麻醉时注入右美托咪定复合 0.5%罗哌卡因 20 mL,C 组注入右美托咪定复合 0.75%罗哌卡因 20 mL。比较三组患者麻醉后镇痛效果,比较三组麻醉前、麻醉 30 min 后的呼吸循环指标,比较三组患者感觉神经、运动神经阻滞情况,记录三组患者术后不良反应发生情况。**结果:**B 组、C 组镇痛优良率显著高于 A 组($P<0.05$),但 B 组、C 组镇痛优良率组间比较差异无统计学意义($P>0.05$)。三组患者麻醉前、麻醉 30 min 后心率(HR)、收缩压(SBP)、舒张压(DBP)、血氧饱和度(SPO₂)整体比较差异均无统计学意义($P>0.05$)。B 组、C 组感觉神经阻滞起效时间均较 A 组短,且 C 组短于 B 组($P<0.05$),而 B 组、C 组感觉神经阻滞持续时间均较长,且 C 组长于 B 组($P<0.05$);B 组、C 组 Bromage 评分 1 分人数均较 A 组少,且 C 组少于 B 组($P<0.05$),B 组、C 组 Bromage 评分 2 分人数均较 A 组多,但 C 组较 B 组少($P<0.05$),C 组 Bromage 评分 3 分人数较 A 组和 B 组多($P<0.05$),三组 Bromage 评分 4 分人数整体比较差异均无统计学意义($P>0.05$)。C 组患者术后不良反应总发生率高于 A 组、B 组($P<0.05$),但 A 组、B 组不良反应总发生率组间比较差异无统计学意义($P>0.05$)。**结论:**0.5%、0.75%罗哌卡因复合右美托咪定应用于肛肠疾病日间手术的镇痛效果、麻醉效果优于 0.375%罗哌卡因复合右美托咪定,但是 0.75%罗哌卡因复合右美托咪定的不良反应发生率偏高,0.5%罗哌卡因复合右美托咪定是肛肠疾病日间手术中更为合适的麻醉方案。

关键词:不同浓度;罗哌卡因;右美托咪定;肛肠疾病;麻醉效果

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Anesthetic Effect of Different Concentration of Ropivacaine Combined with Dexmedetomidine on Anorectal Diseases During Day Surgery*

XIE Yu-qiong, ZHENG Jun-yi[△], CAI Shu-ling, LI Ting-fang, LIU Mei-yan

(Department of Day Surgery Ward, The First Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, Guangdong, 510405, China)

ABSTRACT Objective: To study the anesthetic effect of different concentration of ropivacaine combined with dexmedetomidine on anorectal diseases during day surgery. **Methods:** A total of 123 patients with anorectal diseases, who underwent daytime operation in the First Affiliated Hospital of Guangzhou University of Chinese Medicine from May 2016 to May 2018, were selected and were randomly divided into group A, B and C (41 patients in each group). Group A was received dexmedetomidine with 0.375% ropivacaine 20 mL, group B, dexmedetomidine with 0.5% ropivacaine 20 mL, and group C, dexmedetomidine with 0.75% ropivacaine 20 mL. The analgesic effect after anesthesia was compared among the three groups. The respiratory and circulatory indexes before and 30 minutes after anesthesia were compared among the three groups. The blockade of sensory and motor nerves in the three groups were compared. Postoperative adverse reactions were recorded among the three groups. **Results:** The analgesia excellent and good rate of group B and group C was significantly higher than that of group A ($P<0.05$), but there was no significant difference in the analgesia excellent and good rate between group B and group C ($P>0.05$). There were no significant differences in heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP) and blood oxygen saturation (SPO₂) among the three groups before and 30 minutes after anesthesia ($P>0.05$). The onset time of sensory nerve block in group B and C was shorter than that in group A, and group C was shorter than that in group B ($P<0.05$). The duration of sensory nerve block was longer in group B and C, and the group C was longer than the group B ($P<0.05$). The number of Bromage score 1 in group B and C were less than those in group A, and group C was less than group B ($P<0.05$). The number of Bromage score 2 in group B and C were more than those in group A, but the group C was less than the group B ($P<0.05$). The number of Bromage score 3 in group C were more than those in group A and group B ($P<0.05$). There were no significant

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作者简介:谢玉琼(1969-),女,本科,从事日间手术及围手术期管理的研究,E-mail: xyqyrz@163.com

[△] 通讯作者:郑俊奕(1977-),男,硕士,主任医师,从事舒适医疗的研究,E-mail: dswzheng@163.com

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differences in the number of Bromage score 4 among the three groups ($P>0.05$). The total incidence of adverse reactions in group C was higher than that in group A and group B ($P<0.05$), but there was no significant difference in the total incidence of adverse reactions between group A and group B ($P>0.05$). **Conclusion:** 0.5% and 0.75% ropivacaine combined with dexmedetomidine are better than 0.375% ropivacaine combined with dexmedetomidine for anorectal diseases during day surgery, but the incidence of adverse reactions of 0.75% ropivacaine combined with dexmedetomidine are higher. 0.5% ropivacaine combined with dexmedetomidine is a more suitable anesthetic regimen for day operation of anorectal diseases.

Key words: Different concentration; Ropivacaine; Dexmedetomidine; Anorectal diseases; Anesthetic effect

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前言

肛肠疾病是临床的常见病及多发病,主要发生于肛门及大肠处,疾病种类较多,病因多样,常见有肛裂、肛瘘、痔疮、肛周脓肿等^[1-3]。随着人们自我保健意识的增强以及微创技术的发展,绝大部分肛肠疾病患者会采用手术方式进行治疗。日间手术是肛肠类疾病的最佳手术模式,针对病情相对较轻的患者提供当日检查、当日手术、术后适当观察即可出院的新手术模式^[4-6]。解剖生理学研究显示^[7],肛周神经较为丰富,疼痛较为敏感。合适的麻醉方式不仅可以降低神经敏感性,减轻机体疼痛,还可降低因手术刺激所带来的术后并发症发生风险,故选择合适的麻醉方式具有积极的临床意义。右美托咪定是一种高选择性的 α_2 受体激动剂,可发挥镇静、镇痛、抗交感神经等作用^[8,9]。罗哌卡因是一种新型长效的酰胺类局麻药,可发挥有效的镇痛,且其对心血管和神经毒性较低^[10,11]。既往研究表明^[12],罗哌卡因复合右美托咪定在肛肠疾病日间手术具有一定的镇静、镇痛效果。然而关于罗哌卡因的用药浓度,临床尚无统一标准。本研究通过分析不同浓度罗哌卡因复合右美托咪定在肛肠疾病日间手术中的麻醉效果,旨在为临床肛肠疾病手术麻醉方式的选择提供数据支持。

1 资料和方法

1.1 临床资料

选取2016年5月~2018年5月期间于我院行肛肠疾病日间手术的患者123例为研究对象。本研究已通过本院伦理学委员会批准进行。患者纳入标准^[13]:(1)均确诊为肛肠疾病患者;(2)均具备手术指征;(3)美国麻醉医师协会(American Association of Anesthesiologists, ASA)分级 I - II 级;(4)均由同一组医师进行手术操作;(5)患者及其家属知情本次研究并已签署知情同意书。排除标准:(1)合并凝血功能异常者;(2)穿刺部位感染者;(3)合并腰椎急性、外伤史、手术史者;(4)合并精神疾病无法配合完成本次研究者。根据随机数字表法将患者分成 A、B、C 三组,每组各 41 例,其中 A 组男 18 例,女 23 例,年龄 28~62 岁,平均 (38.46 ± 5.21) 岁;ASA 分级: I 级 21 例, II 级 20 例;疾病类型:痔疮 8 例,肛裂 11 例,肛瘘 7 例,肛周脓肿 15 例。B 组男 20 例,女 21 例,年龄 27~63 岁,平均 (37.91 ± 6.28) 岁;ASA 分级: I 级 22 例, II 级 19 例;疾病类型:痔疮 9 例,肛裂 12 例,肛瘘 7 例,肛周脓肿 13 例。C 组男 23 例,女 18 例,年龄 28~64 岁,平均 (40.25 ± 5.73) 岁;ASA 分级: I 级 23 例, II 级 18 例;疾病类型:痔疮 7 例,肛裂 12 例,肛瘘 9 例,肛

周脓肿 13 例。各组的临床资料进行对比后所得差异无统计学意义($P>0.05$),均衡可比。

1.2 麻醉方法

患者手术前均常规禁食,入室后采用迈瑞 T8 型多功能监护仪对患者心电图、脉搏、血压等进行监测,开放静脉通路,麻醉前进行肌注阿托品(湖北兴华制药有限公司,国药准字:H42020590,规格:1 mL : 0.5 mg)0.5 mg, A 组静脉注射右美托咪定(江苏恒瑞医药股份有限公司,国药准字:H20090248,规格:2 mL : 200 μ g)0.6 μ g/kg, 0.375% 罗哌卡因(AstraZeneca AB 瑞典,进口药品注册证号:H20140764,规格:10 mL : 75 mg)20 mL, B 组静脉注射右美托咪定 0.6 μ g/kg, 0.5% 罗哌卡因 20 mL, C 组静脉注射右美托咪定 0.6 μ g/kg, 0.75% 罗哌卡因 20 mL。

1.3 观察指标

(1)术后采用视觉疼痛模拟评分法(Visual analogue scale, VAS)^[14]评价三组患者镇痛效果, VAS 总分 10 分,其中 0 分为无痛, 10 分为难以忍受之痛,其中 0~3 分为优, 4~6 分为良, 7~10 分为差, 优良率 = 优率 + 良率;(2)记录三组麻醉前、麻醉 30 min 后的心率(Heart rate, HR)、收缩压(Systolic blood pressure, SBP)、舒张压(Diastolic blood pressure, DBP)、血氧饱和度(Saturation of blood oxygen, SPO₂);(3)记录三组患者感觉神经阻滞起效时间(麻醉注射结束后,患者自测肛周至完全无痛时间)、感觉神经阻滞持续时间(术毕后至伤口开始有疼痛时间段),于麻醉后 30 min 采用改良的 Bromage 评分法^[15]评价患者运动阻滞情况,其中足、膝关节运动自如(1 分),足关节能动但膝关节运动困难(2 分),足关节能动但膝关节运动障碍(3 分),足、膝关节均不能运动(4 分);(4)记录三组患者术后不良反应发生情况。

1.4 统计学方法

通过 SPSS21.0 软件处理统计数据,计数资料用率表示,实施 χ^2 检验,计量资料用 $(\bar{x} \pm s)$ 表示,两组间实施 t 检验,多组间比较选择单因素方差分析, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 三组患者镇痛效果比较

三组患者镇痛优良率整体比较差异有统计学意义($P<0.05$), B 组、C 组镇痛优良率显著高于 A 组($P<0.05$),但 B 组、C 组镇痛优良率组间比较差异无统计学意义($P>0.05$),详见表 1。

2.2 三组患者呼吸循环指标的对比

三组患者麻醉前、麻醉 30 min 后 HR、SBP、DBP、SPO₂ 整

体比较差异均无统计学意义 ($P>0.05$), 详见表 2。

表 1 三组患者镇痛效果比较[n(%)]

Table 1 Comparison of analgesic effects among three groups[n(%)]

Groups	Excellent	Good	Bad	Excellent and good rate
Group A(n=41)	15(36.59)	9(21.95)	17(41.46)	24(58.54)
Group B(n=41)	32(78.05)	7(17.07)	2(4.88)	39(95.12)*
Group C(n=41)	29(70.73)	9(21.95)	3(7.32)	38(92.68)*
χ^2			23.361	
P			0.000	

Note: Compared with group A, * $P<0.05$.

表 2 三组患者呼吸循环指标的对比($\bar{x}\pm s$)

Table 2 Comparison of respiratory and circulatory indexes among three groups($\bar{x}\pm s$)

Groups	HR(beat/min)		SBP(mmHg)		DBP(mmHg)		SPO ₂ (%)	
	Before anesthesia	30 min after anesthesia	Before anesthesia	30 min after anesthesia	Before anesthesia	30 min after anesthesia	Before anesthesia	30 min after anesthesia
Group A (n=41)	80.25± 6.19	79.83± 7.33	118.31± 14.33	117.20± 10.57	84.97± 7.31	83.89± 7.20	98.27± 11.14	97.73± 10.24
Group B (n=41)	79.92± 5.41	79.54± 6.52	117.25± 11.47	116.69± 13.63	85.22± 7.30	84.24± 10.03	98.01± 9.63	97.42± 9.62
Group C (n=41)	80.37± 5.83	79.27± 7.26	118.14± 12.35	117.18± 14.34	84.37± 8.25	83.73± 8.46	97.84± 11.20	96.27± 11.20
F	0.065	0.147	0.081	0.020	0.134	0.037	0.017	0.225
P	0.936	0.867	0.922	0.980	0.874	0.963	0.983	0.798

2.3 三组患者麻醉效果比较

B 组、C 组感觉神经阻滞起效时间均较 A 组缩短, 且 C 组短于 B 组 ($P<0.05$), 而 B 组、C 组感觉神经阻滞持续时间均较 A 组延长, 且 C 组长于 B 组 ($P<0.05$); B 组、C 组 Bromage 评分 1 分人数均较 A 组少, 且 C 组少于 B 组 ($P<0.05$), B 组、C 组

Bromage 评分 2 分人数均较 A 组多, 但 C 组较 B 组少 ($P<0.05$), C 组 Bromage 评分 3 分人数较 A 组和 B 组多 ($P<0.05$), 三组 Bromage 评分 4 分人数整体比较差异均无统计学意义 ($P>0.05$), 详见表 3。

表 3 三组患者麻醉效果比较

Table 3 Comparison of anesthetic effects among three groups

Groups	Onset time of sensory nerve block (min)	Duration of sensory nerve block(h)	Bromage[n(%)]			
			1 score	2 scores	3 scores	4 scores
Group A(n=41)	9.74± 1.53	5.31± 1.32	40(97.56)	1(2.44)	0(0.00)	0(0.00)
Group B(n=41)	7.40± 1.48*	7.43± 1.24*	10(24.39)*	23(56.10)*	4(9.76)	4(9.76)
Group C(n=41)	5.76± 1.84*#	9.20± 1.50*#	4(9.76)*#	9(21.95)*#	24(58.54)*#	4(9.76)
F/ χ^2	62.160	84.370	73.685	30.810	37.458	4.286
P	0.000	0.000	0.000	0.000	0.000	0.118

Note: Compared with group A, * $P<0.05$; compared with group B, # $P<0.05$.

2.4 三组患者术后不良反应发生情况比较

三组患者术后不良反应总发生率整体比较差异有统计学意义 ($P<0.05$), C 组患者术后不良反应总发生率高于 A 组、B 组 ($P<0.05$), 但 A 组、B 组不良反应总发生率组间比较差异无统计学意义 ($P>0.05$), 详见表 4。

3 讨论

通常而言, 肛肠疾病日间手术的核心理念就是加速术后康复, 以最小的生理干扰完成外科手术治疗, 进而减少手术创伤带来的心理负担、疼痛以及应激反应等^[16,17], 故其配备更细致的

表 4 三组患者术后不良反应发生情况比较[n(%)]

Table 4 Comparison of postoperative adverse reactions among three groups[n(%)]

Groups	Nausea	Vomit	Hypotension	Itch	Urinary retention	Anal relaxation	Total incidence rate
Group A(n=41)	1(2.44)	1(2.44)	1(2.44)	0(0.00)	1(2.44)	1(2.44)	5(12.20)
Group B(n=41)	1(2.44)	1(2.44)	2(4.88)	0(0.00)	1(2.44)	1(2.44)	6(14.63)
Group C(n=41)	2(4.88)	3(7.32)	2(4.88)	2(4.88)	4(9.76)	2(4.88)	15(36.59)*#
χ^2							8.882
P							0.012

Note: Compared with group A, * $P < 0.05$; compared with group B, # $P < 0.05$.

术前评估、更专业的手术医生和麻醉医生,以提高医疗资源的利用率。日间手术麻醉要求感觉神经阻滞起效时间短,感觉神经阻滞持续时间短,且减小对患者运动阻滞情况,以满足患者在舒适的情况可当天出院的愿望^[18,19]。右美托咪定可抑制交感活性,抑制机体应激,稳定血流动力学,镇静、镇痛效果明显,且呼吸抑制作用不甚明显,常用于临床各类手术辅助麻醉中^[20,21]。国内外已有较多研究显示^[22,23],右美托咪定可安全辅助应用于腰麻。罗哌卡因是临床常用的局麻类药物,因对中枢系统、呼吸系统以及心血管系统毒性作用低,且可将感觉-运动神经分离,现已被广泛应用于肛肠手术骶管阻滞麻醉中。已有研究证实罗哌卡因复合右美托咪定应用于肛肠疾病日间手术,可获得良好的麻醉效果^[24,25]。但关于罗哌卡因具体的浓度目前尚存在一定争议,本研究就此展开探讨。

本次研究结果显示,相比于0.375%罗哌卡因,0.5%、0.75%罗哌卡因镇痛效果更为满意,究其原因,右美托咪定主要通过作用于蓝斑、脊髓内的 α_2 受体,发挥镇痛、镇静效应^[26],联合罗哌卡因脂溶性小、作用时间长、可控性强、毒作用较低,而更高浓度罗哌卡因可在短时间内达到血药浓度,迅速发挥药效,进而提升局麻效果^[27]。0.5%、0.75%罗哌卡因镇痛效果相当的原因可能与本次研究样本量偏少有关。本研究还显示三组患者麻醉前后HR、SBP、DBP、SPO₂整体比较差异均无统计学意义,提示三种麻醉方式对患者呼吸抑制均较轻,主要是因为右美托咪定、罗哌卡因均具有维持机体血流动力学稳定,呼吸抑制作用较轻的特点,有利于日间手术的正常进行^[28]。本研究还表明,在感觉神经阻滞起效、维持方面,罗哌卡因浓度越大,其效果越佳。Dai W等人^[29]研究结果表明,罗哌卡因对臂丛神经感觉神经、运动神经的阻滞效果与药物浓度密切相关。本研究中罗哌卡因浓度越低,Bromage评分为1分的人数越多,其中0.75%罗哌卡因运动阻滞效果最强,可能与罗哌卡因浓度高,药效作用强有关,罗哌卡因运动阻滞机制主要是通过阻断钠离子流入神经纤维细胞膜内对沿神经纤维的冲动传导产生可逆性的阻滞,且呈浓度依赖性^[30]。另外,C组不良反应总发生率高于A组、B组,表明0.75%罗哌卡因术后不良反应较高,这可能与高浓度的局麻药物可增加患者疼痛感和术中应激反应有关。

综上所述,与0.375%罗哌卡因相比,0.5%、0.75%罗哌卡因复合右美托咪定应用于肛肠疾病日间手术的镇痛效果较好,起效更快,维持作用时间更长,但是0.75%罗哌卡因复合右美托咪定的不良反应发生率偏高,综合考虑,0.5%罗哌卡因复合右美托咪定应用于肛肠疾病日间手术可获得较为理想的效果。

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