

doi: 10.13241/j.cnki.pmb.2017.01.023

不同镇静深度静吸复合麻醉对老年腹腔镜腹部手术患者术后认知功能的影响比较*

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摘要 目的:比较不同镇静深度静吸复合麻醉对老年腹腔镜腹部手术患者术后认知功能的影响。**方法:**选择我院 2014 年 3 月-2015 年 3 月 90 例拟择期行腹部手术的老年患者随机分为 A、B、C 三组,每组 30 例,采用不同深度静吸复合麻醉,根据 BIS 指数调节七氟醚浓度和瑞芬太尼输注速率,其中 A 组维持 BIS 值水平 51-60, B 组维持 BIS 值水平 41-50, C 组维持 BIS 值水平 31-40,于术前 1 d 和术后 1 d 对患者认知功能进行测评。**结果:**各组术前 1 d A 组 TMT 完成时间和 MMSE 评分比较差异无显著性($P>0.05$)。A 组术后 24 h 认知功能下降发生率为 30.0%, B 组术后 24 h 认知功能下降发生率为 23.33%, C 组认知功能下降发生率为 16.67%, C 组与 A 组比较差异具有显著性($P<0.05$)。C 组 TMT 完成时间和 MMSE 评分差值均低于 A 组 B 组,但各组内和组间比较差异无显著性($P>0.05$)。**结论:**深度麻醉对老年腹腔镜腹部手术患者早期术后认知功能影响较小。

关键词:镇静深度;静吸复合麻醉;老年人;腹腔镜手术;认知功能

中图分类号:R614;R657.4 **文献标识码:**A **文章编号:**1673-6273(2017)01-93-03

Comparison of Cognitive Function of Elderly Patients with Laparoscopic Abdominal Surgery with Different Depths of Sedation*

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ABSTRACT Objective: To compare the effect of different sedation depth of intravenous anesthesia on postoperative cognitive function in elderly patients undergoing laparoscopic abdominal surgery. **Methods:** 90 elderly patients would undergo abdominal surgery from March 2014 to March 2015 were chosen and randomly divided into three groups (A, B, C, 30 cases in each group by different depth combined intravenous and inhalation anesthesia). The concentration of sevoflurane and remifentanyl infusion rate was adjusted according to the BIS index, with group A maintains the BIS value levels 51-60, group B maintains the BIS value 41-50 and group C maintains the BIS value 31-40. In preoperative and day 1 after operation 1D on The cognitive function of patients was evaluated 1d before surgery and 1 d after the surgery. **Results:** There was no significant difference between the TMT completion time and MMSE score in group A 1d before anesthetization ($P>0.05$). The incidence rate of decline of postoperative 24h cognitive function of group A was 30.0%, and for group B and C, the rate was 23.33% and 16.67%, respectively. The difference between the group C and the group A was significant ($P<0.05$). The TMT completion time and MMSE score in C group were both lower than that in group A and B, but there was no significant difference in or among the groups ($P>0.05$). **Conclusion:** Deep anesthesia has little influence on the cognitive function of elderly patients with laparoscopic abdominal surgery in early stage.

Key words: Sedation depth; Combined anesthesia; Elderly people; Laparoscopic surgery; Cognitive function

Chinese Library Classification(CLC): R614; R657.4 **Document code:** A

Article ID: 1673-6273(2017)01-93-03

前言

术后认知功能障碍 (Postoperative cognitive dysfunction, POCD) 是老年手术患者术后常见的并发症^[1,2], 发生率高达 26%-83%。至今为止发病机制尚不明确, POCD 的发生不仅会延迟康复, 增加医疗费用, 严重的还会影响患者出院后的生存质量甚至导致死亡^[3-6]。随着麻醉技术水平的提高, 年龄已不再是手

术的绝对禁忌, 再加之我国老年人口的增加, 需要在全麻下行手术的患者逐年增加。由 POCD 造成的社会和医学问题日益严重, 已引起麻醉界的高度关注^[7,8]。本研究对基线资料相同的不同镇静深度老年腹腔镜腹部手术患者术前和术后认知功能进行比较, 旨在为老年人静吸复合麻醉深度的选择提供参考。

1 资料与方法

* 基金项目: 2016 全军后勤科研项目 (CCD16J001)

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(收稿日期: 2016-09-05 接受日期: 2016-09-25)

1.1 一般资料

我院 2014 年 3 月 -2015 年 3 月 90 例择期腹腔镜胆囊切除术老年患者,其中男 38 例,女 52 例,入选患者 ASA 分级均为 II-III 级,预计手术时间 60-120 min;排除明显肝肾功能受损或心血管受损疾病患者,合并神经精神系统疾病患者。随机分

为 A、B、C 三组,每组 30 例,A 组患者维持 BIS 值水平 51-60,B 组患者维持 BIS 值水平 41-50,C 组患者维持 BIS 值水平 31-40,各组患者在年龄、性别、受教育时间、平均手术时间、合并基础疾病等方面差异无显著性($P>0.05$)。详见表 1。

表 1 三组老年患者基线资料比较($\bar{x} \pm s, \%$)
Table 1 Comparison of baseline information of three groups ($\bar{x} \pm s, \%$)

Group	Average age (years)	BMI (kg/m ²)	Education years	Average operation time (min)	Diabetes	Hypertension
Group A (n=30)	68.4 $\pm$ 9.2	21.2 $\pm$ 4.8	8.5 $\pm$ 2.7	89.6 $\pm$ 17.8	5(16.67)	7(23.33)
Group B (n=30)	69.1 $\pm$ 8.9	20.7 $\pm$ 3.9	8.9 $\pm$ 2.3	92.4 $\pm$ 11.6	6(20.0)	6(20.0)
Group C (n=30)	68.9 $\pm$ 9.0	20.9 $\pm$ 4.1	8.2 $\pm$ 2.6	88.0 $\pm$ 15.4	5(16.67)	(20.0)

1.2 麻醉方法

镇静深度监测采用美国 Aspect 公司 DSC-xp185-0124 BIS 模块。所有患者术前常规禁食禁饮,入室后建立静脉通路,常规监测无创血压(NIBP)、心率(HR)、ECG、饱和度(SpO₂)等,依次静脉注射 0.2 mg/kg 咪达唑仑、2 μ g/kg 芬太尼、2 mg/kg 丙泊酚、0.7 mg/kg 罗库溴铵麻醉诱导,气管插管后机械通气,氧流量 2 L/min;吸入七氟醚,呼气末浓度 1.0%-1.5%,静脉输注 0.3-1.0 μ g $\cdot$ kg⁻¹ $\cdot$ min⁻¹ 瑞芬太尼,根据 BIS 值调整药物用量及静脉输注速率,间断注射 5-10 mg/次罗库溴铵维持肌松,密切监测 NIBP、HR、ECG、SpO₂ 等,当 HR 波动范围超过基础值 $\pm$ 20%时,给予阿托品升高或艾司洛尔降低 HR;根据 CVP 调整补液速度,手术结束前 30 min 停止追加罗库溴铵,静脉注射 0.1 mg/kg 地佐辛注射液 +0.1 mg/kg 盐酸托烷司琼注射液。术毕停止吸入七氟醚和瑞芬太尼输注,给予 0.3 mg/kg 地佐辛注射液 +6 μ g/kg 芬太尼 + 生理盐水(NS) $\rightarrow$ 100 mL(速度 2 mL/h)术后镇痛并送入麻醉恢复室,完全苏醒肌力恢复后拔除气管导管送回病房。

1.3 观察指标

所有患者均于术前 1 d 和术后 24 h 采用简易精神状态检查表(MMSE)和连线试验(TMT)评价认知功能^[9,10]。MMSE 量

表包括地点定向、时间定向、注意力、即刻记忆、计算力、短时记忆、语言及视空间能力等多方面内容,检查用时约 5-10 min,满分 30 分,根据文化程度设定认知功能正常与异常,分别为受教育时间 >6 年评分 ≥ 24 分为正常; <6 年评分 ≥ 20 分为正常;未受教育者 ≥ 17 分为正常。当术后评分低于术前基础值 2 分时为认知功能下降。TMT 测试要求患者尽快将纸上散落分布的 1-25 数字按大小顺序连接起来,记录完成时间。

1.4 统计学方法

应用 SPSS13.0 统计软件进行数据分析,计量资料以均数 $\pm$ 标准差($\bar{x} \pm s$)表示 t 检验,计数资料采用 χ^2 检验,以 $P<0.05$ 为差异有统计学意义。

2 结果

各组术前 1dA 组 TMT 完成时间和 MMSE 评分比较差异无显著性($P>0.05$)。术后 24 h 认知功能下降 9 例,发生率为 30.0%,B 组术后 24 h 认知功能下降 7 例,发生率为 23.33%,C 组认知功能下降 5 例,发生率为 16.67%,C 组与 A 组比较差异具有显著性($P<0.05$)。C 组 TMT 完成时间和 MMSE 评分差值均低于 A 组 B 组,但各组内和组间比较差异无显著性($P>0.05$)。详见表 2。

表 2 三组患者手术前后 TMT 完成时间和 MMSE 评分比较($\bar{x} \pm s$)
Table 2 Comparison of TMT completion time and MMSE scores of three groups before and after surgery ($\bar{x} \pm s$)

Group	TMT completion time (s)			MMSE score		
	1 d pre-anesthesia	24 h postoperation	D-value	1 d pre-anesthesia	24 h postoperation	D-value
Group A (n=30)	39.6 $\pm$ 11.2	41.3 $\pm$ 11.0	1.7 $\pm$ 0.2	28.7 $\pm$ 2.6	27.1 $\pm$ 1.9	1.6 $\pm$ 0.5
Group B (n=30)	39.2 $\pm$ 10.8	40.3 $\pm$ 10.1	1.1 $\pm$ 0.7	29.1 $\pm$ 2.2	28.0 $\pm$ 2.0	1.1 $\pm$ 0.2
Group C (n=30)	39.9 $\pm$ 10.4	40.1 $\pm$ 10.2	0.2 $\pm$ 0.2	28.9 $\pm$ 1.8	28.2 $\pm$ 1.7	0.7 $\pm$ 0.1

3 讨论

老年人生理功能下降的同时脏器储备功能随之降低,循环系统代偿功能受限,对麻醉药物的敏感性增加,术后有较高的 POCD 发生率。同时 POCD 也是阻碍患者术后恢复的重要原因,因此老年患者的麻醉难度更大,不仅要确保患者术中充分镇痛、镇静、肌松,避免伤害性刺激等并发症,还要把握适当的麻醉深度和控制麻醉药物的用量,预防 POCD 的发生。然而,目

前文献报道的麻醉深度对术后认知功能的影响尚存在争议,有文献^[11,12]比较了不同静吸复合麻醉妇科腹腔镜手术患者术后认知功能显示,BIS 值为 41-50 组镇静深度对患者术后认知功能影响较小。而有相关研究表明较深的镇静深度可以降低 POCD 的发生率^[13]。另外一些研究结果则显示较浅麻醉不仅麻醉药物用量少,而且可以促进术后认知功能恢复^[14]。各种研究众说不一,那么对于老年静吸复合麻醉患者究竟应选择较深麻醉还是较浅麻醉成为临床的难题。

为了获得第一手资料,为老年静吸复合麻醉患者麻醉深度的掌握提供参考,本研究观察了 BIS 值水平 51-60、41-50 和 31-40 三组患者术前 1 d 和术后 24 h 的认知功能,采用 MMSE 量表和连线试验(TMT)作为评定工具,MMSE 量表侧重于大脑功能的认知,可排除神智和情绪异常等干扰因素,有较高的信度和效度。TMT 是评估认知功能简单有效的方法,从测试结果显示,各组术前 1dA 组 TMT 完成时间和 MMSE 评分比较差异无显著性,术后 24hTMT 完成时间略有延长,MMSE 评分略有下降,但各组内和组间比较差异无显著性。A 组术后 24h 认知功能下降发生率为 30.0%,B 组术后 24h 认知功能下降发生率为 23.33%,C 组认知功能下降发生率为 16.67%,C 组与 A 组比较差异具有显著性,说明深度麻醉对老年腹腔镜腹部手术患者早期术后认知功能影响较小。C 组认知功能下降发生率明显低于 AB 两组,分析原因可能是较深镇静可减少大脑氧代谢率及术中有害性的应激反应。从病理学上分析,随着年龄的增加,人脑神经元数目逐渐减少,大脑体积萎缩,树突和突触数目也随之减少,小胶质细胞和星状细胞增生,被激活时产生的细胞因子可能引起精神疾病,而神经细胞的凋亡直接参与了老化,引发老年性痴呆症的发生^[15]。七氟醚和瑞芬太尼等药物麻醉是通过对中枢神经系统兴奋性突触传递的抑制,来达到影响神经突触传递而达到镇静麻醉效果的,由于深度镇静对中枢神经系统兴奋性突触传递的抑制作用明显高于浅度镇静,深度镇静组患者神经细胞突触间的电活动受抑制程度也高于浅度镇静组,被激活的细胞因子少于浅度镇静组,因此认知功能下降率明显降低^[16]。

综上所述,本研究结果显示了较深镇静深度对老年患者术后早期认知功能影响较小。但由于研究时间有限,病例数较少,而且观察时间仅限于术后 24 h,其远期影响有待进一步观察。

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