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不同剂量阿芬太尼复合罗哌卡因椎管内麻醉对肛肠手术术中及术后尿潴留的影响 *

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摘要 目的：探讨不同剂量阿芬太尼复合罗哌卡因椎管内麻醉对肛肠手术术中及术后尿潴留的影响。**方法：**选取我院 2020 年 4 月到 2020 年 12 月共收治的 100 例肛肠手术患者作为研究对象，将患者随机分为 A 组、B 组和 C 组，A 组 30 例，B 组 30 例，C 组 40 例。所有患者均行阿芬太尼复合罗哌卡因椎管内腰硬联合麻醉，其中 A 组患者阿芬太尼剂量为 1 μg/kg，B 组为 5 μg/kg，C 组为 10 μg/kg，对比三组患者麻醉效果，对比三组患者麻醉前、麻醉后、手术 1 h 后的平均动脉压（MAP）、心率（HR）、心脏指数（CI）、每搏指数（SVI）和每搏变异度（SVV）变化情况，术后 1 h、术后 2 h、术后 3 h 和术后 6 h 的 VAS 评分以及术后不良反应和尿潴留发生率。**结果：**通过对比三组患者麻醉效果发现，A 组患者优良率为 80.00%，B 组患者优良率为 100.00%，C 组患者优良率为 100.00%，C 组高于 A 组和 B 组（$P<0.05$）；麻醉前三组患者的 SVV、SVI、CI、MAP、HR 对比无明显差异（$P>0.05$），麻醉后三组患者 SVV、CI 对比无明显差异（$P>0.05$），但三组患者的 SVI、MAP、HR 对比差异显著，C 组明显高于 A 组和 B 组（$P<0.05$），手术 1 h 后，三组患者的 SVV、SVI 对比无明显差异（$P>0.05$），但两者 CI、MAP、HR 对比差异显著，C 组高于于 A 组和 B 组（$P<0.05$）；通过对比三组患者术后不同时间 VAS 评分发现，三组患者术后 6 h 的 VAS 评分对比无明显差异（$P>0.05$），术后 1 h、术后 2 h、术后 3 h 三组患者 VAS 评分对比差异显著，C 组明显低于 A 组和 B 组；C 组患者嗜睡、恶心呕吐、肛门下坠感等术后不良反应对比无明显差异（$P>0.05$），C 组患者术后尿潴留发生率明显低于 B 组和 A 组，组间对比，差异具有统计学意义（$P<0.05$）。**结论：**5 μg/kg 与 10 μg/kg 阿芬太尼复合罗哌卡因椎管内麻醉对肛肠手术患者均具有非常好的麻醉效果，但是应用剂量为 10 μg/kg 阿芬太尼符合罗哌卡因能够稳定患者血流动力学指标，降低患者应激反应，而且术后具有一定的阵痛效果，安全性好，且能够减少患者术后尿储留的发生情况，值得临床应用推广。

关键词：阿芬太尼；罗哌卡因；椎管内麻醉；肛肠手术；尿潴留；应激反应

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Effect of Different Doses of Intrathecal Anesthesia with Anfentanil Eombined with Ropivacaine on Postoperative Urinary Retention in Anorectal Surgery*

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ABSTRACT Objective: To investigate the effect of different doses of intrathecal anesthesia with anfentanil combined with ropivacaine on postoperative urinary retention in anorectal surgery. **Methods:** 100 patients with anorectal surgery in our hospital from April 2020 to December 2020 were randomly divided into group A, group B and group C, 30 cases in group A, 30 cases in group B and 40 cases in group C. All patients received combined spinal epidural anesthesia with alfentanil and ropivacaine, and the dose of alfentanil in group A was 1 μG/kg, group B was 5 μG/kg, group C was 10 μG/kg, the anesthetic effect of the three groups was compared. The mean arterial pressure (MAP), heart rate (HR), heart index (CI), stroke index (SVI) and stroke variability (SVV) were compared between the three groups before anesthesia, after anesthesia and 1 h after operation. The 1 h, postoperative 2 h, postoperative 3H and postoperative 6 h score and postoperative adverse reactions and urinary retention rates were compared. **Results:** The excellent and good rate of group A was 80.00%, that of group B was 100.00%, that of group C was 100.00%, and that of group C was higher than that of group A and group B ($P<0.05$); There was no significant difference in SVV, SVI, CI, map and HR among the three groups before anesthesia ($P>0.05$), and

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there was no significant difference in SVV and CI among the three groups after anesthesia(P>0.05), but there was significant difference in SVI, map and HR among the three groups. Group C was significantly higher than group A and group B(P<0.05). There was no significant difference in SVV and SVI among the three groups one hour after operation (P>0.05), but there was no significant difference in CI, map and HR among the three groups The HR of group C was higher than that of group A and group B(P<0.05); By comparing the VAS scores of the three groups at different time after operation, it was found that there was no significant difference in the VAS scores of the three groups at 6 h after operation (P>0.05), but there was significant difference in the VAS scores of the three groups at 1 h, 2 h and 3 h after operation, and the VAS scores of group C were significantly lower than those of group A and group B; There was no significant difference in postoperative adverse reactions between patients in group C, such as drowsiness, nausea and vomiting, and anal drop sensation (P>0.05). The incidence of postoperative urinary retention in group C was significantly lower than that in group B and A, and the difference between groups was statistically significant (P>0.05). **Conclusion:** 5 μg/kg and 10 μg/kg alfentanil combined with ropivacaine intraspinal anesthesia has a very good anesthetic effect on anorectal surgery patients, but the application dose is 10 μg/kg alfentanil in line with ropivacaine can stabilize the hemodynamics of patients, reduce the stress response of patients, and has a certain pain effect after operation, good safety, and can reduce the occurrence of postoperative urinary retention, which is worthy of clinical application and promotion.

Key words: Alfentanil; Ropivacaine; Spinal anesthesia; Anorectal surgery; Urinary retention; Stress response

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前言

肛肠疾病是临床上常见的一种疾病,例如肛周感染、肛裂以及痔疮等。多数肛肠疾病病灶位置隐蔽,对患者的生活质量产生严重影响[1]。由于,肛肠疾病发生后保守治疗效果有限,因此外科手术治疗成为多数肛肠疾病患者的首选治疗方式。但是由于肛周肌肉、血管、神经分布丰富,解剖学复杂,对于外界刺激较为敏感,所以术后经常会并发尿储留等并发症[2]。因此,充分有效的麻醉能够降低肛门周围神经敏感性,减轻患者手术过程中的疼痛感与不适感,对并发症的预防起到关键作用。另外,安全有效的麻醉也对于降低患者应激反应,提高手术成功率也具有重要价值随着人们生活水平的提升,对于麻醉的要求也逐渐增多,开展安全、微创、无痛、不良反应少的麻醉成为当前麻醉学科研究的重点内容。有研究发现[3,4],应用罗哌卡因联合阿芬太尼能够提升肛肠手术患者的麻醉效果。其中,罗哌卡因是一种长效的酰胺类局部麻醉药物,应用比较低的浓度就可以进行阵痛,还能够减少患者术后行动困难等情况的出现[5]。盐酸阿芬太尼逐渐进入到人们的视野之中,这是一种新型的阿片类药物,具有明显的阵痛效果,而且不良反应低。以往研究中虽然确定了两种药物椎管内麻醉的应用效果,但是对于阿芬太尼的使用剂量还存在一定争议[6,7]。因此,为了提升肛肠疾病外科手术患者的麻醉效果,本文选取我院 2020 年 4 月到 2020 年 12 月共收治的 100 例肛肠手术患者作为研究对象,探讨不同剂量阿芬太尼复合罗哌卡因椎管内麻醉对肛肠手术术中及术后尿潴留的影响,具体报告如下。

1 资料与方法

1.1 一般资料

以 2020 年 4 月到 2020 年 12 月安徽中医药大学第三附属医院的 100 例肛肠手术患者为研究对象,将患者随机分为 A 组、B 组和 C 组,A 组 30 例,B 组 30 例,C 组 40 例。纳入标准:所有患者均符合《中国肛肠病诊疗学》中关于肛肠疾病诊断标准,且符合外科手术指征,需要择期进行手术[8];所有患者对本研究知情并签署同意书。排除标准:合并肛肠病变或恶性消化道肿瘤者;急诊手术者;严重肝肾等重要脏器功能障碍者。本研究经我院伦理委员会批准。三组患者一般资料对比无显著差异(P>0.05)。

表 1 一般资料

Table 1 General Information

Groups	n	Age (year of age)	Body Weight (kg)	Height (cm)	Disease type			
					Anal fistula	Mixed rhohemorrhoids	Perianal abscess	Rectal polyps
Group A	30	54.21± 3.21	61.21± 3.24	160.21± 15.41	4	11	6	9
Group B	30	53.27± 4.26	62.53± 4.36	156.47± 21.16	3	10	7	10
Group C	30	53.72± 3.52	61.28± 4.57	158.94± 19.52	6	12	7	17

1.2 方法

三组患者均进行硬膜外麻醉,让患者在手术床上采取左侧卧位,常规消毒之后在 L 2-3 或 L 3-4 处行硬膜外腔穿刺,将针头卸扣向上,成功之后将血液和脑脊液抽无,置管,将针管位置进行固定,并确认导管达到硬膜外墙,在导管之内推注 2%,2 mL 利多卡因(生产企业:上海禾丰制药有限公司;国药准字:H20023777)试验量,并观察患者没有全脊麻的征象之后,A 组患者采用 1%罗哌卡因(生产企业:AstraZeneca AB;国药准字

H20140763)10 mg+ 阿芬太尼(宜昌人福药业有限责任公司;国药准字 H20203056)按 $C_{21}H_{32}N_6O_3$ 计 10 mL:5 mg,在 2 分钟之内缓慢注入;B 组患者应用罗哌卡因 +5 μg/kg 阿芬太尼;C 组患者应用罗哌卡因 +10 μg/kg 阿芬太尼。三组患者均在用药之后持续卧位 5 分钟,并观察 15 分钟,确认导管处在硬膜外腔之内,直至痛觉阻滞达到胸 8~ 胸 10 椎间隙水平时停止注药。所有患者注射完毕之后,将腰麻针拔出,置入到硬膜外导管,并与硬膜外电子镇痛泵连接后,将混合麻药注入。镇痛泵的首剂量设置为 10 毫升,连续剂量设置为 10 毫升 / 小时,自控每次 8 毫升,设置时间为 20 分钟,直到手术结束后。

1.3 观察指标与麻醉效果判定标准

观察指标:手术前、中和后的平均动脉压(MAP)、心率(HR)、心脏指数(CI)、每搏指数(SVI)和每搏变异度(SVV)情况的记录与分析;采用视觉模拟量表(VAS)评价疼痛程度[9]:0(无痛)~10(最痛)表示疼痛程度,患者依据自身疼痛程度选取其中一个数字[6];术后不良反应与尿潴留发生情况记录。

麻醉效果判定标准:患者全程舒适且不存在疼痛感为优;出现轻度疼痛感,小剂量静脉药物干预后可耐受为良;患者麻醉效果较差,需更换麻醉药物。麻醉优良率 =(优人数 + 良人数)/40× 100%[10]。

1.4 统计学方法

采取统计学软件 SPSS23.0 进行分析,计数资料以(n/%)表示,进行 x^2 检验;计量资料以符合正态分布则用($\bar{x}\pm s$)表示,多组间比较采用 F 检验;以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 麻醉效果对比分析

A 组患者优良率为 80.00%,B 组患者优良率为 100.00%,C 组患者优良率为 100.00%,C 组高于 A 组和 B 组($P<0.05$),如表 2 所示。

表 2 三组患者麻醉效果对比分析(n,%)

Table 2 Comparative Analysis of Three Patients (n,%)

Groups	n	Percent of pass	Excellent	Good	Terrible
Group A	30	26(86.67%)	14(46.67%)	12(40.00%)	4(13.33%)
Group B	30	30(100.00%)	16(53.33%)	14(46.67%)	0(0)
Group C	40	40(100.00%)	28(70.00%)	12(30.00%)	0(0)
x^2		8.570	0.990	1.081	8.570
P		0.014	0.611	0.583	0.014

2.2 三组患者应激反应指标对比分析

麻醉前三组患者的 SVV、SVI、CI、MAP、HR 对比无明显差异($P>0.05$),麻醉后三组患者 SVV、CI 对比无明显差异($P>0.05$),但三组患者的 SVI、MAP、HR 对比差异显著,C 组明显高于 A 组和 B 组($P<0.05$),手术 1 h 后,三组患者的 SVV、SVI 对比无明显差异($P>0.05$),但两者 CI、MAP、HR 对比差异显著,C 组高于于 A 组和 B 组($P<0.05$),如表 3 所示。

2.3 术后 VAS 评分对比分析

三组患者术后 6 h 的 VAS 评分对比无明显差异($P>0.05$),术后 1 h、术后 2 h、术后 3 h 三组患者 VAS 评分对比差异显著,C 组明显低于 A 组和 B 组($P<0.05$),如表 4 所示。

2.4 三组患者术后不良反应及尿潴留发生率对比分析

C 组患者嗜睡、恶心呕吐、肛门下坠感等术后不良反应对比无明显差异($P>0.05$),C 组患者术后尿潴留发生率明显低于 B 组和 A 组,组间对比,差异具有统计学意义($P<0.05$),如表 5 所示。

3 讨论

盐酸阿芬太尼是一种适用于麻醉的芬太尼的类似物,能够进行短时间强效镇痛药,目前大多用于短小手术[11-13]。2019 年 5 月 1 日起,我国对芬太尼类物质实施整类列管,资料显示,此前纳入列管的 25 种芬太尼类物质中有芬太尼、舒芬太尼、瑞芬太尼、阿芬太尼四个品种为药品。目前国内已上市芬太尼、舒芬太尼和瑞芬太尼三个品种。相关研究显示[14-16],盐酸阿芬太尼主要作用于μ 阿片受体,为短效强镇痛药。对心血管系统影响小,一般不影响血压,可用于心血管外科如冠状动脉搭桥术的静脉全麻药。

本研究结果表明,通过对比三组患者麻醉效果发现,A 组患者优良率为 80.00%,B 组患者优良率为 100.00%,C 组患者优良率为 100.00%,C 组高于 A 组和 B 组($P<0.05$),由此表明:应用 10 μg/kg 阿芬太尼复合罗哌卡因椎管内麻醉能够提升肛肠手术患者的麻醉效果,与相关研究[17-19]相符。另外,还有研究发现[20-22],应用舒芬太尼联合罗哌卡因椎管内麻醉应用于无痛分娩产妇也可提升产妇的镇痛效果。麻醉前三组患者的 SVV、SVI、CI、MAP、HR 对比无明显差异($P>0.05$),麻醉后三组患者 SVV、CI 对比无明显差异($P>0.05$),但三组患者的 SVI、MAP、HR 对比差异显著,C 组明显高于 A 组和 B 组($P<0.05$),手术 1h 后,三组患者的 SVV、SVI 对比无明显差异($P>0.05$),但两者 CI、MAP、HR 对比差异显著,C 组高于于 A 组和 B 组($P<0.05$),由此证明,10 μg/kg 阿芬太尼复合罗哌卡因椎管内麻醉对患者血流动力学影响较小。本研究结果与 Mellick LB 等[23]研究相符,即:传统瑞芬太尼作为阿片类药物对患者脑血流速度的影响较大,而阿芬太尼相对较小。还有研究发现[24,25],对无痛人流术患者应用丙泊酚复合 10 μg/kg 阿芬太尼麻醉效果更好,能够稳定患者心率和血压,与本研究结果相符通过对比三组患者术后不同时间 VAS 评分发现,三组患者术后 6 h 的 VAS 评分对比无明显差异($P>0.05$),术后 1 h、术后 2 h、术后 3 h 三组患者 VAS 评分对比差异显著,C 组明显低于 A 组和 B 组,由此证明,10 μg/kg 阿芬太尼的应用能够起到一定程度术后镇痛作用。目前研究中并未将不同剂量阿芬太尼复合罗

表 3 两组患者应激反应指标对比分析($\bar{x}\pm s$)

Table 3 Comparative Analysis of Patients in Two Groups($\bar{x}\pm s$)

Groups	n	SVV(%)			SVI(mL/m²)		
		Before the anesthesia	After the anesthesia	Postoperative 1 h	Before the anesthesia	After the anesthesia	Postoperative 1 h
Group A	30	11.82± 1.64	12.63± 1.21	12.52± 1.70	43.49± 10.26	38.84± 13.67	44.53± 9.54
Group B	30	11.91± 2.25	12.42± 2.25	12.36± 2.55	43.43± 7.36	41.25± 12.56	44.68± 10.25
Group C	40	12.23± 3.21	12.29± 3.24	12.24± 5.16	43.16± 6.35	45.93± 8.78	45.53± 11.54
F	-	0.771	0.667	0.350	0.185	2.960	0.453
P	-	0.443	0.506	0.727	0.854	0.004	0.652

续表 3

Continuew Table 3

Groups	n	CI[L/(min·m²)]			MAP(mmHg)			HR(times/min)		
		Before the anesthesia	After the anesthesia	Postoperative 1 h	Before the anesthesia	After the anesthesia	Postoperative 1 h	Before the anesthesia	After the anesthesia	Postoperative 1 h
Group A	30	2.93± 0.29	2.39± 0.62	2.45± 0.46	91.45± 11.90	72.56± 6.81	74.56± 10.32	71.09± 6.25	60.84± 6.67	60.53± 4.54
Group B	30	2.95± 0.35	2.58± 0.25	2.67± 0.62	93.25± 11.25	78.36± 7.36	78.33± 12.67	70.26± 7.34	61.25± 7.25	62.56± 5.25
Group C	40	2.91± 0.32	2.62± 0.44	2.83± 0.54	94.53± 13.21	82.59± 19.52	82.53± 12.54	70.16± 6.35	64.93± 8.78	67.53± 8.54
F	-	0.134	2.315	4.19	0.543	4.706	2.484	0.19	2.516	4.909
P	-	0.875	0.104	0.018	0.583	0.011	0.025	0.827	0.014	<0.001

表 4 三组患者不同时间 VAS 评分对比分析($\bar{x}\pm s$,分)

Table 4 Comparative analysis of VAS scores at different times in three groups($\bar{x}\pm s$, points)

Groups	n	VAS score (points)			
		Postoperative 1 h	Postoperative 2 h	Postoperative 3 h	Postoperative 6 h
Group A	30	4.70± 1.19	3.51± 0.23	3.05± 0.28	2.69± 0.24
Group B	30	3.71± 0.98	2.99± 0.31	2.98± 0.12	2.64± 0.21
Group C	40	3.25± 1.24	2.65± 0.21	2.56± 0.24	2.63± 0.08
F	-	13.769	101.931	49.526	1.014
P	-	<0.001	<0.001	<0.001	0.367

表 5 后并发症发生率对比分析(n,%)

Table 5 Comparative Analysis of Complications (n,%)

Groups	n	Untoward effect			Total	Retention of urine
		Drowsiness	Nausea and vomitting	Anal descent sensation		
Group A	30	0	0	1	1(3.33%)	6(20.00%)
Group B	30	0	1	2	3(10.00%)	3(10.00%)
Group C	40	2	2	0	4(10.00%)	0(0)
x^2	-	-	-	-	1.270	8.420
P	-	-	-	-	0.530	0.015

哌卡因椎管内麻醉的应用研究,但是有研究发现,盐酸阿芬太尼属于一种新型麻醉性镇痛药物,属于芬太尼衍生物,属于短小镇痛药物的一种,该药物化学性质独特,起效时间比瑞芬太尼快 4 倍,但是作用时间比较短,但是镇痛效果比较好,由此证明阿芬太尼具有一定术后镇痛作用,与本研究结果相似[26,27]。C 组患者嗜睡、恶心呕吐、肛门下坠感等术后不良反应对比无明显差异 ($P>0.05$),C 组患者术后尿潴留发生率明显低于 B 组和 A 组,组间对比,差异具有统计学意义($P<0.05$),结果表明:

应用 10 μg/kg 阿芬太尼复合罗哌卡因能够降低肛肠手术患者术后尿潴留的发生率，且安全性好，与 Zhang K 等研究完全一致[28]。这也证明了优质的麻醉方案，能够降低尿潴留发生率。另外本研究不同麻醉方式麻醉后不良反应发生率方面差异无统计学意义（$P>0.05$），与相关研究[29,30]不同，即该研究认为应用有效的麻醉方式能够减少患者术后不良反应现象，这可能是本文与以往研究所应用的麻醉药物具有一定差异，从而对术后不良反应产生影响。

综上所述，5 μg/kg 与 10 μg/kg 阿芬太尼复合罗哌卡因椎管内麻醉对肛肠手术患者均具有非常好的麻醉效果，但是应用剂量为 10 μg/kg 阿芬太尼符合罗哌卡因能够稳定患者血流动力学指标，降低患者应激反应，而且术后具有一定的镇痛效果，安全性好，且能够减少患者术后尿储留的发生情况，值得临床应用推广。

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