

不同麻醉方式对子宫切除患者血液动力学的影响*

张志明¹ 张大伟² 刘帆¹ 刘翔麟³

(1 湖南省中医药研究院附属医院麻醉科 湖南 长沙 410006 2 中南大学湘雅三医院普外科 湖南 长沙 410013 ;

3 长沙市妇幼保健院麻醉科 湖南 长沙 410002)

摘要 目的 探索全麻复合硬膜外麻醉和全身麻醉用于子宫切除术对血液动力学的影响。方法 36 例行子宫切除术患者 随机分成全麻组(A 组 18 例)和硬膜外 + 全麻组(B 组 18 例) ,采用 Swan-Ganz 导管技术 ,监测手术时血液动力学变化。结果 A 组 HR、MAP、CVP、SVR 及 CI 均明显增加 ,SV 无明显变化 ,B 组除 CVP 明显上升外 ,其余各指标均无明显变化。结论 全麻复合硬膜外麻醉下施行子宫切除术 ,能减轻术中应激反应 ,稳定血液动力学。

关键词 :全麻复合硬膜外麻醉 ;全身麻醉 ;子宫切除术 ;血液动力学

中图分类号 R78 文献标识码 A 文章编号 1673-6273(2012)15-2917-03

The Impact on Haemodynamics of Hysterectomy Patients by Different Anesthesia Methodes*

ZHANG Zhi-ming¹, ZHANG Da-wei², LIU Fan¹, LIU Xiang-lin³

(1. Dept. of Anesthesia of Traditional Chinese Medicine and Pharmacy Academy Affiliated Hospital of Hunan province, Changsha

410006, China; 2. Dept. of General Surgery of the Third Xiang-Ya Hospital of Central South University, Changsha 410013, China;

3. Dept. of Anesthesia of Maternal and Child Care Service Centre of Changsha, Changsha 410006, China)

ABSTRACT Objective: To explore the impact on haemodynamics of hysterectomy patients by different anesthesia methodes.

Methods: Thirty-six hysterectomy patients were divided into general anaesthesia group (Group A, 18 patients) and general anaesthesia combined epidural anesthesia group (Group B, 18 patients) randomly. The hemodynamic change was detected by Swan-Ganz catheter technique during the operation. **Results:** The HR, MAP, CVP, SVR and CI of Group A increase apparently, but the SV doesn't change apparently. The CVP of Group B increases apparently. Besides CVP, other indexes don't change apparently. **Conclusion:** The general anaesthesia combined epidural anesthesia should reduce the intraoperative stress reponse and stabilize haemodynamics during the hysterectomy operation.

Key words: General anaesthesia combined epidural anesthesia; General anaesthesia; Hysterectomy; Haemodynamics

Chinese Library Classification(CLC): R78 **Document code:** A

Article ID:1673-6273(2012)15-2917-03

全身麻醉是指麻醉药经呼吸道吸入 ,或经静脉或肌肉注射进入体内 ,产生可逆性中枢神经系统的抑制 ,表现为神志消失 ,遗忘 ,全身感觉及痛觉丧失 ,反应抑制和骨骼肌松弛^[1-4]。硬膜外麻醉是指局麻药注入硬脊膜外隙 ,暂时阻断脊髓神经根的神经过传的方法^[5-7]。子宫切除术是妇科常见的一种手术 ,多用于切除子宫肿瘤及某些子宫出血和附件病变等^[8-11]。本研究拟探索全身麻醉和全麻复合硬膜外麻醉用于子宫切除术对患者血液动力学的变化。

1 资料与方法

1.1 病例选择

子宫切除术患者 36 例 ,年龄 25~60 岁 ASA ~ 级 ,术前无内分泌系统疾患 ,随机分成全麻组(A 组)18 例 ,全麻 + 硬膜外麻醉组(B 组)18 例。

1.2 麻醉方法

术前两组常规于麻醉前 30 分钟肌注苯巴比妥钠 0.1 g 和阿托品 0.5 mg。A 组 静脉开放后以咪达唑仑 ,芬太尼、异丙酚 ,

维库溴铵诱导插管 ,插管后接麻醉机控制呼吸 ,氧流量 2L/min ,潮气量 10 mL/kg ,呼吸频率 12 次 /min ,吸:呼比 1:2 ,麻醉维持以异氟醚呼吸末浓度 1.5%~1.8%加用维库溴铵。B 组 :入室后常规消毒铺巾后 ,选择 T9~10 ,完成硬膜外穿刺 ,向头侧置管 3 cm。静脉开放后以 2%利多卡因 3 mL 试探有平面及无误入蛛网膜下腔后 ,进行全麻诱导插管 ,方法同 A 组 ,但异氟醚呼吸末浓度为(0.8~1.1)%。在手术野消毒铺巾后 B 组再经硬膜外导管注入 2%利多卡因 7 mL ,若手术时间长于 50 分钟 ,则再追加 5 mL。两组静脉输注速度为 :入室至切皮前 10mL·kg⁻¹·h⁻¹ ,手术开始后 6mL·kg⁻¹·h⁻¹。

1.3 测定方法

两组均于气管插管后 ,经左桡动脉穿刺置管 ,用 HP-M1205 生理记录仪监测直接动脉压(MAP) ,经右颈内静脉穿刺置入 F7 Swan-Ganz 三腔带气囊和热敏电阻的漂浮导管。通过压力换能器 ,连接同一监测仪 ,测定中心静脉压(CVP) ,以温度稀释测定心输出量(CO) ,并计算 :心脏指数(CI)、每搏量(SV)、体外循环阻力(SVR) ,并分别于手术前 ,手术 5、10、15、30

* 基金项目 湖南省科研条件创新专项(2010TT2032)

作者简介 张志明(1974-) ,主治医师 ,研究方向 临床麻醉与疼痛医学 E-mail:zhangzhiming6633@163.com

(收稿日期 2011-09-28 接受日期 2011-10-24)

分钟和术毕(放气后)5分钟测定血液动力学指标。

1.4 统计学方法

采用 SPSS 16.0 软件进行统计学分析,计量资料以($\bar{x} \pm s$)表示,组间比较采用 t 检验, $P < 0.05$ 表示差异明显,有统计学意义。

2 结果

2.1 A 组患者年龄、体重、身高、手术时间分别为(45.2 ± 1.4)岁、

(61.5 ± 1.2)Kg、(163.7 ± 1.5)cm、(120.3 ± 1.8)min, B 组患者分别为(46.1 ± 1.3)岁、(61.7 ± 1.8)Kg、(162.9 ± 1.7)cm、(122.1 ± 1.4)min。两组患者年龄、体重、身高及手术时间无差异($P > 0.05$),见表 1。

2.2 手术前后 SpO_2 均在(99~100)% ECG 未见心律失常。气道峰压值手术前 A 组为(20.31 ± 0.50)kPa, B 组为(2.26 ± 0.31)kPa,手术后均明显上升,分别为(29.21 ± 0.51)kPa 和(2.81 ± 0.42)kPa($P < 0.05$)(1 kPa=7.5 mmHg)。

表 1 一般情况和手术时间($\bar{x} \pm s$)
Table 1 General conditions and operation time

Group	Number	Age(years)	Body weight (kg)	Body height (cm)	Operation time (min)
Group A	18	45.2 ± 1.4	61.5 ± 1.2	163.7 ± 1.5	120.3 ± 1.8
Group B	18	46.1 ± 1.3	61.7 ± 1.8	162.9 ± 1.7	122.1 ± 1.4

2.3 A 组手术时 HR、MAP、CVP 均明显上升,并持续于手术全过程,术毕 HR、CVP 恢复至手术前水平;手术早期 SVR 明显上升($P < 0.05$),15 分钟后逐渐下降,与手术前无明显差异($P > 0.05$);手术时 SV 无明显变化,CO、CI 明显增加。B 组手术时除 CVP 明显上升,其余各指标均无明显变化($P > 0.05$)。见表 2。

2.4 A 组患者 PETCO₂ 术前 10 min、术中 5 min、术中 10 min、

术中 15 min、术后 5 min 分别为(3.7 ± 0.7)kPa、(4.6 ± 0.6)kPa、(4.8 ± 0.6)kPa、(4.8 ± 0.8)kPa、(4.7 ± 0.8)kPa, B 组患者分别为(3.5 ± 0.6)kPa、(4.2 ± 0.8)kPa、(4.3 ± 0.6)kPa、(4.4 ± 0.4)kPa、(4.4 ± 0.4)kPa。两组手术后 PETCO₂ 均明显上升($P < 0.01$)。两组间无明显差异($P > 0.05$),见表 2。

表 2 两组血液动力学及呼吸末 CO₂ 分压比较
Table 2 The comparison of the haemodynamics and respiratory end-tidal CO₂ voltage ratio between two groups

Index	Group	Pneumoperitoneum				
		Preoperative 10min	5min	10min	15min	Postoperative-disinflat 5min
HR(time/min)	Group A	67 ± 7	$84 \pm 10^*$	$85 \pm 13^*$	$88 \pm 14^*$	71.8 ± 25
	Group B	73 ± 12	73 ± 15	77 ± 12	77 ± 13	76.0 ± 12
MAP(kPa)	Group A	10.2 ± 1.8	$14.9 \pm 1.7^* \Delta$	$14.8 \pm 1.6^*$	$13.5 \pm 1.7^*$	$12.4 \pm 1.0^* \Delta$
	Group B	9.5 ± 1.4	10.6 ± 1.2	$11.2 \pm 1.2^*$	11.1 ± 1.3	10.9 ± 0.6
CVP(kPa)	Group A	1.5 ± 0.5	$2.2 \pm 0.6^*$	$2.2 \pm 0.7^*$	$2.1 \pm 0.7^*$	1.4 ± 0.5
	Group B	1.5 ± 0.4	$2.1 \pm 0.4^*$	$2.1 \pm 0.4^*$	$2.1 \pm 0.5^*$	1.6 ± 0.4
SVR(dyne·s ⁻¹ ·cm ⁻⁵)	Group A	1470 ± 602	$2167 \pm 85^*$	$1874 \pm 669^*$	1669 ± 647	1182 ± 698
	Group B	1325 ± 347	1766 ± 597	1441 ± 384	1400 ± 422	1108 ± 271
CO(L·min ⁻¹)	Group A	3.5 ± 0.9	$4.1 \pm 1.1^*$	$4.7 \pm 1.3^*$	$5.0 \pm 1.3^*$	$5.5 \pm 1.9^*$
	Group B	3.8 ± 1.2	3.3 ± 1.0	3.9 ± 1.3	4.1 ± 1.7	4.9 ± 1.1
CI(L·min ⁻¹ ·m ⁻²)	Group A	2.2 ± 0.5	$2.5 \pm 0.7^*$	$2.9 \pm 0.8^*$	$3.0 \pm 0.9^*$	$3.4 \pm 1.2^*$
	Group B	2.3 ± 0.6	2.1 ± 0.6	2.4 ± 0.8	2.5 ± 1.09	3.06 ± 0.53
SV(ml·beat ⁻¹)	Group A	52 ± 11	47 ± 10	54 ± 10	55 ± 11	$68 \pm 18^*$
	Group B	55 ± 18	46 ± 17	50 ± 17	54 ± 21	$67 \pm 16^*$
PETCO ₂ (kPa)	Group A	3.7 ± 0.7	$4.6 \pm 0.6^*$	$4.8 \pm 0.6^*$	$4.8 \pm 0.8^*$	$4.7 \pm 0.8^*$
	Group B	3.5 ± 0.6	$4.2 \pm 0.8^*$	$4.3 \pm 0.6^*$	$4.4 \pm 0.4^*$	$4.4 \pm 0.4^*$

Note: * $P < 0.05$ compared with Preoperative; $\Delta P < 0.05$ group A compared with group B.

3 讨论

全身麻醉的特点是使患者意识消失,并能抑制机体对伤害性刺激的反应^[12-13]。对中枢神经系统的抑制程度与血液内药物

浓度有关,并且可以控制和调节,这种抑制是完全可逆的^[14]。子宫切除术由于全麻的建立,对呼吸循环及神经内分泌代谢可导致一定影响。手术早期 SVR 明显增加,可能与腹内压增加,周围静脉阻力上升、腹主动脉受压以及血浆儿茶酚胺、血管加压素、肾素-血管紧张素、前列腺素等增加,而手术后期 SVR 的逐渐恢复可能与机体对机械压迫的适应有关。

腹部手术多主张采用全麻复合硬膜外麻醉,可减少全麻药物的使用,使麻醉更加平稳,还可应用硬膜外阻滞行术后镇痛^[15]。全麻复合硬膜外组,手术时 SVR 无明显变化,可能是因为硬膜外麻醉致内脏大、小神经阻滞,腹腔内脏血管扩张,周围血管阻力降低,部分代偿了手术机械压迫和神经激素变化引起的 SVR 增加,从而不致产生类似全麻下手术引起后负荷明显增加的不利影响。本研究结果还显示:两组手术时 SV 均无明显变化;全麻组 HR、CO 明显增加,同时由于 SVR 增加,致 MAP 明显增加。复合硬膜外麻醉组,手术后 HR、MAP、SVR、CO 无明显变化,这与硬膜外麻醉交感神经活性降低和腹腔内脏血管扩张有关。

综上,全麻复合硬膜外麻醉下施行子宫切除术,能降低 SVR、NAP 和 HR,减少心脏后负荷及心脏做功。因此,可作为高血压、冠心病患者选用的一种较好的麻醉方法。

参考文献(References)

- [1] Grint NJ, Lorena SE, Johnson CB, et al. Metabolic acidosis in healthy mules under general anaesthesia with halothane [J]. Vet Anaesth Analg, 2011, 38(5):484-489
 - [2] Gupta L, Sinha S, Pande M, et al. Ambulatory laparoscopic tubal ligation: a comparison of general anaesthesia with local anaesthesia and sedation [J]. J Anaesthesiol Clin Pharmacol, 2011, 27(1):97-100
 - [3] Sudha P, Koshy RC. Nonconvulsive status epilepticus: An unusual cause of postoperative unresponsiveness following general anaesthesia [J]. Indian J Anaesth, 2011, 55(2):174-176
 - [4] Buchanan FF, Myles PS, Cicuttini F. Effect of patient sex on general anaesthesia and recovery [J]. Br J Anaesth, 2011, 106(6):832-839
 - [5] Young VL. Commentary on: Epidural Anesthesia as a Thromboembolic Prophylaxis Modality in Plastic Surgery [J]. Aesthet Surg J, 2011, 31(7):825-826
 - [6] Nelson KE, Tonidandel A. Interscapular pain during cesarean delivery under epidural anesthesia [J]. Int J Obstet Anesth, 2011, 20(2):196
 - [7] Lee JH, Huh J, Kim DK, et al. Laparoscopic cholecystectomy under epidural anesthesia: a clinical feasibility study [J]. Korean J Anesthesiol, 2010, 59(6):383-388
 - [8] Hur HC, Donnellan N, Mansuria S, et al. Vaginal cuff dehiscence after different modes of hysterectomy [J]. Obstet Gynecol, 2011, 118(4):794-801
 - [9] Stang A, Merrill RM, Kuss O. Hysterectomy in Germany: A DRG-Based Nationwide Analysis, 2005-2006 [J]. Dtsch Arztebl Int, 2011, 108(30):508-514
 - [10] Rouzi AA, Sahly NN, Shobkshi AS, et al. Manchester repair. An alternative to hysterectomy [J]. Saudi Med J, 2009, 30(11):1473-1475
 - [11] Bansal N, Herzog TJ, Shaw RE, et al. Primary therapy for early-stage cervical cancer: radical hysterectomy vs radiation [J]. Am J Obstet Gynecol, 2009, 201(5):485
 - [12] Kwiatosz-Muc M, Wdowiak L, Nestorowicz A, et al. Costs of subarachnoid vs. general anaesthesia for caesarean section [J]. Anestezjol Intens Ter, 2010, 42(3):124-128
 - [13] 曾因明.麻醉学[M].北京:人民卫生出版社.2008:38
Zeng Yin-ming. Anesthesiology [M]. Beijing: The People's Medical Publishing House, 2008: 38
 - [14] 吴在德,吴肇汉.外科学[M].北京:人民卫生出版社.2008:94
Wu Zai-de, Wu Zhao-han. Surgery [M]. Beijing: The People's Medical Publishing House, 2008:94
 - [15] Booke M, Fingerhut D, Wendt M, et al. Improvement in hemodynamic stability and perioperative management from a combination of general and epidural anesthesia [J]. Anesthesiology, 1994, 81 (3A): 1055
-
- (上接第 2927 页)
- Li Sang, Li Qiang-xiang. Effect Analysis of Health Education in Treatment of Diabetes [J]. Progress in Modern Biomedicine, 2010, 10(4):723-725
- [5] 高合新, 王建军, 刘桂芹, 等. 综合护理干预对老年住院糖尿病患者影响的临床观察[J]. 现代生物医学进展, 2011, 11(6): 1158-1160
Gao He-xin, Wang Jian-jun, Liu Gui-qin, et al. Clinical Observation of Comprehensive Nursing Intervention in Elderly Hospitalized Patients with Diabetes Mellitus [J]. Progress in Modern Biomedicine, 2009, 7(10): 1158-1160
 - [6] Ye Ren-gao, Lu Zai-ying, Xie Yi, et al. Internal Medicine[M]. Beijing: People's Health Publishing House, 2005: 799
 - [7] Fang Fu-sheng, Tian Hui, Yu Ying, et al. Effect of screening and health education on the incidence of diabetes [J]. Med J Chin PLA, 2011, 36(6):642-645
 - [8] Zhao Xi-li, Ji Fang, Liu Xiao-lan, et al. Investigation on the Situation of Self-management in 206 Diabetic Patients [J]. China Pharmacy, 2010, 21(14):1337-1335
 - [9] Sun Su-xia. Effect of Health Education on Blood Sugar and Health Behavior in Elderly Diabetic Patients [J]. Applied Journal of general practice, 2008, 6(3): 273-274
 - [10] Chen Liang, Hu Fang-fang, Zhang Hui-qin. Management Effective Evaluation on the Groups of Patients with the Type 2 Diabetes Mellitus [J]. Chinese Journal of General Practice, 2011, 9(12): 94-95
 - [11] Chen Yong, He Jing, Zou Xian-rong, Gong Chang-qun, et al. Health Education on Diabetes Quality of Life [J]. Practical Journal of Cardiac Cerebral Pneumal and Vascular Disease, 2011, 19(6):1043-1044
 - [12] Sun Wei-na, Liu Chun-mei, Wang jin, et al. The Effects of "ZHIJI" Health Management on Comprehensive Therapy for Type 2 Diabetes Mellitus Patients [J]. Chinese General Practice, 2011, 14(3):73-75
 - [13] Sarol JN Jr, Nicodemus NA Jr, Tan KM, et al. Self-monitoring of blood glucose as part of a multi-component therapy among non-insulin requiring type 2 diabetes: a meta-analysis(1966-2004) [J]. Curr Med Res Opin, 2005, 21(2): 173-184
 - [14] Martin S, Schneider B, Heinemann L, et al. Self-monitoring of blood glucose in type 2 diabetes and long-term outcome: an epidemiological cohort study [J]. Diabetologia, 2006, 49(2): 271-278
 - [15] Liu Zun-yong. The new model of diabetes cure for the community health service center [J]. Chinese Journal of General Practice, 2009, 7(10): 5