·临床研究·

不同麻醉方式对老年患者胃癌术后肺部感染的影响

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【摘 要】 **目的** 探讨不同麻醉方式对老年患者胃癌术后肺部感染的影响。**方法** 入选2013年3月至2016年3月泸州市中医医院收治的老年胃癌患者100例,根据麻醉方式,采用随机数字表法将患者分为全凭静脉麻醉(TIVA)组、吸入全身麻醉(IA)组和硬膜外麻醉联合静脉全身麻醉(CE-IVA)组,分别于麻醉前、拔管后5 min测定呼吸频率(RR)、血氧饱和度(SaO_2)和分钟通气量(MV),手术完毕停药后监测患者苏醒时间和拔管时间,术后第3天监测患者有无肺部感染。**结果** 相比麻醉前,三组患者拔管后RR升高,SaO_2和MV降低,差异有统计学意义($P<0.05$)。相比TIVA组和IA组患者,CE-IVA组患者拔管后RR降低,而SaO_2和MV升高,苏醒时间和拔管时间明显缩短,肺部感染率降低,差异有统计学意义($P<0.05$)。**结论** 硬膜外麻醉联合静脉全身麻醉可改善患者肺功能,显著降低患者术后肺部感染发生率。

【关键词】 胃癌;麻醉;肺部感染;老年
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Effect of different anesthetic approaches on postoperative pulmonary infection in elderly patients after gastric cancer surgery

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【**Abstract**】 **Objective** To determine the effect of different anesthetic approaches on postoperative pulmonary infection in the elderly patients after gastric cancer surgery. **Methods** A total of 100 elderly patients with gastric cancer who were treated surgically in our hospital from March 2013 to March 2016 were recruited in this study. They were randomly divided into total intravenous anesthesia group (TIVA, $n=32$), inhalation anesthesia group (IA, $n=30$), and combined epidural-intravenous anesthesia group (CE-IVA, $n=38$). Respiratory rate (RR), blood oxygen saturation (SaO_2) and minute ventilation (MV) were measured before anesthesia and in 5 min after extubation. The recovery time and extubation time were monitored after the operation was finished. On the 3rd day after operation, the incidence of postoperative pulmonary infection was observed in the subjects. **Results** Significantly elevated RR and reduced SaO_2 and MV were observed in all the 3 groups of patients after extubation than before surgery ($P<0.05$). The CE-IVA group had obviously lower RR, higher SaO_2 and MV, shorter recovery time and extubation time, and lower incidence of pulmonary infection when compared with the other 2 groups ($P<0.05$). **Conclusion** Combined epidural-intravenous anesthesia can improve respiratory function and reduce the incidence of postoperative pulmonary infection in elderly patients after gastric cancer surgery.

【**Key words**】 gastric cancer; anesthesia; pulmonary infection; aged

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老年胃癌患者由于各器官的退行性变以及机体免疫力减弱,术后易继发肺部感染[1,2]。一旦合并肺部感染,将延长患者的住院时间,增高治疗费用,严重者可危及生命。研究已经表明[3],麻醉是导致患者术后肺部感染的主要危险因素之一,行气管插管的全麻患者术后感染率远高于未插管者[4]。因此,选择合理的麻醉方式,对减少患者术后肺部感染的发生具有重要意义[5,6],能最大程度减少并发症,降低术后肺部感染的发生率,本研究探讨了不同麻醉方式对老年胃癌患者术后肺部感染的影响。

1 对象与方法

1.1 研究对象

入选2013年3月至2016年3月泸州市中医医

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院收治的老年胃癌患者100例,根据麻醉方式,采用随机数字表法将患者分为全凭静脉麻醉(total intravenous anesthesia,TIVA)组、吸入全身麻醉(inhalation anesthesia,IA)组和硬膜外麻醉联合静脉全身麻醉(combined epidural-intravenous anesthesia,CE-IVA)组。TIVA组患者32例,男性18例,女性14例,年龄(67.10±5.32)岁。IA组患者30例,男性16例,女性14例,年龄(66.83±6.10)岁。CE-IVA组患者38例,男性22例,女性16例,年龄(66.90±7.04)岁。纳入标准:美国麻醉医师协会(American Society of Anesthesiologists,ASA)分级Ⅰ~Ⅱ级;年龄≥60岁;均行胃部分切除手术。排除标准:术前合并呼吸道及肺部感染;合并免疫、内分泌及循环系统疾病。本研究已通过医院伦理委员会批准,所有研究对象已签署知情同意书。

1.2 麻醉方法

患者入手术室后建立外周静脉通道,接监护仪连续监测患者生命体征。三组患者均面罩吸氧去氮,静脉滴注咪唑安定0.05 mg/kg、丙泊酚2 mg/kg、芬太尼3 μg/kg、顺式阿曲库铵0.1 mg/kg进行静脉麻醉诱导,患者麻醉诱导完成后行气管插管,然后进行间歇性机械正压通气。TIVA组患者靶控输注丙泊酚6~12 mg/(kg·h),瑞芬太尼0.4~1 mg/(kg·min),每隔30 min间断静注维库溴铵0.08~0.1 mg/kg以维持麻醉;IA组患者七氟烷吸入麻醉,使得最低有效肺泡浓度(minimum alveolar concentration, MAC)控制在0.75~1.5 MAC,复合靶控输注瑞芬太尼0.4 mg/(kg·min)以维持麻醉;CE-IVA组患者麻醉诱导前在腰椎T8~T9或T9~T10椎间隙行硬膜外穿刺置管,0.75%罗哌卡因3~6 ml持续泵注以维持硬膜外麻醉,微量泵泵注丙泊酚3~6 mg/(kg·h),瑞芬太尼0.2~0.4 mg/(kg·min),每隔30 min间断静注维库溴铵0.06~0.08 mg/kg以维持全身麻醉状态。术中患者若心率低于50次/min,单次静脉注射阿托品0.5 mg,若平均动脉压(mean artery pressure,MAP)下降超过基础值的20%,则单次静脉注射麻黄碱5~10 mg。

1.3 检测指标

分别于麻醉前、拔管后5 min测定呼吸频率(respiratory rate, RR)、血氧饱和度(blood oxygen saturation,SaO_2)和分钟通气量(minute ventilation, MV)。手术完毕停药后监测患者苏醒时间和拔管时间,术后第3天监测患者有无发热、咳嗽和咯痰、肺部有无啰音、血白细胞计数是否$>15\times10^9$/L,拍胸部X光片检查肺部。

1.4 统计学处理

采用SPSS20.0统计软件对数据进行分析,计量资料中呈正态分布者用均数±标准差($\bar{x}\pm s$)表示,组间比较用t检验。计数资料用百分率表示,组间比较用χ^2检验或Fisher精确检验。以$P<0.05$为差异有统计学意义。

2 结 果

2.1 三组患者一般临床资料比较

三组患者在年龄、性别、体质量指数、TNM分期、ASA分级方面差异无统计学意义($P>0.05$;表1)。

2.2 三组患者呼吸功能指标比较

相比麻醉前,三组患者拔管后RR升高,SaO_2和MV降低,差异有统计学意义($P<0.05$);相比TIVA组和IA组患者,CE-IVA组患者拔管后RR明显降低,而SaO_2和MV升高,差异有统计学意义($P<0.05$;表2)。

表1 三组患者一般临床资料比较

Table 1 Comparison of clinical data between three groups

Item	TIVA group ($n=32$)	IA group ($n=30$)	CE-IVA group ($n=38$)	t/χ^2	P value
Age(years,$\bar{x}\pm s$)	67.10±5.32	66.83±6.10	66.90±7.04	1.281	0.542
Gender(male/female)	18/14	16/14	22/16	0.143	0.931
BMI(kg/m^2,$\bar{x}\pm s$)	22.38±2.30	22.10±3.22	22.59±2.40	0.893	0.608
TNM stage[n(%)]				0.279	0.991
Ⅰ	7(21.88)	6(20.00)	9(23.68)		
Ⅱ	13(40.63)	12(40.00)	16(42.11)		
Ⅲ	12(37.50)	12(40.00)	13(34.21)		
ASA grade[n(%)]				0.970	0.616
Ⅰ	20(62.50)	22(73.33)	27(71.05)		
Ⅱ	12(37.50)	8(26.67)	11(28.95)		

BMI: body mass index; TNM: tumor, node, metastases; ASA: American Society of Anesthesiologists. TIVA: total intravenous anesthesia; IA: inhalation anesthesia; CE-IVA: combined epidural-intravenous anesthesia

表2 三组患者呼吸功能指标比较

Table 2 Comparison of indices of respiratory function between three groups ($\bar{x} \pm s$)

Item	TIVA group(n=32)		IA group (n=30)		CE-IVAgroup (n=38)	
	Before anesthesia	At 5 min after extubation	Before anesthesia	At 5 min after extubation	Before anesthesia	At 5 min after extubation
RR(times/min)	19.19±4.23	27.59±5.28*	19.20±4.14	27.83±4.12*	19.24±3.89	20.04±3.30*#
SaO_2(%)	98.90±1.20	89.10±1.10*	98.85±1.17	90.04±1.08*	98.90±1.09	95.10±1.11*#
MV(L)	8.10±0.31	6.32±1.31*	8.05±0.32	6.40±1.22*	8.11±0.40	7.61±0.89*#

RR: respiratory rate; SaO_2: blood oxygen saturation; MV: minute ventilation. TIVA: total intravenous anesthesia; IA: inhalation anesthesia; CE-IVA: combined epidural-intravenous anesthesia. Compared with before anesthesia. *$P<0.05$; compared with TIVA and IA group, #$P<0.05$

2.3 三组患者苏醒时间及拔管时间比较

TIVA组患者苏醒时间(14.28±7.19)min、拔管时间(22.38±8.13)min,IA组患者苏醒时间(14.82±6.32)min、拔管时间(22.02±9.22)min,CE-IVA组患者苏醒时间(8.71±2.25)min,拔管时间(12.28±2.17)min,明显短于TIVA组和IA组患者,差异有统计学意义($P<0.05$)。

2.4 三组患者术后肺部感染情况比较

CE-IVA组、TIVA组、IA组患者术后发生肺部感染者分别为1例(2.63%),7例(21.88%),8例(26.67%),CE-IVA组患者肺部感染率明显低于其他2组,差异有统计学意义($P<0.05$)。

3 讨 论

老年胃癌患者由于肺顺应性降低、肺泡弹性下降、闭合容量及无效死腔量增加,术后易继发肺部感染,影响康复甚至危及生命,已成为老年胃癌患者术后死亡的原因之一[7,8]。胃癌患者术后达到完善镇痛、极早恢复自主呼吸,能咳嗽和排痰,可有效降低呼吸道感染的发生[9,10]。因此,老年胃癌患者手术麻醉时取得最佳的麻醉效果,保证术后良好镇痛,对降低患者术后呼吸系统并发症甚为重要[11,12]。研究结果表明硬膜外麻醉能有效减轻术后疼痛,使应激激素产生减少,可明显改善高危患者术后肺功能和预后,尤其是恶性肿瘤患者[13,14]。

本研究CE-IVA组患者肺部感染率明显低于TIVA组和IA组,表明硬膜外麻醉联合静脉全身麻醉可改善患者的肺功能,降低患者术后肺部感染的发生率。此外,CE-IVA组患者苏醒时间和拔管时间明显短于TIVA组和IA组患者,达到了满足术者麻醉深度的要求,同时使患者术后尽早清醒。CE-IVA组患者SaO_2和MV高于TIVA组和IA组患者,说明CE-IVA组患者缩短了进行自主呼吸时间,在呼吸功能改善情况上明显优于TIVA组和IA组患者。总之,CE-IVA组患者在肺部感染发生情况、苏醒时间及拔管时间上明显优于其他两组患者,其可能原因是硬膜外麻醉联合静脉全身麻醉可减少患者使用瑞芬太尼和丙泊酚的剂量,从而减轻患者机体对药物的代谢负担,进而加快患者自主呼吸,缩短患者苏醒时间和拔管时间,降低了患者术后肺部感染的发生率。

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·消 息·

《中华老年多器官疾病杂志》论文优先发表快速通道

为加快重大医学研究成果的交流推广，促进医学事业的发展，我刊对符合下列条件的论文开设快速通道，优先发表：(1)国家、军队、省部级基金资助项目；(2)其他具有国内领先水平的创新性科研成果论文；(3)相关领域各类最新指南解读。凡要求以“快速通道”发表的论文，作者应提供关于论文科学性和创新性的说明。我刊对符合标准的稿件，即快速审核及刊用。

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