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利多卡因减轻老年高血压病人 ERCP 手术中的心血管应激 *

谢宇颖¹ 汤 泓² 王 勇³ 王 颖¹ 岳子勇⁴ 戚思华¹ 隋 红⁵

(1 哈尔滨医科大学第四临床医学院 黑龙江 哈尔滨 150001; 2 黑龙江省医院 黑龙江 哈尔滨 150030; 3 哈尔滨市第七医院 黑龙江 哈尔滨 150050; 4 哈尔滨医科大学第二临床医学院 黑龙江 哈尔滨 150081; 5 哈尔滨医科大学 黑龙江 哈尔滨 150081)

摘要 目的:观察静脉给予利多卡因在 ERCP 手术中对老年高血压患者心血管应激反应的影响,观察该方法对静脉麻醉药丙泊酚用量的影响。**方法:**选择 80 例行 ERCP 手术的老年高血压患者,随机分为 A 组和 B 组。A 组患者先给予 1 $\mu\text{g}/\text{kg}$ 的芬太尼随后再以 2~3 mg/sec 的速度注入丙泊酚;B 组患者先给予 1.5 mg/kg 利多卡因随后再以 2~3 mg/sec 的速度注入丙泊酚。待患者达到 Ramsay 5 级时开始进行 ERCP 检查。记录诱导前、诱导后、进镜、术中、退镜及苏醒时的血压、心率、呼吸频率及脉搏氧饱和度,并记录术中丙泊酚维持剂量及不良反应,包括呼吸暂停、呛咳、呃逆、体动的发生率。**结果:**两组患者基本情况无统计学差异。A 组、B 组患者在诱导后收缩压和舒张压明显低于诱导前。A 组收缩压和舒张压在诱导后、进镜、术中、退镜时显著低于 B 组;A 组呼吸频率在诱导后低于 B 组。B 组不良反应发生率显著低于 A 组。B 组丙泊酚用量明显少于 A 组($P<0.05$)。B 组苏醒时间短于 A 组。**结论:**利多卡因复合丙泊酚应用于老年患者,麻醉效果好、血流动力学稳定,术中丙泊酚用量少,术后苏醒迅速值得在临床推广。

关键词:利多卡因;丙泊酚;老年;高血压

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Effects of Lidocaine on Cardiovascular Responses of Endoscopic Retrograde Cholangio Pancreatography in Elderly patients with Hypertension*

XIE Yu-ying¹, TANG Hong², WANG Yong³, WANG Ying¹, YUE Zi-yong⁴, QI Si-hua¹, SUI Hong⁵

(1 The fourth Affiliated Hospital, Harbin Medical University, Harbin, Heilongjiang, 150001, China; 2 Heilongjiang Provincial Hospital, Harbin, Heilongjiang, 150030, China; 3 Seventh Hospital in Harbin, Harbin, Heilongjiang, 150050, China; 4 The Second Affiliated Hospital, Harbin Medical University, Harbin, Heilongjiang, 150081, China; 5 Harbin Medical University, Harbin, Heilongjiang, 150081, China)

ABSTRACT Objective: In the present study, effects of lidocaine on cardiovascular responses were observed in elderly hypertension patients during endoscopic retrograde cholangio pancreatography. **Methods:** Eighty patients scheduled for were randomly scheduled for endoscopic retrograde cholangio pancreatography were randomly divided into group A and B. All patients were given fentanyl 1 $\mu\text{g}/\text{kg}$ and propofol 2~3 mg/sec intravenously in Group A. All patients were given lidocaine 1.0 mg/kg and propofol 2~3 mg/sec intravenously in Group B. When RSS was reached 5 degrees, endoscopy intubation were performed. SBP, DBP, HR, SpO_2 and bispectral index(BIS) were recorded before and after anesthesia induction, start-endoscopy, intra-operation, finish-endoscopy, and revival. Complications and propofol in intraoperation were also investigated. **Results:** There were no significant differences in the basic statements between group A and B. SBP and DBP decreased significantly after induction in both groups compared with the baseline value ($P<0.05$). SBP and DBP in Group A were decreased significantly after anesthesia induction, start-endoscopy, intra-operation and finish-endoscopy than Group B. Total dose of propofol are lower in group B compared with group A ($P<0.05$). **Conclusions:** We conclude that the i.v. administration of lidocaine attenuates the hemodynamic instability and total dose of propofol and, it does not increase side effects in endoscopic retrograde cholangio pancreatography procedure in elderly patients with hypertension.

Key words: Lidocaine; Propofol; Cardiovascular responses; Agedness; Hypertention

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前言

内镜逆行胰胆管造影术(endoscopic retrograde cholangio pancreatography, ERCP)已成为胰胆管疾病重要的诊断和治疗

方法,在 ERCP 下可进行十二指肠乳头括约肌切开、胆道取石、胆管引流术等治疗,使得患者避免开腹手术,减少创伤^[1]。但在操作过程中,患者多有焦虑、恶心、呕吐、腹痛及躁动等不适,甚至可引起严重的心血管系统并发症^[2]。行 ERCP 检查的患者多

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作者简介:谢宇颖(1975-),女,硕士研究生,主治医师,主要研究方向:静脉麻醉药脏器保护;电话:15245066070;

E-mail: xyy85805066@126.com

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为老年人,常合并高血压病。老年高血压患者多数为单纯收缩期高血压,常伴有植物神经系统、内分泌-代谢系统、血管动脉硬化性病^[3-5]。这些基础病变使得患者对手术不良刺激引发的应激反应明显强于非高血压病患者,故对进行 ERCP 检查的老年高血压病患者,根据其病理生理特点,选择适当的麻醉药物至关重要。本文拟对老年高血压病患者进行观察,比较利多卡因符合静脉麻醉药与传统的阿片类药物符合静脉麻醉药在 ERCP 手术中对应激反应的影响。以期为此类手术探寻一种安全可行的麻醉方法,为临床麻醉提供理论依据。

1 资料与方法

1.1 实验对象

经哈尔滨医科大学附属四院伦理委员会批准,选择 80 例行 ERCP 手术,且高血压病史超过 2 年,未进行系统抗高血压治疗 ASA II~III 级病人,其中男 41 例,女 39 例,年龄 60~85 岁,体重 50~80kg。签署知情同意书,进行实验。

1.2 实验分组

入选患者随机分为 A 组和 B 组,A 组为芬太尼 + 丙泊酚组,B 组为利多卡因 + 丙泊酚组,每组 40 例。

1.3 麻醉方法

所有病人术前禁食、禁饮 8 h,术前 20 min 均常规肌注山莨菪碱 10 mg,入室均常规右上肢远端建立外周静脉通路,鼻导管吸氧,流量 3~5 L/min。用 Mandray BeneView T8 监护仪持续监测心电图(ECG)、收缩压(SBP)、舒张压(DBP)、心率(HR)、呼吸频率(RR)、脉搏血氧饱和度(SpO₂),取左侧卧位于

检查台上,咬住口圈,静卧 5 min 后开始麻醉(由专人注药)。2 组给药方法:A 组 1 ug/kg 的芬太尼 5 s 内注入外周静脉,随后再以 2~3 mg/s 的速度注入丙泊酚;B 组将利多卡因 1.5 mg/kg 在 40 s 内注入,随后再以 2~3 mg/s 的速度注入丙泊酚,待达到 Ramasy 5 级(由专人评定)时开始进镜。

1.4 观察指标

连续监测并记录受检者诱导前(T0)、诱导后(T1)、进镜(T2)、术中(T3)、退镜(T4)及苏醒(T5)个时间点的 SBP、DBP、RR、HR、SpO₂、苏醒时间,并记录术中丙泊酚维持剂量及不良反应,包括呼吸暂停、呛咳、呃逆、体动的发生率。

1.5 统计分析

计量资料均以均数±标准差($\bar{x} \pm s$)描述,全部数据采用 SPSS17.0 软件进行统计分析。组间比较采用单因素方差分析,组内比较采用重复测量方差分析;率的比较采用 χ^2 检验, $P < 0.05$ 为差异有统计学意义。

2 结果

所有患者均能顺利完成 ERCP 手术操作,2 组患者年龄、性别、身高、体重等一般情况无统计学差异,见表 1。A 组、B 组患者在诱导后收缩压明显低于诱导前。组间比较:A 组收缩压和舒张压在诱导后、进镜、术中、退镜时显著低于 B 组;A 组呼吸频率在诱导后低于 B 组,见表 2。B 组不良反应发生率显著低于 A 组,见表 3。B 组丙泊酚总量(6.1 ± 0.6) mg/kg,明显少于 A 组的(4.8 ± 0.4) mg/kg ($P < 0.05$)。B 组的苏醒时间(9.1 ± 1.2) min 短于 A 组的苏醒时间(11.1 ± 1.1) min ($P < 0.05$)。

表 1 两组患者基本情况(n=40, $\bar{x} \pm s$)

Table 1 Basic situation of the patients

Group	Sex ratio(male/female)	Age(y)	Height(cm)	Weight(kg)
Group A	19/21	72± 6	172.45± 8.87	75.26± 8.63
Group B	20/20	70± 9	175.45± 6.19	74.18± 9.32

表 2 两组患者各时点 SBP、DBP、HR、RR、SPO₂ 比较

Table 2 The blood pressure, heart rate, respiratory rate and oxygen saturation of blood at different time points

Group	Time-point	SBP(mmHg)	DBP(mmHg)	HR(bpm)	RR(bpm)	SpO ₂ (%)
Group A	T0	170.3± 8.9	113.7± 10.3	75± 8	17± 2	98± 4
	T1	131.2± 9.2 [#]	86.7± 8.9 [#]	74± 9	12± 2 [#]	93± 6
	T2	130.2± 9.4	91.6± 9.1	73± 10	16± 2	94± 5
	T3	133.2± 10.1	85.5± 10.5	75± 9	15± 2	95± 5
	T4	135.2± 8.4	90.7± 9.2	74± 9	16± 2	96± 4
	T5	151.2± 10.7	106.7± 11.2	76± 8	17± 2	97± 3
Group B	T0	171.7± 3.3	113.7± 10.3	76± 9	16± 2	98± 2
	T1	150.5± 7.6 ^{##}	105.2± 9.4 ^{##}	75± 10	15± 3 [*]	94± 6
	T2	152.1± 9.3 [*]	103.7± 8.8 [*]	74± 10	16± 2	94± 5
	T3	147.9± 9.7 [*]	99.5± 10.8 [*]	73± 11	15± 2	95± 5
	T4	150.5± 8.7 [*]	101.8± 8.8 [*]	74± 11	16± 2	96± 4
	T5	155.5± 10.7	98.4± 10.8	75± 10	17± 2	98± 2

Note : * $P < 0.05$ A group compared with B group; # $P < 0.05$ T1 compared with T2.

表 3 两组患者不良反应发生率比较例(%)

Table 3 The Incidence of Adverse Reaction

Group	Adverse reaction		
	-+	Apnea	Hiccup or bucking
Group A	9(22.5)	4(10.0)	5(12.5)
Group B	3(7.5)*	1(2.5)*	4(10.0)

Note: *P<0.05 A group compared with B group

3 讨论

老年高血压病人是一个特殊人群,在手术麻醉过程中极易发生心脑血管意外^[6], ERCP 检查患者,多半为老年人,且体质较差常合并有呼吸循环系统慢性疾病。本研究选择行 ERCP 检查的老年患者为研究对象,通过将传统的芬太尼-丙泊酚配伍与利多卡因-丙泊酚配伍进行比较,结果显示,在达到相同镇静程度条件下,利多卡因-丙泊酚配伍 SBP 和 DBP 的下降幅度减小,呼吸抑制减轻,既不延长苏醒时间,也无术中知晓和恶心呕吐的发生;而 1.5mg/kg 的利多卡因可显著降低丙泊酚总药量,可显著降低中枢神经毒性反应发生率。

ERCP 检查可产生较强的应激刺激,会导致机体生理功能、代谢、情绪及心理改变^[7],对老年高血压病人不利,而在监测麻醉下通过药物达到抗焦虑、镇静、镇痛及遗忘作用可有效的减少应激反应^[8]。循环系统功能状态的改变可直接体现应激的水平。有研究显示,在监测麻醉下实施 ERCP 手术的病人均未出现过度应激导致的血压升高并顺利完成检查^[9]。在反应血液动力学改变的无创监测指标中,MAP 是反映脏器灌注最重要的指标,且年龄大于 50 岁者的器官灌注对 SBP 的依赖性增加,同时由于压力感受器敏感性下降及血管顺应性降低^[10],导致高血压病人常伴有较严重的组织器官灌注不良,再加上同时存在的血压调定点上移和自身调节能力受损,故未经系统治疗的老年高血压病人应避免血压在短时间内剧烈波动,以防发生危及生命的心脑血管并发症。血液动力学的稳定主要体现在 SBP 和 DBP 的变化幅度减小,这对重要脏器的灌注极具意义。但是,麻醉本身也是老年高血压病人心脑血管并发症的风险因素之一,ERCP 检查术常需要较深度镇静(Ramsay5~6 级)以抑制咽喉反射,但同时也抑制呼吸和循环,加重高血压病人原已存在的组织低灌注和缺氧,同样增加潜在心脑血管并发症风险。一般来说,老年高血压病人围麻醉期血压波动允许的生理范围为基础血压的 20%,才有可能保证各重要器官和组织灌注良好以及心肌供氧与需氧之间的平衡。因此,适度的镇静是安全的保障既要保证满意的麻醉效果,又得维持呼吸及血流动力学稳定^[11]。

丙泊酚由于效果确切是临床上最常用的静脉麻醉药^[12]。在临床上经常将丙泊酚与阿片类药物芬太尼配伍应用于 ERCP 手术病人的麻醉^[13]。但这两种药物配伍应用的不足之处是对呼吸和循环系统的抑制。老年高血压患者心血管有一定程度的减退,麻醉药物对循环系统的抑制作用表现的更为明显。而且,丙泊酚达到镇静效果和达到麻醉效果所需的剂量非常接近^[14],有研究表明,丙泊酚的确存在一个发生呼吸和循环明显抑制的阈

血浆浓度;老年人单独应用异丙酚的安全剂量为 1.2mg/kg 以下,并且老年人丙泊酚有效安全剂量范围因清除率下降而进一步缩小,极易导致与注药剂量和速度相关的呼吸和循环系统抑制作用^[15,16],本研究结果显示 A 组全部病例达到 Ramsay5~6 级时均伴随 SBP 和 DBP 的大幅下降,超过老年高血压病人的血压波动可耐受程度,因此,单靠调整丙泊酚的剂量和输注速度不能完全解决舒适与安全的矛盾。

利多卡因既是酰胺类麻醉药又属 Ib 类抗心律失常药,主要通过阻断 Na⁺ 通道降低兴奋性而兼具有中枢神经系统(CNS)和心血管系统(CVS)双重作用^[17-20]。同芬太尼一样,也能增强丙泊酚麻醉效能^[21]。Wyman 等的大样本回顾性分析显示,预防性使用利多卡因可显著降低急性心肌梗患者原发性室颤的发生率和病死率,同时不诱发窦房阻滞、房室传导阻滞或心脏停搏^[22];2006 年 ACC/AHA/ESC 联合发布的室性心律失常治疗和心脏性猝死预防指南建议在心肌缺血的病人中应用利多卡因,而老年高血压病人的心脑血管均存在不同程度的灌注不良;除缓解局部注射痛之外,有大量研究显示 1~1.5 mg/kg 利多卡因可预防气管插管和拔管时的心血管反应及插管不良反应^[23,24],但还未有临床资料显示将利多卡因作为静脉复合麻醉的成分之一应用于老年高血压病人 ERCP 术中。本研究结果显示 B 组血压下降幅度明显小于 A 组,所以老年高血压病人在利多卡因复合丙泊酚麻醉下 ERCP 检查,麻醉效果满意,循环、呼吸平稳。在本研究中,两组患者 Ramsay 分级和 BIS 的动态变化差异无统计学意义,但 B 组所需丙泊酚剂量却显著减少,这与 Sloan 等研究结果相同,显示利多卡因的中枢抑制作用加强了丙泊酚的镇静作用^[25]。

综上所述,利多卡因复合丙泊酚应用于老年患者术中麻醉效果好,呼吸平稳血流动力学稳定且可控性强,术中不良反应发生率低能明显减少术中单位时间丙泊酚用量且术后能迅速苏醒是安全有效的麻醉方法值得在临床推广。

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