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右美托咪定复合丙泊酚全麻对腰椎手术患者镇痛效果及术后恢复的影响

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摘要 目的:探讨右美托咪定复合丙泊酚全麻对腰椎手术患者镇痛效果及术后恢复的影响。**方法:**选择我院于2015年10月~2016年10月择期行腰椎全麻手术患者92例,经随机数字表法分为观察组及对照组各46例,两组麻醉诱导方案相同,于麻醉诱导前给予观察组静脉泵入右美托咪定,给予对照组静脉泵入生理盐水。术后均采用经静脉自控镇痛。记录两组患者麻醉诱导前(T0)、插管1 min(T1)、插管5 min(T2)、拔管后1 h(T3)及术毕(T4)的收缩压(SBP)、舒张压(DBP)、血氧饱和度(SPO₂)和心率(HR)。比较两组患者拔管后即刻疼痛及镇静情况。记录两组患者定向力恢复时间、苏醒时间、拔管时间以及吗啡使用剂量。统计两组患者不良反应情况。**结果:**两组患者T1时刻SBP、DBP水平较T0明显下降,对照组T3时刻SBP水平高于T0,差异有统计学意义(P<0.05);观察组T1时刻DBP、SBP水平高于对照组,T3时刻SBP水平低于对照组,差异均有统计学意义(P<0.05);T1、T2、T3、T4时刻观察组HR水平明显高于对照组,差异均有统计学意义(P<0.05);拔管后观察组视觉模拟评分(VAS)低于对照组,而Ramasy评分高于对照组,差异有统计学意义(P<0.05)。观察组吗啡使用剂量明显低于对照组,差异有统计学意义(P<0.05),两组苏醒时间、定向力恢复时间以及拔管时间差异均无统计学意义(P>0.05),两组不良反应发生率差异无统计学意义(P>0.05)。**结论:**采用右美托咪定复合丙泊酚全麻对腰椎手术患者血流动力学的影响小,镇痛、镇静效果显著,术后镇痛药物使用量减少,值得临床推广。

关键词:右美托咪定;丙泊酚;腰椎手术;镇痛

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Effect of Dexmedetomidine Combined with Propofol on Analgesia and Postoperative Recovery in Patients with Lumbar Surgery

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ABSTRACT Objective: To investigate the effect of dexmedetomidine combined with propofol on analgesia and postoperative recovery in patients with lumbar surgery. **Methods:** Selected 92 patients underwent elective lumbar anesthesia surgery in our hospital from October 2015 to October 2016. The patients were randomly divided into observation group and control group with 46 cases in each group. The two groups used the same anesthesia induction program, the observation group was given intravenous infusion of dexmedetomidine before anesthesia induction, while the control group was received intravenous infusion of saline. And the patient-controlled intravenous analgesia was given in two groups. Recorded the systolic blood pressure (SBP), diastolic blood pressure (DBP), pulse oxygen saturation (SPO₂) and heart rate (HR) in two groups at below time points: before anesthesia induction (T0), 1 min after intubation (T1), 5 min after intubation (T2), 1 h after extubation (T3) and right after the surgery completed (T4). Compared the pain and sedation status between the two groups right after extubation. Recorded the recovery time of orientation, wake-up time, extubation time, dosage of morphine and adverse reactions of two groups. **Results:** SBP and DBP levels in two groups at T1 were significantly decreased than T0, and the SBP in control group at T3 was higher than T0, the differences were statistically significant (P<0.05); The SBP and DBP levels in observation group at T1 were higher than the control group, and the SBP at T3 was lower than the control group, the differences were statistically significant (P<0.05); The HR level in observation group at T1, T2, T3, T4 were significantly higher than the control group respectively, the differences were statistically significant (P<0.05); The visual analogue scale (VAS) score in the observation group was lower than control group, and Ramasy score higher than the control group right after extubation, the differences were statistically significant (P<0.05). The dosage of morphine in the observation group was significantly lower than that in the control group, the

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difference was statistically significant ($P<0.05$), while the recovery time of orientation, wake-up time, extubation time and adverse reactions of two groups had no statistical difference ($P>0.05$). **Conclusion:** Using dexmedetomidine combined with propofol has little effect on hemodynamics in patients with lumbar surgery, analgesic and sedative effect significantly, with small dosage of postoperative analgesic drugs, which is worthy of promotion.

Key words: Dexmedetomidine; Propofol; Lumbar surgery; Analgesia

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前言

随着医疗水平的发展与进步,临床中已经可以准确的诊断出腰椎疾病,手术治疗较保守治疗能够更准确、迅速、彻底的解除患者的病痛,因此临床中很多腰椎疾病的患者采用手术治疗^[1]。腰椎手术对患者造成的创伤大、出血量多,术后患者疼痛剧烈^[2]。疼痛会引起麻醉恢复期患者一系列生理反应,对呼吸系统、免疫系统、循环系统等多个系统均有不良影响^[3],且行腰椎手术患者多为中老年人,大多合并有循环系统、呼吸系统疾病,因此采用合适的麻醉方案,在保证适宜麻醉深度的同时避免术中患者知晓,不仅可维持患者血流动力学的稳定,提高手术的安全性,减少患者的痛苦,还可促进患者术后尽早康复^[4]。右美托咪定广泛用于全麻手术,具有良好的镇痛效果,并且对呼吸抑制作用小^[5]。我院采用右美托咪定复合丙泊酚的方案用于腰椎手术患者的麻醉,观察对镇痛效果以及对患者术后恢复的影响,旨在为临床提供参考。

1 资料与方法

1.1 一般资料

选择我院于2015年10月~2016年10月择期行全麻腰椎手术患者92例。纳入标准:诊断明确,无手术禁忌者;美国麻醉师协会(ASA)分级为I~II级^[6];年龄35~65岁;体质指数(BMI)18~30 kg/m²;术前检查肝肾功能、血常规及凝血功能均无异常。排除标准:心、肝、肾等脏器严重功能不全者;存在既往脑血管疾病史者;术前服用过 β 受体阻滞剂者;并发恶性肿瘤疾病者。经随机数字表法分为观察组及对照组各46例,观察组男24例,女22例;年龄为38~64岁,平均为(49.81 $\pm$ 7.32)岁;ASA分级I级24例,II级22例。对照组男22例,女24例,年龄为35~65岁,平均为(50.14 $\pm$ 7.64)岁;ASA分级I级22例,II级24例。两组一般资料比较差异无统计学意义($P>0.05$)。患者均知情同意本次研究且签署《知情同意书》,本次研究经医院伦理委员会批准。

1.2 麻醉方法

进入手术室后常规监测患者平均动脉压(MAP)、心率(HR)、血氧饱和度(SPO₂),建立静脉通路,输注乳酸钠林格液10 mL/kg,吸氧3 min后实施麻醉诱导,两组麻醉诱导方案相同:药物浓度及剂量根据患者性别、年龄及BMI用药,舒芬太尼(宜昌人福药业有限责任公司,国药准字H20054172,规格2 mL:100 μ g)0.2~0.4 ng/mL,维库溴铵0.6 mg/kg,丙泊酚(Fresenius Kabi AB,国药准字J20080023)2~3 μ g/mL,咪达唑仑(江苏恩华药业股份有限公司,国药准字H10980025,规格1 mL:5 mg)0.03 mg/kg,维库溴铵(成都天台山制药有限公司,国药准

字H20063411,规格4 mg)0.6 mg/kg辅助气管插管。靶控输注舒芬太尼及丙泊酚,3 min后观察患者是否有意识,若有意识则2 min上调一次丙泊酚靶控浓度直至意识消失,每次调整幅度1 μ g/mL。意识消失后给予患者维库溴铵静脉注射,行气管插管后接呼吸机行机械通气。潮气量设置为8~10 mL/kg,呼吸频率设置在12~15次/min。于麻醉诱导前给予观察组静脉泵入右美托咪定(江苏恒瑞医药股份有限公司,国药准字H20090248,规格2 mL:200 μ g)0.5 μ g/kg,持续时间为10 min,之后以0.3 μ g/kg $\cdot$ h维持,术毕前30 min停止输注。于麻醉诱导前给予对照组静脉泵入生理盐水25 mL,并以等量生理盐水维持。麻醉维持舒芬太尼:0.15~0.25 μ g/(kg $\cdot$ h)持续泵注,观察患者血流动力学监测指标,维持丙泊酚靶控浓度2~3 μ g/mL,术毕停用舒芬太尼及丙泊酚,两组患者均间断注射顺阿曲库铵0.03 mg/kg。均采用经静脉自控镇痛(patient controlled intravenous analgesia, PCIA)的方式,患者清醒后接镇痛泵,PCIA配方均为:吗啡0.5 g/L,速度为1 mL/h,PCIA 2 mL,锁定时间8 min。

1.3 观察指标

监测并记录两组患者麻醉诱导前(T0)、插管1 min(T1)、插管5 min(T2)、拔管后1 h(T3)及术毕(T4)的收缩压(SBP)、舒张压(DBP)、SPO₂和HR。比较两组患者拔管后即刻疼痛及镇静情况,镇静程度评分采用Ramasy评分^[7],疼痛程度经视觉模拟量表^[8](Visual analog scale, VAS)评价。记录两组患者定向力恢复时间、苏醒时间(手术完成后至患者睁眼的时间)、拔管时间(手术完成后至拔管的时间)以及吗啡使用剂量。统计两组患者不良反应情况。Ramasy评分评价标准:分数越高表示镇静等级越高,1分表示烦躁,2分表示安静,3分表示有嗜睡表现但能听清楚指令,4分表示睡眠状态能唤醒,5分表示多次呼喊后才醒,6分表示深度睡眠,无法唤醒。VAS评分评价标准:分数为0~10分,分数越高表示疼痛程度越高,0分表示完全不痛,1~3分表示轻微疼痛,4~7分表示患者有明显的疼痛,但尚可耐受,8~10分表示重度疼痛,患者难以忍受。

1.4 统计学处理

经SPSS20.0统计学软件行相关数据处理,计数资料由n(%)表示,数据比较经卡方 χ^2 检验,计量资料由($\bar{x}\pm s$)表示,两组比较经t检验, $P<0.05$ 表示差异有统计学意义。

2 结果

2.1 两组患者血流动力学指标比较

两组患者T1时刻SBP、DBP水平较T0明显下降,对照组T3时刻SBP水平高于T0,差异有统计学意义($P<0.05$);观察组T1时刻DBP、SBP水平高于对照组,T3时刻SBP低于对照组,差异均有统计学意义($P<0.05$);T1、T2、T3、T4时刻观察组

HR 水平显著高于对照组,差异均有统计学意义($P<0.05$),两组 T0、T1、T2、T3、T4 时刻 SpO_2 差异均无统计学意义($P>0.05$)。

表 1 两组患者血流动力学指标比较
Table 1 Comparison of hemodynamic indexes between the two groups

Groups	Indexes	T0	T1	T2	T3	T4
Observation group	HR(times/min)	72.57± 7.56	62.34± 8.24*	66.74± 8.54*	67.52± 9.32*	65.32± 11.12*
Control group		71.45± 7.44	55.34± 9.14#	54.32± 9.23#	55.42± 10.12#	56.64± 9.35#
Observation group	SBP(mmHg)	122.35± 17.42	109.84± 14.55#*	114.43± 16.63	124.43± 14.29*	128.55± 17.47
Control group		124.53± 16.23	97.73± 13.23#	121.34± 18.46	137.52± 16.37#	133.45± 18.44
Observation group	DBP(mmHg)	74.35± 8.34	68.46± 7.43**	75.54± 7.83	75.24± 10.43	82.77± 10.63
Control group		75.53± 8.53	60.66± 7.62#	77.64± 8.55	77.15± 11.56	86.63± 11.33
Observation group	SpO_2 (%)	97.83± 1.62	99.25± 0.64	99.74± 0.83	99.25± 0.74	99.32± 1.46
Control group		98.04± 1.64	99.12± 0.57	99.64± 0.74	99.32± 0.67	99.35± 1.63

Note: Compared with T0, * $P<0.05$; compared with the control group, # $P<0.05$.

2.2 两组镇静及镇痛效果比较

拔管后观察组 VAS 评分为(3.23± 0.76)分,明显低于对照组的(4.19± 0.84)分,差异有统计学意义($t=5.747, P=0.000$);拔管后观察组 Ramsay 评分为(3.42± 0.81)分,明显高于对照组的(2.13± 0.79)分,差异有统计学意义($t=7.732, P=0.000$)。

2.3 两组术后恢复相关指标比较

观察组的吗啡使用剂量低于对照组,差异有统计学意义($P<0.05$);两组苏醒时间、定向力恢复时间以及拔管时间差异均无统计学意义($P>0.05$)。见表 2。

表 2 两组术后恢复相关指标比较
Table 2 Comparison of postoperative recovery indicators in the two groups

Groups	n	Recovery time of orientation(min)	Wake-up time(min)	Extubation time(min)	Dosage of morphine(mg)
Observation group	46	18.54± 4.54	14.83± 3.46	16.04± 4.24	22.43± 4.62
Control group	46	17.83± 5.13	14.36± 2.94	15.93± 3.68	26.78± 5.12
t		0.703	0.702	0.132	4.278
P		0.483	0.484	0.894	0.000

2.4 两组患者不良反应情况比较

观察组寒战 1 例,心动过缓 1 例,不良反应发生率为 4.35%(2/46),对照组恶心 1 例,呕吐 2 例,不良反应发生率为 6.52%(3/46)。两组不良反应发生率差异无统计学意义($\chi^2=0.212, P=0.646$)。

3 讨论

腰椎手术是骨科手术中创伤较大的手术,并且手术存在一定的风险。如何对腰椎手术患者实施安全有效的麻醉,对其手术的安全及术后的康复均有重要意义^[9]。手术所造成的创伤及手术中的牵拉均会使人体出现应激反应,引起 DBP、SBP 及 HR 的变化,不利于血流动力学的稳定,甚至可能导致心血管事件的发生^[10]。临床中在行外科手术时,当最大限度降低患者的应激反应,减少麻醉药物的使用量,避免手术和麻醉的刺激导致心脑血管疾病^[11]。目前临床中常用到的镇痛药物存在诸多不足,如阿片类药物则易导致患者术后痛觉过敏,氯胺酮对人体的中枢神经具有一定的副作用^[12,13]。右美托咪啶是 α_2 肾上腺素受体激动剂,可作用于中枢和外周神经系统 α_2 受体,减少肾上腺素的分泌,抑制神经元放电,缓解交感神经张力,从而达到镇痛、镇静的效果^[14]。右美托咪啶在我国的临床应用时间不

长,国外报道显示,右美托咪啶用于胃癌、肺癌、颅损伤等疾病均有较显著的镇静效果^[15-17]。

本次研究我院采用右美托咪啶复合丙泊酚全麻的方案用于腰椎手术患者的麻醉,结果显示,两组患者 T1 时刻 SBP、DBP 水平较 T0 明显下降,观察组 T1 时刻 DBP、SBP 水平高于对照组,T3 时刻 SBP 低于对照组,T1、T2、T3、T4 时刻观察组 HR 水平明显高于对照组($P<0.05$)。以上结果表明,采用右美托咪啶复合丙泊酚的方案对患者血流动力学的影响更小。HR、SBP、DBP 是临床研究中常用的血流动力学指标,本次研究中两组患者血流动力学指标均有一定程度下降,可能与丙泊酚对循环系统的抑制作用有关。文献研究表明,右美托咪啶具有抑制中枢性抗交感作用,同时可增强迷走神经活性,可抵消一部分由于丙泊酚所引起的血管扩张作用,缓解气管插管时导致的血流动力学改变^[18]。本次研究中两组 SpO_2 水平差异无统计学意义($P>0.05$),表明右美托咪啶对人体呼吸功能影响较小,这与之前的报道相似。拔管后观察组 VAS 评分低于对照组,Ramsay 评分高于对照组(均 $P<0.05$),提示右美托咪啶复合丙泊酚的方案在镇痛、镇静作用方面效果更佳。丙泊酚可抑制脑内突触前膜释放谷氨酸,通过降低其浓度抑制 N-甲基-D-天冬氨酸受体,减弱兴奋性突触后电位。文献证实,右美托咪啶与丙

泊酚的药理机制不同,两种药物的镇静效果有叠加作用^[9]。观察组吗啡使用剂量明显低于对照组($P<0.05$),以上结果表明,采用右美托咪定复合丙泊酚的方案可减少吗啡使用剂量,吗啡因其便于控制、价格便宜等优点成为临床中广泛应用的镇痛药物,但大量使用也会导致患者出现呼吸抑制、恶心、呕吐等不良反应。有文献报道认为右美托咪定可减少术后镇痛药物的使用剂量^[20]。本次研究中均未见严重的不良反应,临床中右美托咪定较为常见的不良反应如心动过速,心动过缓、低血压等均与右美托咪定负荷量注射速率及使用剂量相关,因此药物浓度及剂量根据患者性别、年龄及 BMI 用药,而靶控输注则是根据药代运转的特点,将药物浓度维持在恒定的水平,保证适宜的麻醉深度。

综上所述,采用右美托咪定复合丙泊酚全麻对腰椎手术患者的麻醉,对患者血流动力学的影响小,镇痛、镇静效果显著术后镇痛药物使用量减少,值得推广。

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