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超快通道麻醉对胸腔镜手术患者血流动力学与血清干扰素的影响 *

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摘要 目的：探讨超快通道麻醉对胸腔镜手术患者血流动力学与血清干扰素 -γ(Interferon-γ，IFN-γ)的影响。**方法**：选择 2018 年 1 月 ~2020 年 10 月在安徽中医药大学第一附属医院诊治的胸腔镜手术患者 62 例，根据治疗方法分为两组（n=31），患者均行胸腔镜手术，对照组给予传统静脉复合麻醉，实验组给予超快通道麻醉，记录两组血流动力学与血清 IFN-γ 变化。**结果**：两组 T0、T1、T2 与 T3 时间点的平均动脉压(Mean arterial pressure，MAP)、心率(Heart rate，HR)值对比无差异(P>0.05)，均在正常范围。两组手术时间、术中出血量对比无差异(P>0.05)，实验组术后胸管留置时间、住院时间短于对照组(P<0.05)。实验组术后 7 d 并发症发生率低于对照组(6.5 % vs 25.8 %，P<0.05)。两组术后 7 d 的血清 IFN-γ 值高于术前 1 d，且实验组高于对照组(P<0.05)。**结论**：超快通道麻醉在胸腔镜手术患者的应用并不会影响患者的血流动力学与手术进程，有利于抑制血清 IFN-γ 的释放，减少术后并发症的发生，促进患者康复。

关键词：超快通道麻醉；胸腔镜；血流动力学；干扰素 -γ
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Effect of Ultrafast Channel Anesthesia on Hemodynamics and Serum Interferon in Patients Undergoing Thoracoscopic Surgery*

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ABSTRACT Objective: To investigate the effect of ultrafast channel anesthesia on hemodynamics and serum interferon-γ (IFN-γ) in patients undergoing thoracoscopic surgery. **Methods:** A total of 62 patients undergoing thoracoscopic surgery in the First Affiliated Hospital of Anhui University of Traditional Chinese Medicine from January 2018 to October 2020 were selected and divided into two groups according to the treatment method (n=31). All patients underwent thoracoscopic surgery, the control group were given traditional intravenous combined anesthesia, and the experimental group were given ultra-fast channel anesthesia. The changes in hemodynamics and serum IFN-γ expression were recorded. **Results:** There was no difference in the mean arterial pressure (MAP) and heart rate (HR) values between the two groups at T0, T1, T2 and T3 (P>0.05), and they were all within the normal range. There was no difference in operation time and intraoperative blood loss between the two groups(P>0.05). The postoperative chest tube indwelling time and hospital stay in the experimental group were shorter than those in the control group(P<0.05). The complication rate of the experimental group was lower than that of the control group (6.5% vs 25.8 %, P<0.05). Serum IFN-γ values of the two groups at 7 days after operation were higher than those at 1 day before operation, and the experimental group was higher than the control group (P<0.05). **Conclusion**: The application of ultrafast channel anesthesia in patients undergoing thoracoscopic surgery does not affect the patient's hemodynamics and surgical process, and is beneficial to inhibit the release of serum IFN-γ, reduce postoperative complications, and promote patient recovery.

Key words: Ultrafast channel anesthesia; Thoracoscopy; Hemodynamics; Interferon-γ
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前言

胸外科麻醉管理技术一直是麻醉管理中的难点，包括双腔气管插管、封堵器、单肺通气、控制性降压等专科麻醉技术[1,2]。随着微创技术的发展，胸腔镜手术(Video-assisted Thoracoscopic Surgery，VATS)在胸外科疾病诊治中得到了广泛应用，可通过先进的摄、录像系统可将操作视野放大，保证了各种手术的操作更加精确，从而能明显减轻术后疼痛，减少术后并发症，促进患者快速康复[3,4]。不过三孔胸腔镜技术对患者依然有比较大的创伤，不利于患者康复[5,6]。特别是麻醉不当可影响机体血流动力学指标，继而影响血压、心率，为此对于麻醉的要求很高[7]。超快通道麻醉是在合理应用短效麻醉药物的基础上使患者在术后 1 h 内拔除气管导管，以促进患者术后早期康复[8,9]。已有研究发现低水平的 IFN-γ 会导致机体的免疫下降，易诱发肿瘤的

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发生[10-12]。本文具体探讨了超快通道麻醉对胸腔镜手术患者血流动力学与血清 IFN-γ 的影响，以明确超快通道麻醉的应用价值与机制。现总结报道如下。

1 资料与方法

1.1 研究对象

选择 2018 年 1 月 ~2020 年 10 月在安徽中医药大学第一附属医院进行诊治的胸腔镜手术患者 62 例，疾病包括：肺癌、肺结节等。纳入标准：(1)ASA 分级Ⅰ~Ⅱ级；(2)年龄 35~75 岁；(3)Mallampati 分级：Ⅰ～Ⅱ级；(4)术前肺功能正常或轻度损害，FEV_1/FVC%测定值占预计值≥ 70 %；(5)术前没有进行其他手术。排除标准：(1)肺部感染，呼吸道较多分泌物的患者；(2)术前肺功能损害达到中度或以上，第 1 秒时间肺活量低于肺活量的 70 %；(3)有阻塞性睡眠呼吸暂停综合征的患者；(4)术中中转开胸者；(5) 术后再次手术者；(6) 有冠心病病史的患者；(7)严重药物过敏史及药物成瘾史者；(8)精神类疾病者。

根据治疗方法分为两组，两组一般资料对比无差异(P>0.05)，见表 1。

表 1 两组一般资料对比

Table 1 Comparison of two general data

Groups	n	Age (years)	Gender (M/F)	BMI (kg/m²)	ASA staging (Ⅰ/Ⅱ)	Pulmonary nodules/lung cancer
Experimental group	31	54.29± 2.42	16/15	22.18± 2.10	11/20	18/13
Control group	31	55.32± 2.93	17/14	22.87± 1.74	10/21	17/14

1.2 手术与麻醉方法

患者入院后，均行胸腔镜手术，取健侧卧位，在患者腋中线第 7 肋间处，作一 1 cm 观察孔，置入 Trocar，然后在肩胛下角线第 8 肋间处，作一 1.5 cm 辅助操作孔，在腋前线第 4 肋间处，作一 3 cm 主操作孔，三个切口均置入保护套。

对照组：给予传统静脉复合麻醉。实验组：给予超快通道麻醉，术中持续应用阿曲库铵，静脉泵注瑞芬太尼 0.1~0.15 μg/kg/min，保持术中舒芬太尼总量≤ 2 μg/kg，控制中心静脉压 7~8 cm H_2O，胶体渗透压 20~25 mmHg。术后根据需要给予静脉注射氨茶碱 2~3 mg/kg，患者自主呼吸良好后拔除导管。

1.3 观察指标

由同一医师记录：(1)两组麻醉前(T0)、手术开始时(T1)、术中 30 min(T2)及手术结束时(T3)的血流动力学指标：MAP、HR。(2)两组术后胸管留置时间、手术时间、术中出血量与住院时间。(3)两组术后 7 d 发生的并发症(如肺炎、切口感染、心力衰竭、呼吸衰竭等)。(4) 术前 1 d、术后 7 d 抽取患者的空腹静脉血 2~3 mL，离心，取血清，采用酶联免疫法检测血清 IFN-γ。

1.4 统计方法

应用 SPSS 22.00，符合正态分布的计量资料用 $\bar{x}\pm s$ 示，用独立样本 t 检验或配对 t 检验进行统计分析；计数资料用%示，用 x^2 检验进行统计系分析，P<0.05 有统计学意义。

2 结果

2.1 血流动力学变化对比

两组 T0、T1、T2 与 T3 时间点的 HR 与 MAP 值对比无差异(P>0.05)，均正常，见表 2。

表 2 两组生命体征变化对比($\bar{x}\pm s$)

Table 2 Comparison of changes in vital signs between the two groups ($\bar{x}\pm s$)

Groups	n	HR(times/min)				MAP(mmHg)			
		T0	T1	T2	T3	T0	T1	T2	T3
Experimental group	31	72.32± 4.10	73.09± 4.13	73.00± 2.87	73.86± 4.22	94.52± 4.59	92.34± 4.44	91.87± 3.78	91.40± 2.88
Control group	31	73.76± 3.19	74.00± 2.76	73.76± 3.11	74.02± 3.88	93.78± 3.18	93.00± 5.29	92.76± 5.00	92.67± 4.81

2.2 围手术期指标对比

两组手术时间、术中出血量对比无差异(P>0.05)，实验组的术后胸管留置时间、住院时间短于对照组(P<0.05)，见表 3。

表 3 两组围手术期指标对比($\bar{x}\pm s$)

Table 3 Comparison of perioperative indexes between the two groups ($\bar{x}\pm s$)

Groups	n	Operation time (min)	Intraoperative bleeding (mL)	Retention time of chest tube after operation (d)	Postoperative hospitalization (d)
Experimental group	31	153.33± 20.44	130.00± 16.84	3.10± 0.13*	6.92± 0.24*
Control group	31	148.98± 19.29	127.98± 13.92	5.18± 0.22	9.09± 0.44

Note: compared to the control group, *P<0.05.

2.3 术后并发症对比

实验组术后 7 d 并发症发生率低于对照组(6.5 % vs 25.8 %，P<0.05)，见表 4。

表 4 两组术后并发症情况对比(例,%)

Table 4 Comparison of postoperative complications between the two groups (n, %)

Groups	n	Pneumonia	Infection of incisional wound	Heart failure	Respiratory failure	Total
Experimental group	31	0	1	0	1	2(6.5)*
Control group	31	1	3	2	2	8(25.8)

Note: compared to the control group, *P<0.05.

2.4 血清 IFN-γ 变化对比

两组术后 7 d 的血清 IFN-γ 值高于术前 1 d,且实验组高于对照组(P<0.05),见表 5。

表 5 两组手术前后血清 IFN-γ 变化对比(pg/mL,$\bar{x}\pm s$)

Table 5 Comparison of changes in serum IFN-γ between the two groups before and after surgery (pg/mL, $\bar{x}\pm s$)

Groups	n	1 d preoperative	7 d postoperatively
Experimental group	31	0.14± 0.01	5.45± 0.48#*
Control group	31	0.13± 0.02	2.10± 0.24#

Note: compared to the control group, *P<0.05, compared to the 1 d preoperative, #P<0.05.

3 讨论

手术治疗作为胸外科主要治疗方法,能最大程度切除肿瘤组织,但是也可因为麻醉、牵拉、创伤导致患者术后出现各种并发症[13,14]。三孔胸腔镜手术已成为胸外科手术的重要的技术,也符合肿瘤根治的原则,且具有更好的手术安全性和临床预后[15,16]。本研究实验组的术后胸管留置时间、术后住院时间短于对照组,表明超快通道麻醉的应用能促进患者康复。与雷迁[17]等学者的研究类似,该学者探究胸腔镜体外循环心脏手术中实施超快通道麻醉的经验,成功实施超快通道麻醉的患者术后重症监护室滞留时间(3.9± 1.8) h、住院时间(4.5± 1.9) d。从机制上分析,超快通道麻醉能够避免或减少患者术中疼痛不适情况,既保证了患者完善的镇痛效果,又可避免阻滞运动神经功能,可使患者在安全舒适的状态下完成手术,促进术后康复,减少术后胸管留置时间、术后住院时间[18,19]。特别是该方法配合短效静脉麻醉药与吸入麻醉药物维持麻醉,有助于尽快拔管,利于患者术后进行早期康复,促进胃肠功能的改善[20,21]。

胸腔镜手术在临床应用具有术后疼痛轻、康复快、创伤小、患者满意度高等优势[22]。不过在多数情况下,常规麻醉尚不能完全保证患者术中的麻醉效果,导致在术后出现多种并发症,也容易出现血流动力学波动[23,24]。本研究两组不同时间点的 HR 与 MAP 都处于正常范围,对比无差异;实验组术后 7 d 的并发症发生率低于对照组。郦惠芳[25]等学者对比了外周神经阻滞联合静脉快通道麻醉用于老年下肢手术患者的临床效果,术后单纯静脉全麻组的收缩压、舒张压、心率水平高于神经阻滞复合静脉快通道麻醉组,与本研究类似。从机制上分析,超快通道麻醉可降低患者长时间通气导致心肺功能损伤的发生几率;其也有利于维持患者体内酶活性,加速患者体内药物的代谢,使患者自身生理状态恢复正常[26,27]。

胸腔镜手术经过不断的探索及手术规范化,其应用水平已经处于一个较高水平的阶段,可以使手术操作更为精细,视野显露更为清晰,从而减轻机体的应激反应[28]。并且胸腔镜手术产生的炎性应激反应比较轻,有利于机体自身恢复氧化应激反应的平衡,对机体的免疫功能抑制作用也比较轻[29]。IFN-γ 主要由 Th1 细胞分泌,通过放大免疫应答的识别,使细胞表达 MHC-Ⅱ类抗原,发挥抗病毒作用[30,31]。本研究显示两组术后 7 d 的血清 IFN-γ 值高于术前 1 d,实验组高于对照组,表明超快通道麻醉在胸腔镜手术患者的应用能促进血清 IFN-γ 的分泌。从机制上分析,该方法能减轻肺间质水肿,控制胶体渗透压在正常范围内,提高机体血红蛋白运输氧气的能力,有利于降低炎症反应,从而有利于血清 IFN-γ 分泌正常[32,33]。本研究创新性的探究了超快通道麻醉在胸腔镜手术对血清 IFN-γ 分泌的影响,结果显示超快通道麻醉在胸腔镜手术患者,有利于抑制血清 IFN-γ 的释放,但是本研究也存在一定的不足,样本量少,且对长期生存率的影响还需要深入分析。

总之,超快通道麻醉在胸腔镜手术患者的应用并不会影响患者的血流动力学与手术进程,有利于抑制血清 IFN-γ 的释放,减少术后并发症的发生,促进患者康复。

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