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全身麻醉联合硬膜外麻醉在腹腔镜胆囊切除术高血压患者中的应用效果观察*

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摘要 目的:探讨全身麻醉联合硬膜外麻醉对腹腔镜胆囊切除术(LC)高血压患者麻醉效果、血流动力学和T细胞亚群的影响。**方法:**选取2017年3月~2019年3月期间我院收治的113例行LC的高血压患者,采用随机数字表法分为对照组(n=56)和研究组(n=57),对照组患者予以全身麻醉,研究组在对照组的基础上联合硬膜外麻醉,比较两组患者麻醉效果、血流动力学[心率(HR)、平均动脉压(MAP)]、T细胞亚群、术后恢复情况及并发症。**结果:** 研究组的麻醉效果优良率为91.23%(52/57),高于对照组的76.79%(43/56)(P<0.05)。研究组麻醉诱导前(T1)、插管后2 min(T2)、气腹后10 min(T3)、术中探查(T4)、术毕气管导管拔出2 min后(T5)时间点HR、MAP无明显变化,对照组T1~T5时间点HR、MAP呈现先下降后升高趋势(P<0.05);研究组T1、T2时间点HR高于对照组,T4和T5时间点HR则低于对照组(P<0.05);研究组各时间点MAP均低于对照组(P<0.05)。两组术毕1d(T6)、术毕3d(T7)时间$CD4^+$、$CD4^+/CD8^+$均较T1较低,$CD8^+$较T1升高,但研究组$CD4^+$、$CD4^+/CD8^+$高于对照组,$CD8^+$则低于对照组(P<0.05)。研究组术后睁眼时间、定向力恢复时间、拔管时间均短于对照组(P<0.05)。两组并发症发生率比较无差异(P>0.05)。**结论:**高血压患者行LC时给予全身麻醉联合硬膜外麻醉,麻醉效果显著,可有效稳定机体血流动力学,减轻免疫抑制,促进患者术后意识恢复,且不增加并发症发生率。

关键词:全身麻醉;硬膜外麻醉;腹腔镜胆囊切除术;高血压;麻醉效果

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Application Effect of General Anesthesia Combined with Epidural Anesthesia on Hypertension Patients Undergoing Laparoscopic Cholecystectomy*

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ABSTRACT Objective: To investigate the effect of general anesthesia combined with epidural anesthesia on anesthesia, hemodynamics and T cell subsets in patients with hypertension undergoing laparoscopic cholecystectomy (LC). **Methods:** 113 patients with hypertension treated by LC in our hospital from March 2017 to March 2019 were selected, they were randomly divided into two groups: control group(n=56) and study group(n=57). The control group was given general anesthesia. The study group was combined with epidural anesthesia on the basis of the control group to compare the anesthesia effect, hemodynamics [heart rate (HR), mean arterial pressure (map)] T cell subsets, postoperative recovery and complications. **Results:** The excellent rate of anesthesia effect in the study group was 91.23% (52/57), which was higher than 76.79% (43/56) in the control group(P<0.05). HR and map at time points before anesthesia induction (T1), 2 minutes after intubation (T2), 10 minutes after pneumoperitoneum (T3), intraoperative exploration (T4), and 2 minutes after tracheal catheter extraction (T5) in the study group showed no significant change, while HR and map at time points t1-t5 in the control group showed a trend of first decreasing and then increasing (P<0.05); HR at time points T1 and T2 in the study group was higher than that in the control group, while HR at time points T4 and T5 in the study group was lower than that in the control group(P<0.05))The map of each time point in the study group was lower than that in the control group(P<0.05). $CD4^+$, $CD4^+/CD8^+$ were lower and $CD8^+$ were higher in the study group than in the control group, but $CD4^+$, $CD4^+/CD8^+$ were higher in the study group than in the control group, and $CD8^+$ were lower in the study group than in the control group(P<0.05). The time of eye opening, directional force recovery and extubation in the study group were shorter than those in the control group (P<0.05). There was no difference in the incidence of complications between the two groups (P>0.05). **Conclusion:** General anesthesia combined with epidural anesthesia can effectively stabilize the hemodynamics, reduce the immunosuppression, promote the recovery of consciousness, and do not increase the incidence of complications.

Key words: General anesthesia; Epidural anesthesia; Laparoscopic cholecystectomy; Hypertension; anesthesia effect

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前言

腹腔镜胆囊切除术（Laparoscopic cholecystectomy,LC）是治疗胆囊良性病变的常用术式,具有出血量少、创伤较小、患者术后恢复快等优势[1,2]。但 LC 仍属于有创术式,会不可避免的给患者的生理机能如呼吸系统、循环系统等带来不同程度的影响,这使得患者手术麻醉风险增加,麻醉风险管理难度提升[3-5]。尤其是针对高血压患者,其本身常伴随着心、肝、肺、肾等脏器的功能损伤,若未能予以合适的麻醉方式,可引起血压剧增、心肌耗氧量增加等强烈的心血管反应，不利于患者术后恢复[6,7]。现临床多采用气管内插管全身麻醉处理,然而全身麻醉只能抑制患者大脑皮层、下丘脑及边缘系统对大脑皮层的投射区域,而对术中因气管插管、术中腹腔镜器械置入、术后拔管等手术区域的操作的抑制作用较弱[8,9]。有研究显示硬膜外麻醉可对手术区域的伤害性刺激产生一定的阻滞作用[10]。鉴于此,本研究通过探讨全身麻醉联合硬膜外麻醉对 LC 高血压患者麻醉效果、血流动力学和 T 细胞亚群的影响,以期为临床麻醉方案的选择提供参考。

1 资料与方法

1.1 一般资料

选取 2017 年 3 月 ~2019 年 3 月期间我院收治的行 LC 的高血压患者 113 例，本次研究符合我院伦理委员会的相关规定,并已获得委员会批准。纳入标准:(1)均经临床 MRI 检查,确诊为胆囊良性病变者,均符合手术指征,择期行 LC 者;(2)均符合高血压诊断标准[11],高血压分期处于 I~II 期者;(3)知情本研究且签署了同意书;(4)美国麻醉医师协会(American Society of Anesthesiologists,ASA)[12]分级为 I~II 级者。排除标准:(1)合并有胰腺炎、糖尿病史、血液系统疾病者;(2)患有精神疾病或认知功能障碍者;(3) 合并严重心肺肾功能障碍者;(4)患有其他感染性疾病者;(5)合并内分泌疾病者。采用随机数字表法分为对照组(n=56)和研究组(n=57),其中对照组男 35 例,女 21 例,高血压病程 2~12 年,平均(6.39± 0.82)年;年龄 46~73 岁,平均(56.82± 2.67)岁;其中慢性胆囊炎 18 例,胆囊结石 24 例，胆囊息肉 14 例。研究组男 38 例，女 19 例，高血压病程 3~11 年,平均(6.82± 0.96)年;年龄 48~75 岁,平均(57.91± 3.28)岁;其中慢性胆囊炎 20 例,胆囊结石 26 例,胆囊息肉 11 例。两组一般资料比较无差异(P>0.05)。

1.2 方法

术前两组均予以降压处理,血压控制为舒张压(DBP)＜95 mmHg,收缩压(SBP)＜160 mmHg。术前常规禁饮、禁食,入室后给予肌注 0.1 g 苯巴比妥钠(重庆药友制药有限责任公司,国药准字 H50021537,规格:2 mL:0.2 g)、0.5 mg 阿托品(东北制药集团沈阳第一制药有限公司,国药准字 H21021924,规格:硫酸阿托品 0.5 mg),开放上肢静脉通路。对照组患者给予全身麻醉,麻醉诱导:依次静脉注射咪达唑仑(宜昌人福药业有限责任公司,国药准字 H20067040,规格:<1 mL>2 mL:2 mg<5 mg>) 0.05~0.10 mg/kg、依托咪酯(江苏恩华药业股份有限公司,国药准字 H32022992,规格:10 mL:20 mg)0.2 mg/kg、芬太尼(江苏恩华药业股份有限公司,国药准字 H20143314,规格:1 mg(以芬太尼计)3~4 μg/kg、顺苯磺酸阿曲库铵(浙江仙琚制药股份有限公司,国药准字 H20090202,规格:5 mg(以顺阿曲库铵计)) 0.1~0.15 mg/kg,诱导成功后气管插管,行机械通气,潮气量设置为 8~10 mL/kg,呼吸频率为 10~12 次 /min,采用微量泵泵注丙泊酚(广东嘉博制药有限公司,国药准字 H20133360,规格:50 mL:1000 mg)50~60 μg/kg·min、瑞芬太尼(江苏恩华药业股份有限公司，国药准字 H20143314，规格:1 mg（以瑞芬太尼计))0.1~0.2 μg/kg·min 进行麻醉维持,并间断性注射顺苯磺酸阿曲库铵维库溴铵。研究组在对照组的基础上联合硬膜外麻醉,研究组患者先给予硬膜外麻醉,呈左侧卧位,穿刺位置为 T8~9 椎间隙处,放置膜外导管并妥善固定。经导管注入 4 mL 1.5%利多卡因试验量(珠海润都制药股份有限公司,国药准字 H20043049,规格:以利多卡因计 5 mL: 100 mg),观察 5 分钟后无异常追加 8 mL 1.5%利多卡因，麻醉平面符合要求后进行全身麻醉,全身麻醉方式同对照组。

1.3 检测指标

(1)记录两组患者麻醉效果,其中以患者实施麻醉后术中无烦躁感、疼痛感为优;以患者实施麻醉后术中轻微烦躁感、疼痛感为良;以患者实施麻醉后术中出现烦躁感、疼痛感,追加药物后烦躁感、疼痛感消失为可;以患者实施麻醉后出现明显不适,需更换麻醉方式为差。优良率 = 优率 + 良率[13]。(2)记录两组患者术后睁眼时间、定向力恢复时间、拔管时间。(3)于麻醉诱导前(T1)、插管后 2 min(T2)、气腹后 10 min(T3)、术中探查(T4)、术毕气管导管拔出 2 min 后(T5)等时间点记录两组患者心率（heart rate,HR)、平均动脉压（mean arterial pressure,MAP)。(4)于 T1、术毕 1 d(T6)、术毕 3 d(T7)抽取患者静脉血 4 mL,采用全自动流式细胞分析仪(美国贝克曼公司,型号 cytomics TMFC500)检测 $CD4^+$、$CD8^+$,计算 $CD4^+/CD8^+$。(5)记录两组术后并发症发生率。

1.4 统计学方法

采用 SPSS24.0 处理数据,计量资料以($\bar{x}\pm s$)表示,实施 t 检验,计数资料以率(%)表示,实施 χ^2 检验,将α=0.05 作为检验标准。

2 结果

2.1 两组患者麻醉效果比较

研究组的麻醉效果优良率为 91.23%(52/57)，高于对照组的 76.79%(43/56)(P<0.05),详见表 1。

2.2 两组患者不同时间点血流动力学比较

对照组 T1~T5 时间点 HR、MAP 呈现先下降后升高趋势(P<0.05)；研究组 T1~T5 时间点 HR、MAP 组内比较差异无统计学意义(P>0.05);研究组 T1、T2 时间点 HR 高于对照组,T4 和 T5 时间点 HR 则低于对照组（P<0.05)；研究组各时间点 MAP 均低于对照组(P<0.05);详见表 2。

表 1 两组患者麻醉效果比较 例(%)

Table 1 Comparison of anesthesia effect between the two groups n(%)

Groups	Excellent	Pretty good	Good	Bad	Total effective rate
Control group(n=56)	14(25.00)	29(51.79)	9(16.07)	4(7.14)	43(76.79)
Study group(n=57)	19(33.33)	33(57.89)	4(7.02)	1(1.75)	52(91.23)
x^2					4.400
P					0.036

表 2 两组患者不同时间点血流动力学比较($\bar{x}\pm s$)

Table 2 Comparison of hemodynamics between the two groups at different time points($\bar{x}\pm s$)

Groups	Time	HR(times/min)	MAP(mmHg)
Control group(n=56)	T1	80.41± 7.22	103.32± 7.29
	T2	76.96± 6.17[a]	98.93± 8.21[a]
	T3	87.34± 7.28[ab]	102.39± 7.27[ab]
	T4	94.88± 8.16[abc]	106.86± 8.12[ab]
	T5	99.47± 7.25[abcd]	110.38± 13.26[abcd]
Study group(n=57)	T1	89.68± 6.13[e]	95.41± 6.15[e]
	T2	88.39± 7.32[e]	94.03± 7.28[e]
	T3	87.52± 8.15	95.07± 8.13[e]
	T4	87.84± 8.39[e]	95.15± 7.24[e]
	T5	88.42± 7.09[e]	95.27± 6.28[e]

Note: compared with T1 time point, [a]*P*<0.05; compared with T2 time point, [b]*P*<0.05; compared with T3 time point, [c]*P*<0.05; compared with T4 time point, [d]*P*<0.05; compared with control group, [e]*P*<0.05.

2.3 两组患者不同时间点 T 细胞亚群比较

两组 T1 时间点 $CD4^+$、$CD8^+$、$CD4^+/CD8^+$ 比较无统计学差异(*P*>0.05);两组 T1、T6、T7 时间点 $CD4^+$、$CD4^+/CD8^+$ 呈持续下降趋势,$CD8^+$ 呈持续上升趋势(*P*<0.05);研究组 T6、T7 时间 $CD4^+$、$CD4^+/CD8^+$ 高于对照组,而 $CD8^+$ 则低于对照组(*P*<0.05);详见表 3。

表 3 两组患者不同时间点 T 细胞亚群比较($\bar{x}\pm s$)

Table 3 Comparison of T cell subsets between the two groups at different time points($\bar{x}\pm s$)

Groups	Time	$CD4^+$(%)	$CD8^+$(%)	$CD4^+/CD8^+$
Control group(n=56)	T1	38.37± 3.32	29.40± 2.26	1.31± 0.24
	T6	30.28± 2.46*	39.96± 2.24*	0.76± 0.13*
	T7	25.82± 2.36*[#]	46.98± 3.92*[#]	0.55± 0.09*[#]
Study group(n=57)	T1	39.04± 2.27	28.91± 2.30	1.35± 0.19
	T6	35.99± 2.43*[@]	34.74± 2.10*[@]	1.04± 0.17*[@]
	T7	30.92± 2.38*[#@]	39.47± 2.85*[#@]	0.78± 0.15*[#@]

Note: compared with T1 time point, **P*<0.05; compared with T6 time point, [#]*P*<0.05; compared with control group, [@]*P*<0.05.

2.4 两组患者术后恢复情况比较

研究组术后睁眼时间、定向力恢复时间、拔管时间均短于对照组(*P*<0.05);详见表 4。

表 4 两组患者术后恢复情况比较($\bar{x}\pm s$,min)

Table 4 Comparison of postoperative recovery between the two groups($\bar{x}\pm s$, min)

Groups	Postoperative eye opening time	Recovery time of directional force	Extubation time
Control group(n=56)	12.85± 0.79	26.13± 1.56	21.92± 2.53
Study group(n=57)	8.79± 0.85	17.92± 1.41	13.94± 2.48
t	26.289	29.360	16.932
P	0.000	0.000	0.000

2.5 两组患者术后并发症发生情况

对照组术后出现 2 例呛咳、2 例恶心呕吐、3 例腹胀、2 例认知功能障碍，并发症发生率为 16.07%(9/56)；研究组出现 2 例呛咳、1 例恶心呕吐、2 例腹胀、1 例认知功能障碍，并发症发生率为 10.53%(6/57)；两组并发症发生率比较无差异(x^2=0.754，P=0.385)。

3 讨论

胆囊良性病变主要包括慢性胆囊炎、胆囊结石、胆囊息肉等，外科手术是治疗胆囊良性病变的主要方式[14]。随着微创技术的发展，LC 由于其术后创伤小、康复速度快等优势逐渐受到广大患者及医师的认可[15]。由于胆囊良性病变多发于中老年群体，而中老年群体其身体各项机能下降，常合并各类基础性疾病，其中以高血压较为常见[16]。高血压患者由于血压长期处于较高水平，身体各脏器已遭受到一定的损伤，因此其手术耐受力普遍较差[17]。既往研究结果显示[18]，手术刺激及麻醉均可导致患者出现不同程度的应激反应，引起血流波动，继而增加心血管事件发生风险。因此，高血压患者行 LC 术式时应给予合适的麻醉方式以最大程度的减少术中刺激。临床中较为常用的麻醉方法为全身麻醉，但是此麻醉无法彻底阻止手术区域的刺激，此外，行 LC 时需行二氧化碳气腹，气腹对机体循环、呼吸系统的影响较大，可激发各种生理病理性改变[19,20]。硬膜外麻醉是指将局麻药注入硬膜外腔，阻滞脊神经根，暂时使其支配区域产生麻痹，进而减少术中应激反应的麻醉方法[21]。

本次研究结果显示，研究组的麻醉效果优良率高于对照组，可见高血压患者行 LC 时给予全身麻醉联合硬膜外麻醉，效果确切。分析其原因，全身麻醉可产生中枢神经系统的抑制，而硬膜外麻可产生手术区域的阻滞，两种麻醉方式从不同的阻滞机制出发，共同提高麻醉效果[22-24]。本次结果还显示，对照组患者术中血流动力学指标波动较大，而研究组可维持血流动力学稳定，这主要是因为全身麻醉无法对交感神经 - 肾上腺髓质轴产生有效的阻滞作用，而全身麻醉联合硬膜外麻醉可有效阻滞交感神经 - 肾上腺髓质轴的信号传导，弱化患者手术刺激的在神经中的传导，从而减轻手术中因疼痛造成的心血管应激反应，此外，硬膜外麻醉还可作用于心脏自主神经，从而稳定心脏节律与功能，因此 HR 趋于稳定[25-27]。T 淋巴细胞亚群的测定是检测机体细胞免疫功能的重要指标，而 $CD4^+/CD8^+$ 比例的降低通常被视为免疫功能处于低下状态。LC 术式注射麻醉药物、建立二氧化碳气腹、切割电凝止血等操作均可干扰患者免疫功能。本研究中两组患者术后不同时间点均有免疫抑制现象产生，但全身麻醉联合硬膜外麻醉患者的免疫抑制程度较轻，这是因全身麻醉联合硬膜外麻醉可有效抑制外源性因素对患者机体的刺激，同时还减轻了血流波动，避免引起各脏器二次损伤，从而减轻免疫抑制[28]。研究组的术后睁眼时间、定向力恢复时间、拔管时间均优于对照组，可能与全身麻醉联合硬膜外麻醉可有效扩张腹腔内脏血管、维持血流动力学平稳有关，保证了手术的顺利进行，进而促进患者术后恢复[29]。另两组并发症发生率比较无差异，再一次证实了全身麻醉联合硬膜外麻醉的安全有效性，与既往研究结果基本一致[30]。由于研究样本量有限，且研究时间尚短，本研究尚未对联合麻醉注射的最佳剂量及远期预后进行探讨，今后将增加随访和样本容量，对以上不足进行进一步探究，以期获取更为精准全面的数据和结论。

综上所述，高血压患者行 LC 时给予全身麻醉联合硬膜外麻醉，麻醉效果令人满意，可有效稳定机体血流动力学，减轻患者免疫抑制，促进患者术后恢复，且不增加并发症发生率。

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