doi: 10.13241/j.cnki.pmb.2014.15.031

老年患者全身麻醉气管插管后致下呼吸道感染的相关因素分析及对策 *

吴超贤[1] 王 莉[1] 任远华[1] 董建军[1] 赵永军[1△] 李顺长[2]

(1 广元市第一人民医院麻醉科 四川 广元 628017; 2 第二军医大学长海医院麻醉科 上海 315000)

摘要 目的:探讨老年患者全身麻醉气管插管后致下呼吸道感染麻醉相关影响因素,并采取相对应的处理措施,以期提高临床治疗水平。**方法:**回顾性分析 2010 年 1 月 -2013 年 1 月 103 例老年全身麻醉气管插管患者,对其中出现下呼吸道感染的 13 例患者进行回顾性麻醉影响因素分析。**结果:**老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素有插管过深、插管不熟练、拔管指征不完全、拔管延迟(>3 h)、麻醉时间长(>3 h)等(P<0.05)。而与患者插管途径、插管方式、拔管延迟(<3 h)无关(P>0.05)。**结论:**老年患者全身麻醉气管插管后致下呼吸道感染麻醉相关影响因素较大,临床上要加以规范。

关键词:老年;全身麻醉;气管插管;下呼吸道感染;影响因素

中图分类号:R614 **文献标识码:**A **文章编号:**1673-6273(2014)15-2925-04

Analysis of Anesthesia Related Factors and Countermeasures in Elder Patients With Respiratory Tract Infection After Intubation in General Anesthesia*

WU Chao-xian[1], WANG Li[1], REN Yuan-hua[1], DONG Jian-jun[1], ZHAO Yong-jun[1], LI Shun-chang[2]

(1 Department of anesthesiology, first people's hospital in guangyuan city, Guangyuan, Sichuan , 628017, China;

2 Department of anesthesiology, Changhai hospital, second military medical university, Shanghai, 315000, China)

ABSTRACT Objective: To investigate anesthesia related factors in elder patients with respiratory tract infection after intubation in general anesthesia, and take corresponding countermeasures to deal with in order to improve the level of clinical treatment. **Methods:** 103 cases of elderly patients with tracheal intubation under general anesthesia during January, 2010-January, 2013 were analyzed retrospectively. Anesthesia influencing factors of 13 cases which subjected to lower respiratory tract infections were analyzed. **Results:** The anesthesia related influencing factors in elder patients with respiratory tract infection after intubation in general anesthesia were as follows: Deep intubation, intubation unskilled, inappropriate extubation indication, delayed extubation (> 3h), and anesthesia for a long time(> 3h) , etc(P<0.05). However, intubation approach, intubation method, and delayed extubation(<3h) were statistically unrelated (P> 0.05). **Conclusion:** Anesthesia related factors in elder patients with respiratory tract infection after intubation in general anesthesia are significant, and should further be regulated in clinical work.

Key words: Elderly patients; General anesthesia; Endotracheal intubation; Lower respiratory tract infections; Influencing factors

Chinese Library Classification(CLC): R614 Document code: A

Article ID:1673-6273(2014)15-2925-04

前言

气管插插管是临床上重要的操作技术,不仅在麻醉上应用广泛,且对于危重患者呼吸循环的抢救过程中有重要作用。但是我们分析在临床上一些老年人行全身麻醉气管插管后容易发生下呼吸道感染,当然,这和患者抵抗力低下,存在多种基础疾病,容易诱发感染等有关,研究认为这其中麻醉也有重要的影响作用。本次研究就通过对 103 例老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素进行总结, 以期早期预防,降低下呼吸道感染的发生率,提高临床治疗水平。

1 资料与方法

1.1 临床资料

2010 年 1 月 -2013 年 1 月收入院的 103 例老年全身麻醉气管插管患者,所有患者手术前均无呼吸道感染症状,术后诊断下呼吸道感染的标准符合以下内容[1]: ①出血咳嗽、咳痰、等呼吸系统症状者; ②体温 38℃ 以上, 伴有白细胞计数≥ 11×10^9/L;③双肺可闻及干湿性啰音;④x 线胸片呈炎性阴影;⑤痰培养中存在病原菌。其中男 72 例,女 31 例,年龄最小 61 岁,最大 92 岁,平均(67.3± 4.6)岁;手术类型:腹腔手术例,盆腔手术例,颅脑手术例,脊柱和骨科手术例,耳鼻喉科手术例,其他手术例。详细数据见表 1。

1.2 方法

按照相关的标准,查阅所有患者的病例资料,对麻醉过程中插管途径、盲探插管、插管深度、插管熟练度、拔管指征、延迟拔管(包括在 3 小时以上和 3 小时以下)进行分析。而插管过深指的是成人插管超过 4.5-5.0 cm,儿童插管超过 3 cm,插管不熟练指的是插管操作 3 次以上,以自主呼吸基本恢复,呼之能

* 基金项目:卫生部杰出人才扶持计划基金(315009)

作者简介:吴超贤(1973-),男,本科,主治医师,研究方向:麻醉,主治医师,电话:13628123136,Emal:Wuchaoxian555@163.com

△通讯作者:赵永军(1971-),男,本科,主治医师,研究方向:麻醉,主治医师

(收稿日期:2013-12-08 接受日期:2013-12-30)

表 1 患者一般资料情况

Table 1 General condition of patients

Index	Man	Female	Age (years)	Abdominal surgery	Pelvic surgery	Brain surgery	Spinal orthopedic surgery	ENT surgery
Case	72	31	67.3± 4.6	31	25	20	14	13
Percentage (%)	69.9	30.1	-	30.1	24.3	19.4	13.6	12.6

应,潮气量超过 8 ml/kg,有明显的呼吸呛咳,有吞咽反射且呼之能应。

1.3 统计学处理

采用 SPSS13.0 软件进行分析，将相关因素调查统计的内容作为变量,计量资料采用 t 检验,计数资料采用 χ^2 检验进行分析,以 P< 0.05 为有统计学意义。

2 结果

2.1 老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素分析

从以下的表格中看出,老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素有插管过深、插管不熟练、拔管指征不完全、拔管延迟(＞3 h)、麻醉时间长(＞3 h)等(p＜0.05)。而与患者插管途径、插管方式、拔管延迟(＜3 h)无关(p＞0. 05),见表 2。

2.2 老年患者全身麻醉气管插管后下呼吸道感染麻醉 Logistic 多因素分析

通过对数据进行 Logistic 回归分析,得出插管过深、插管不熟练、拔管指征不完全、拔管延迟(＞3h)、麻醉时间长(＞3h)为老年患者全身麻醉气管插管后下呼吸道感染的独立危险因素,详见表 3。

表 2 老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素呛咳比较(例)

Table 2 Comparison of cough reflex in elder patients with respiratory tract infection after intubation in general anesthesia (case)

Relevant factors	value	Intubation cases	cases of lower respiratory infection	Percentage	X^2	P value
Intubation approach	Nasal	36	5	13.89	0.684	0.0537
	Oral	67	8	11.94		
Intubation method	Blind Intubation	14	2	14.29	0.683	0.0758
	Photopic intubation	89	11	12.36		
Intubation depth	Too deep	25	11	44.0	5.799	0.0012
	Photopic intubation	78	2	2.54		
Intubation proficiency	Skilled	79	3	3.80	6.052	0.0231
	Unskilled	24	10	41.67		
Extubation indication	Incomplete	29	9	31.03	5.475	0.0347
	Entirely	74	4	5.40		
Delayed extubation (>3h)	Delayedextubation	33	10	30.30	5.684	0.0412
	Normal	70	3	4.29		
Delayed extubation (<3h)	Delayed extubation	24	3	12.50	0.693	0.0758
	Normal	79	10	12.66		
Anesthesia time (h)	≤ 3	78	3	3.85	6.578	0.0127
	＞3	25	10	40.0		

表 3 Logistic 多因素分析结果

Table 3 Result of logistic Multivariate analysis

Related factors	OR	Wald x2	P value
Intubation depth	2.497	9.267	P＜0.05
Intubation unskilled	2.217	10.263	P＜0.05
Inappropriate extubation indication	1.013	8.612	P＜0.05
Delayed extubation	3.601	11.105	P＜0.05
Anesthesia for a long time	2.186	12.969	P＜0.05

3 讨论

对于全身麻醉气管插管术后发生下呼吸道感染的原因,研究[2,3]认为是由于气管插管后呼吸道和麻醉机的呼吸回路直接接触,麻醉机中的病原菌无污染呼吸道,呼气时里面的水气可通过聚集在呼气螺旋纹理中, 这样就会造成病原菌生长和繁殖,全身麻醉后的患者,由于呼吸道纤毛处于麻痹状态,失去了外来微生物的第一道抵御能力。而在进行插管时消毒不完全也会造成病原菌随着呼吸道管路进行体内。且气管插管会破坏呼吸道表面黏膜,从而造成患者发生感染,而发生感染后容易造成器官功能损害,呼吸系统功能不全,加重了病情,延长了住院时间,造成治疗费用增加[4]。这也是麻醉时间长造成下呼吸道感染的重要原因。

从本次研究结果中看出,老年患者全身麻醉气管插管后下呼吸道感染麻醉相关影响因素有插管过深、插管不熟练、拔管指征不完全、拔管延迟(>3 h)、麻醉时间长(>3 h)。首选,人体口腔内有大量的细菌,插管过深会造成口腔内的导管等会随着导管进入到下呼吸道, 加上全身麻醉后贲门括约肌会松弛,细菌容易在括约肌表面定植,在加上体位的变化,如在脊柱手术时需要俯卧位,此时就入造成胃内容物返流,而插管过深则容易导管将消化道内的细菌进入咽部,顺着导管作用进入到下呼吸道。研究[5]称,全身麻醉患者发生胃内容物返流的机率为 4%-24%,其中约 60%患者容易发生误吸,但是咽部自卫反射恢复时间一般需要术后的 4-8h[6,7],所以插管过深容易造成下呼吸道感染。而气管插管本身属于侵袭性操作,频繁的插管会破坏呼吸道黏膜的屏障作用,且气管会发生水肿,完整性被破坏,加上手术的创伤作用,患者的抵抗力会低下,细菌会随着导管进入到下呼吸道中,引起感染。研究[8,9]指出,气管插管和气管纤毛运动呈正比, 气管插管后 2h 气管内壁的纤毛会发生倒伏和破碎,6h 后就会造成坏死和损伤,彻底失去屏障作用,所以,若操作者不熟练就会造成气道上皮发生损伤,发生炎性反应,气道分泌物明显增加,造成黏膜干燥后咳嗽反射减弱,分泌物排出困难,细菌容易侵入下呼吸道。

咽部自卫反射恢复时间一般需要术后的 4-8h,而目前气管插管的拔管指征为患者咳嗽反射恢复,吞咽反射恢复,咳嗽力量较大,气管内分泌物量增加明显,自主潮气量在 5 ml/kg,呼吸频率低于 20 次 / 分,检查患者无喉头水肿,上呼吸道通畅。下颌活动良好[10,11]。若未掌握好拔管指征,胃内容物成为巨大的感染源,在未清除呼吸道分泌物等情况下拔除,容易引起呼吸道感染。这也可以解释延长拔管的原因。

针对以上的情况,结合造成全身麻醉气管插管下呼吸道感染的影响因素,我们在临床上要加强无菌操作,正确认识到各种无菌操作对临床效果的重要作用,低于低年资的医生要加强业务学习能力,多向高年资的医生学习相关的经验,平时多注重实践能力操作。可通过在模拟人身上加强气管插管的学习,避免在手术时频繁插管,损伤患者的黏膜屏障。另外在手术前要和手术医生做好沟通工作,估计手术的时间,对于手术时间超过 3h 最好应用抗生素,预防感染,且在术中追加一次。用呋喃西林和洗必泰等交替漱口, 用消毒液漱口口咽部喷雾消毒[12-15]。同时在进行气管插管时检查患者的辅助检查, 详细询问病史,要求患者禁饮禁食 8 小时以上, 避免胃内容物过多引起感染。且在插管过程中要注意插管的深度, 一般成人不超过 4.5-5.0 cm,儿童插管不超过 3 cm。对于插管延迟好拔除指征情况,要掌握好相关的理论知识,严格按照拔管的指征进行操作。在拔管时要选择质量好、内径适合的吸痰管从气管插管内壁快速注入 5-10 mL 生理盐水,引起患者呛咳后吸痰,一般维持 10s 后用高浓度吸氧或气囊加压给氧后促使 SaO_2 达到 95%以上后在吸引,条件允许情况下可排背促进痰液排出,直至双肺无湿啰音[16,17]。同时在手术中加强呼吸道湿化也是重要的,确保气管湿化和痰液稀释,抑制细菌生长。同时在吸痰时要进行口腔和气管内双重吸痰,杜绝同一导管进入气管和口腔内交替吸痰[18,19]。

除此之外,患者在清醒后尽可能的吸出痰液,避免误吸,在术中加强护理,严密观察患者病情变化也是至关重要的,对患者的基础疾病先进行控制治疗,在围手术期加强营养支持等常规的治疗是必不可少的。这对于控制下呼吸道感染和麻醉一样是密不可分的。

参 考 文 献(References)

[1] Sharrock NE, Fischer G, Goss S, et al. The early recovery of cognitive function after total-hip replacement under hypotensive epidural anesthesia[J]. Regional Anesthesia and Pain Medicine, 2005, 30(2): 123-127

[2] Mracek J, Holeckova I, ChytraI, et al. The impact of general versus local anesthesia on early subclinical cognitive function following carotid endarterectomy evaluated using P3 event-related potentials[J]. Acta Neurochirurgica, 2012, 154(3): 433-438

[3] Yan X-B, Ouyang W, Li G, et al. Involvement of neuronal nitric oxide synthase in cognitive impairment in isoflurane-treated rats[J]. Neuroscience Letters, 2012, 506(2): 240-244

[4] Bilotta F, Doronzio A, Cuzzone V, et al. Early postoperative cognitive recovery and gas exchange patterns after balanced anesthesia with sevoflurane or desflurane in overweight and obese patients undergoing craniotomy: a prospective randomized trial[J]. Journal of neurosurgical anesthesiology, 2009, 21(3): 207-213

[5] George Djaiani, Rita Katznelson, Ludwik Fedorko, et al. Early benefit of preserved cognitive function is not sustained at one-year after cardiac surgery: a longitudinal follow-up of the randomized controlled trial[J]. Canadian journal of anesthesia, 2012, 59(5): 449-455

[6] Magni G, Baisi F, Rosa IL, et al. No difference in emergence time and early cognitive function between sevoflurane-fentanyl and propofol-remifentanil in patients undergoing craniotomy for supratentorial intracranial surgery[J]. Journal of neurosurgical anesthesiology, 2005, 17(3): 134-138

[7] Caverni V, Pinto G, Favaro R, et al. Hypotensive Anesthesia and Recovery of Cognitive Function in Long-term Craniofacial Surgery[J]. The Journal of craniofacial surgery, 2005, 16(4): 531-536

[8] Larsen B, Seitz A, Larsen R, et al. Recovery of cognitive function after remifentanil-propofol anesthesia: a comparison with desflurane and sevoflurane anesthesia[J]. Anesthesia &amp,Analgesia, 2000, 90(1):168-174

[9] Breslin DS, Reid JE, Mirakhur RK, et al. Sevoflurane--nitrous oxide anaesthesia supplemented with remifentanil: effect on recovery and cognitive function[J]. Anaesthesia, 2001, 56(2): 114-119

[10] 张素芹, 郭安梅, 郭素香, 等. 两种诊断方法对术后认知功能障碍评估分析[J]. 现代生物医学进展, 2009, 9(20): 3929 -3931
Zhang Su-qin, Guo An-mei, Guo Su-xiang, et al. Evaluation and analysis of two diagnostic methods of postoperative cognitive dysfunction [J]. Progress in Modern Biomedicine, 2009, 9(20): 3929 -3931

[11] 肖春红, 郭安梅, 郭素香, 等. 异氟醚对认知功能的影响机制[J]. 现代生物医学进展, 2010, 10(17): 3382-3383, 3346
Xiao Chun-hong, Guo An-mei, Guo Su-xiang, et al. Influence of isoflurane on cognitive function[J]. Progress in Modern Biomedicine, 2010, 10(17): 3382-3383, 3346

[12] Dr. Hemanshu Prabhakar. Early cognitive Functions in Patients after Embolization in Neuroradiological Suite-A Comparison of Two Anesthetic Techniques[J]. Journal of Anesthesia & Clinical Research, 2011, 2(3): 1-3

[13] Shih J, May LDV, Gonzalez HE, et al. Delayed environmental enrichment reverses sevoflurane-induced memory impairment in rats [J]. Anesthesiology, 2012, 116(3): 586-602

[14] Dumas A, Dupuis GH, Searle N, et al. Early versus late extubation after coronary artery bypass grafting: effects on cognitive function[J]. Journal of cardiothoracic and vascular anesthesia, 1999, 13 (2): 130-135

[15] Evered LA, Silbert BS, Scott DA, et al. Plasma amyloid beta42 and amyloid beta40 levels are associated with early cognitive dysfunction after cardiac surgery[J]. The Annals of Thoracic Surgery, 2009, 88(5): 1426-1432

[16] Padmanabhan U, Leslie K, Eer AS, et al. Early cognitive impairment after sedation for colonoscopy: the effect of adding midazolam and/or fentanyl to propofol[J]. Anesthesia and Analgesia, 2009, 109(5): 1448-1455

[17] Elsinga RM, Roze E, VanBraeckel K.N.J.A, et al. Motor and cognitive outcome at school age of children with surgically treated intestinal obstructions in the neonatal period[J]. Early human development, 2013, 89(3): 181-185

[18] Evered LA, Silbert BS, Scott DA, et al. Plasma amyloid beta42 and amyloid beta40 levels are associated with early cognitive dysfunction after cardiac surgery[J]. The Annals of Thoracic Surgery, 2009, 88(5): 1426-1432

[19] Mazul Sunko B, Hromatko I, Tadinac M, et al. Subclinical neurocognitive dysfunction after carotid endarterectomy-the impact of shunting [J]. Journal of neurosurgical anesthesiology, 2010, 22(3): 195-201

(上接第 2808 页)

Liu Kang-feng, Huang Wen-juan, Ma Jin-guang, et al. Efficacy of mucosolvan joint lavage for severe traumatic brain injury patients with pulmonary infection after tracheotomy[J]. Chinese Journal of Medicine, 2011, 10(11): 1156-1159

[14] 贾东岩, 王志刚, 李亚光, 等. 沐舒坦雾化吸入联合静脉注射治疗脑卒中伴坠积性肺炎的疗效[J]. 中国老年学杂志, 2012, 32(17): 3804-3805
Jia Dong-yan, Wang Zhi-gang, Li Ya-guang, et al. Effect of mucosolvan inhalation combined with intravenous therapy for stroke efficacy hypostatic pneumonia[J]. Chinese Journal of Gerontology, 2012, 32(17): 3804-3805

[15] 刘健, 施燕, 窦懿, 等. 早期应用乌司他丁对严重烧伤患者脏器功能的保护[J]. 上海交通大学学报(医学版), 2008, 28(5): 578-581
Liu Jian, Shi Yan, Dou Yi, et al. Early application of Ulinastatin in organ function protection in patients with severe burn[J]. Journal of Shanghai Jiaotong University (Medical Sciences), 2008, 28 (5): 578-581

[16] 马培华, 时洪星. 沐舒坦治疗新生儿胎粪吸入综合征的临床研究[J].中国妇幼保健, 2008, 23(9): 1238-1239
Ma Pei-hua, Shi Hong-xing. Ambroxol in the treatment of neonatal meconium aspiration syndrome[J]. Chinese Maternal and Child Health, 2008, 23(9): 1238-1239

[17] 李清平, 董文斌, 翟雪松, 等. 固尔舒与沐舒坦预防早产儿呼吸窘迫综合征的临床研究[J]. 中国妇幼保健, 2007, 22(21): 2944-2945
Li Qing-ping, Dong Wen-bin, Zhai Xue-song, et al. Guershu jointed with ambroxol in preventing preterm children with respiratory distress syndrome[J]. Chinese Maternal and Child Health, 2007, 22(21): 2944-2945

[18] 顾金萍, 于健, 王俊松, 等. 乌司他丁在急性呼吸窘迫综合征的临床应用研究[J]. 现代生物医学进展, 2012, 12(14): 2695-2697, 2705
Gu Jin-ping, Yu Jian, Wang Jun-song, et al. Clinical application of Ulinastatin in acute respiratory distress syndrome in[J]. Progress in Modern Biomedicine, 2012, 12(14): 2695-2697, 2705

[19] 潘珍, 陈春泉. 乌司他丁对严重烧伤患者重要脏器保护作用的 Meta 分析[J]. 中国药师, 2012, 15(5): 700-704
Pan Zhen, Chen Chun-quan. Meta-analysis of protection effect of Ulinastatin in important organs in patients with severe burn[J]. Chinese pharmacist, 2012, 15(5): 700-704

[20] 信文启, 李新宇, 周新, 等. 乌司他丁对大鼠毛细血管渗漏综合征肺毛细血管通透性的影响 [J]. 现代生物医学进展, 2010, 10(24): 4672-4674
Xin Wen-qi, Li Xin-yu, Zhou xin, et al. Influence of Ulinastatin for rat capillary leak syndrome, pulmonary capillary permeability[J]. Progress in Modern Biomedicine, 2010, 10(24): 4672-4674