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硬膜外复合全身麻醉对开胸手术患者血流动力学和应激反应的影响研究

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摘要 目的:研究硬膜外复合全身麻醉对开胸手术患者血流动力学和应激反应的影响。**方法:**选取 120 例我院 2015 年 1 月到 2016 年 1 月收治的开胸手术患者,按照随机数字表法将患者分为研究组和对照组,对照组给予单纯全麻,研究组给予硬膜外复合全身麻醉,比较两组苏醒时间、苏醒期收缩压、舒张压、心率及烦躁情况,并比较两组术前、术后 72 h 血糖、皮质醇以及肾上腺素水平。**结果:**两组苏醒时间比较无统计学意义($P>0.05$),苏醒期研究组收缩压、舒张压及心率、烦躁发生率均较对照组降低($P<0.05$);两组术前血糖、皮质醇及肾上腺素比较无统计学差异($P>0.05$);术后 72 h,两组血糖、皮质醇及肾上腺素均升高($P<0.05$);研究组血糖、皮质醇及肾上腺素均较对照组降低($P<0.05$)。**结论:**硬膜外复合全身麻醉应用于开胸手术能显著提高患者苏醒期苏醒质量,稳定血流动力学,改善其应激反应。

关键词:硬膜外麻醉;全身麻醉;开胸手术;血流动力学;应激反应

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Effect of Hemodynamics and Stress Response of Epidural Combined with General Anesthesia in Thoracic Surgery

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ABSTRACT Objective: To study effect of hemodynamics and stress response of epidural combined with general anesthesia in thoracic surgery. **Methods:** 120 patients with thoracic surgery in our hospital from January 2015 to January 2016 were selected, and they were divided into study group and control group according to random number table. The control group was given general anesthesia, the study group was given epidural combined with general anesthesia. The recovery time, the systolic blood pressure, diastolic blood pressure, heart rate and irritability were compared between the two groups, the levels blood glucose, cortisol and epinephrine in two groups before and 72 h after operation were compared. **Results:** There was no significant difference in recovery period between the two groups ($P>0.05$), systolic blood pressure, diastolic blood pressure and heart rate of the study group in recovery period were significantly lower than those in the control group, the incidence of irritability in recovery period was significantly lower than that in control group, the difference was statistically significant ($P<0.05$). There was no significant difference in blood glucose, cortisol and epinephrine in the two groups before operation ($P>0.05$). At 72 h after operation, the blood glucose, cortisol and epinephrine were increased in the two groups ($P<0.05$), the blood glucose, cortisol and epinephrine in the study group were significantly lower than those in the control group, the difference was statistically significant ($P<0.05$). **Conclusion:** The application of epidural combined with general anesthesia in thoracic surgery can significantly improve the awakening quality during recovery period, stabilize hemodynamics, and improve their stress response.

Key words: Epidural anesthesia; General anesthesia; Thoracic surgery; Hemodynamics; Stress response

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前言

开胸手术是临床上的常见手术,是治疗各种心脏疾病、肺癌、食管癌及其胸部创伤的主要方法^[1-2]。随着社会污染的加重,人们生活方式的转变,各种癌症发生率的增加,开胸手术也越来越多。麻醉在开胸手术过程中非常重要,而麻醉苏醒期间患者情感波动较大,其无意识的肢体动作会造成手术切口裂开或出血、气管和引流管脱落等,从而导致患者窒息、心脑血管事件

甚至死亡等不良后果。而手术期间强烈而持久的应激反应会导致患者机体内环境稳定性的破坏以及免疫功能的降低^[3,4]。单纯的全身麻醉手术创伤大、出血量多,且易造成患者机体过度的应激反应,使患者出现烦躁和焦虑,术后患者的血压和心率也不稳定,容易出现并发症^[5]。有报道称硬膜外复合全身麻醉能减少麻醉对患者生理的干扰,并阻滞手术部位相关的交感神经向心传导,使患者在苏醒期时手术区仍然无痛感,减轻了患者的躁动和情感的波动,从而减少了不良后果的发生^[6,7],同时也能减少应激激素的分泌,以维持患者机体内环境的稳定^[8]。本研究旨在分析硬膜外复合全身麻醉对开胸手术患者血流动力学和应激反应的影响,现将结果报道如下。

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1 资料与方法

1.1 一般资料

选取 120 例我院 2015 年 1 月到 2016 年 1 月收治的开胸手术患者, 纳入标准^[9]: 所有患者均符合美国麻醉师协会 (ASA) 评分 I-II 级; 无胸部手术史。排除标准: 心肺功能不全患者; 严重高血压、高血糖患者; 精神疾病者、中枢神经系统疾病者。按照随机数字表法将患者分为研究组和对照组, 研究组 60 例, 男性 31 例, 女性 29 例, 年龄 40-69 岁, 平均年龄为 (63.3±1.7) 岁, 体重 55-70 kg, 平均体重为 (65.8±1.3) kg, 手术时间 120-180 min, 平均手术时间为 (148.6±9.8) min; 对照组 60 例, 男性 33 例, 女性 27 例, 年龄 40-70 岁, 平均年龄为 (65.9±1.6) 岁, 体重 55-70 kg, 平均体重为 (65.6±1.4) kg, 手术时间 120-180 min, 平均手术时间为 (148.5±8.5) min, 两组一般资料经统计学分析无差异 ($P>0.05$), 具有可比性。所有患者均知情同意, 且本研究经医院伦理委员会批准。

1.2 方法

所有患者麻醉前半小时肌注阿托品和咪达唑仑, 入手术室以后建立外周静脉通道, 然后补充丢失的液体。对照组: 患者行全麻诱导, 具体步骤如下: 取 0.2 mg 的芬太尼、40-100 mg 的丙泊酚, 给患者分别以静脉注入, 待患者消失意识后, 静脉注入 0.08-0.12 mg/kg 的维库溴铵, 同时吸氧除氮控制呼吸, 然后行气管插管接上麻醉机, 保持潮气量介于 8-10 mL, 呼吸频率大约 12 次/min。全麻维持: 术中每小时以微泵注入 3-5 mg 的丙泊酚, 并每次按需间断静脉注入 0.05-0.1 mg 的芬太尼、0.03-0.05

mg/kg 的维库溴铵, 吸入 0.5%-2% 的异氟醚以维持麻醉。研究组: 先给予患者硬膜外麻醉, 于第 6、7 胸椎或者 7、8 胸椎穿刺, 然后向头侧放置导管大约 4 cm, 给予利多卡因大约 3 mL, 确认没有导管误进入蛛网膜下腔后再注入罗哌卡因大约 5-8 mL, 等阻滞平面满意后进行对照组的全麻诱导和全麻维持操作, 每 40 min 向硬膜外导管注射 1.5% 的罗哌卡因大约 3-5 mL。

1.3 观察指标

观察两组苏醒时间、苏醒期收缩压、舒张压、心率及烦躁情况, 并比较两组术前、术后 72 h 血糖、皮质醇以及肾上腺素。血糖浓度采用 One Touch II 快速血糖仪进行测定; 而皮质醇和肾上腺素浓度则采用放射免疫方法进行检测, 操作方法和步骤均严格按照试剂盒说明进行, 试剂盒购自上海信帆生物科技有限公司。

1.4 统计学方法

全部数据均在 SPSS17.0 软件上统计, 其中苏醒时间、苏醒期收缩压、舒张压、心率以及血糖、皮质醇及肾上腺素水平等计量资料用 ($\bar{x} \pm s$) 表示, 应用 t 检验, 烦躁发生率等计数资料应用 χ^2 检验, 检验标准设置为 $\alpha=0.05$ 。

2 结果

2.1 两组血流动力学比较

两组苏醒时间比较差异无统计学意义 ($P>0.05$), 苏醒期研究组收缩压、舒张压及心率、烦躁发生率均较对照组降低 ($P<0.05$)。见表 1。

表 1 两组血流动力学比较

Table 1 Comparison of hemodynamics between the two groups

Groups	n	Recovery time(h)	Systolic pressure (mmHg)	Diastolic pressure (mmHg)	Heart rate (beats/min)	Incidence of irritability(%)
Control group	60	5.2±0.9	132.8±8.2	92.1±1.7	103.2±8.2	13(21.7)
Study group	60	4.9±1.1	109.8±7.9 ^a	81.6±0.9 ^a	89.5±6.9 ^a	5(8.3) ^a

Note: compared with the control group, ^a $P<0.05$.

2.2 两组应激反应比较

两组术前血糖、皮质醇及肾上腺素比较无统计学意义 ($P>0.05$); 术后 72h, 两组血糖、皮质醇及肾上腺素均升高 ($P<$

0.05); 研究组血糖、皮质醇及肾上腺素均较对照组降低 ($P<0.05$)。见表 2。

表 2 两组血糖、皮质醇及肾上腺素比较 ($\bar{x} \pm s$)

Table 2 Comparison of blood glucose, cortisol and adrenaline between the two groups ($\bar{x} \pm s$)

Groups	Time	Blood glucose(mmol/L)	Cortisol(mmol/L)	Epinephrine (μg/L)
Control group	Before operation	4.98±1.32	0.58±0.03	35.23±1.32
	72h after operation	7.91±2.04 ^b	0.89±0.11 ^b	62.98±0.98 ^b
Study group	Before operation	5.01±1.97	0.59±0.12	35.89±2.05
	72h after operation	5.58±1.42 ^{ab}	0.67±0.05 ^{ab}	42.38±1.98 ^{ab}

Note: compared with the control group, ^a $P<0.05$, compared with before operation, ^b $P<0.05$.

3 讨论

开胸手术在临床上的应用越来越广泛, 是临床上治疗严重

心脏疾病、肺部疾病以及胸部外伤等疾病的主要方法^[10]。麻醉在开胸手术中非常重要, 全身麻醉在开胸手术应用也越来越多, 全身麻醉苏醒后尤其是苏醒期, 会因血液中麻醉药物浓度

减弱,其麻醉效果会显著降低,患者会渐渐苏醒^[11,12]。在苏醒期因手术带来的创伤会引起患者疼痛,从而导致患者情感上的较大波动,主要表现为躁动和不能控制的哭泣,躁动会导致坠床、外伤以及各种导管的非计划性拔除;同时苏醒期患者会出现血流动力学改变,引起血压增加和心率增快,严重时会导致心脑血管意外发生,因此,稳定血流动力学具有重要意义^[13,14]。患者苏醒期也会因各种刺激而出现应激反应,此反应的发生是由于机体受到外界创伤的刺激造成,其主要表现为一系列的内分泌代谢反应,包括儿茶酚胺、皮质醇及肾上腺素水平升高,蛋白质分解加速、血糖升高等。过强的应激反应会对患者的免疫功能造成影响,增加术后感染的发生,且患者容易出现精神状态不稳定,会影响预后,同时患者精神不稳也会引起内分泌紊乱,致使患者疼痛加重^[15,16]。开胸手术切口比较大,肋骨也会被切开,也会损伤到周围的筋膜,这些均是伤害刺激的来源,而这些刺激均会传播到大脑中枢,进而导致患者出现各种不良反应,增加并发症的发生率^[17-19]。而硬膜外麻醉能使胸段硬膜外被较好的阻滞,进而显著抑制脊髓中枢的反射弧,显著减少伤害刺激由脊髓传入大脑,降低伤害性刺激对大脑的刺激作用,提高患者苏醒期的苏醒质量,稳定血流动力学,改善患者的应激状态^[20,21]。

本研究发现,两组苏醒时间比较无统计学意义($P>0.05$),说明硬膜外复合全身麻醉与单纯全身麻醉对患者苏醒时间无显著影响,均能使患者及时苏醒。且研究还发现,苏醒期研究组收缩压、舒张压及心率、烦躁发生率均较对照组降低,与其他研究结果具有一致性^[22,23],说明硬膜外复合全身麻醉能较好的稳定患者苏醒期血流动力学稳定性,降低患者苏醒期烦躁的发生率,进而提高患者苏醒期的苏醒质量。分析其原因为单纯的全身麻醉需要静脉注入大量的麻醉药,从而加重了对患者机体循环和呼吸的抑制,进而影响了患者血流动力学的稳定^[24,25];而硬膜外复合全身麻醉则可以抑制手术创伤刺激向心传导,使得患者在苏醒期时手术区无痛感,以减少了躁动和情感波动对血压和心率的影响^[26,27]。研究还发现,术前血糖、皮质醇及肾上腺素比较无统计学意义($P>0.05$),术后 72 h,两组血糖、皮质醇及肾上腺素均升高,但研究组血糖、皮质醇及肾上腺素均较对照组降低,说明硬膜外复合全身麻醉应用于开胸手术能较好的稳定患者血糖、皮质醇以及肾上腺素水平,进而改善患者的应激状态。分析其原因为单纯的全身麻醉手术创伤和麻醉药等导致患者免疫系统紊乱,应激激素分泌较高,从而引起患者体内过度的应激反应,但硬膜外复合全身麻醉能抑制手术创伤刺激诱发患者产生兴奋感,提高了患者细胞的免疫功能,使得应激激素分泌下降,以减轻机体内的应激反应^[28-30]。

综上所述,硬膜外复合全身麻醉应用于开胸手术具有较好的麻醉效果,能较好的提高患者麻醉苏醒期苏醒质量,稳定血流动力学以及减少患者应激反应。

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