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## 肺癌术后出现肺部感染患者的影响因素及其临床预防控制策略

张东亚, 徐莉, 丁艳

(淮安市第一人民医院呼吸与危重症医学科, 江苏 淮安 223300)

**[摘要]** 目的: 探究肺癌术后出现肺部感染患者的影响因素及其临床预防控制策略。方法: 回顾分析淮安市第一人民医院于2018年1月至2020年1月收治的180例肺癌患者, 患者均接受肺癌手术治疗。分析肺癌术后出现肺部感染的单因素, 采用logistic多因素回归分析肺部感染相关影响因素, 并制订针对性临床预防控制策略。结果: 在180例肺癌患者中, 术后出现肺部感染率为9.44%(17/180)并纳入研究组, 采用美国胸科协会制定的院内肺部感染诊断标准对感染程度分为轻度3例(17.65%)、中度9例(52.94%)、重度5例(29.41%)。余下163例肺癌术后未出现肺部感染患者纳入对照组。经单因素分析显示: 两组患者的年龄 $\geq 60$ 岁、手术时间长、侵入性操作、合并慢性疾病、切口疼痛经统计学分析对比有明显差异性( $P < 0.05$ )。经logistic回归分析结果得出: 年龄 $\geq 60$ 岁、切口疼痛、合并糖尿病与慢性阻塞性肺疾病是肺癌术后出现肺部感染的独立影响因素( $P < 0.05$ )。因此制订病房环境护理、饮食运动指导、早期肠内营养支持、口腔护理、预防性给使用抗菌药物等临床预防控制策略。结论: 高龄、术后切口疼痛、合并糖尿病与慢性阻塞性肺疾病的肺癌患者可能更容易出现术后肺部感染, 需采取相关有效临床预防控制策略, 最大化避免出现术后肺部感染, 改善预后。

**[关键词]** 肺癌; 肺部感染; 影响因素; 临床预防控制策略

## Influencing factors and clinical prevention and control strategies of postoperative pulmonary infection in patients with lung cancer

ZHANG Dongya, XU Li, DING Yan

(Department of Respiratory and Critical Care Medicine, First People's Hospital of Huai'an, Huai'an Jiangsu 223300, China)

**Abstract** **Objective:** To explore the influencing factors and clinical prevention and control strategies of postoperative pulmonary infection in patients with lung cancer, in order to reduce the pain of patients and improve the prognosis. **Methods:** A total of 180 cases of lung cancer patients in our hospital from January 2018 to January 2020 were retrospectively analyzed, and all of them received lung cancer surgery. The single factor of postoperative pulmonary infection was analyzed, and the related influencing factors of pulmonary infection were analyzed by logistic regression, and the targeted clinical prevention and control strategies were formulated. **Results:** Among 180

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通信作者 (Corresponding author): 张东亚, Email: chen597841@163.com

patients with lung cancer, the incidence of postoperative pulmonary infection was 9.44% (17/180) and they were included in the study group. According to the degree of infection, they were divided into 3 cases of mild (17.65%), 9 cases of moderate (52.94%) and 5 cases of severe (29.41%). The remaining 163 patients without pulmonary infection were included in the control group. Single factor analysis showed that: the patients in the two groups were over 60 years old, with long operation time, invasive operation, combined with chronic diseases and incision pain there is significant difference through statistical analysis and comparison ( $P < 0.05$ ). The results of logistic regression analysis showed that: the patients in the two groups were over 60 years old, with incision pain, diabetes mellitus and COPD were the independent factors ( $P < 0.05$ ). Therefore, the prevention and control strategies of ward environment care, diet and exercise guidance, early enteral nutrition support, oral care, prophylactic use of antibiotics and so on were formulated. **Conclusion:** Lung cancer patients with advanced age, postoperative incision pain, diabetes mellitus and COPD are more likely to have postoperative pulmonary infection. We need to take effective clinical prevention and control strategies to avoid postoperative pulmonary infection and improve prognosis.

**Keywords** lung cancer; lung infection; influencing factors; clinical prevention and control strategies

近年来我国罹患肺癌患者数量不断增多,且好发于中老年人群,具有发病隐匿、病情发展较快、早期症状不典型等特征,容易被人们忽视。相关研究<sup>[1]</sup>发现:大部分确诊患者中均为肺癌晚期,导致预后不良,严重影响患者生存质量。手术是肺癌常用治疗方法之一,能够完全切除病灶、清除淋巴结。但由于绝大多数中老年患者各项器官功能处于逐渐衰退状态,加之慢性病缠身,抵抗力较弱,另外手术治疗为侵入性操作,这就增加了术后肺部感染风险性<sup>[2-3]</sup>。若术后出现肺部感染,则会致使病情加重,病死率升高。积极探索出肺癌术后出现肺部感染的影响因素,并加强预防控制就显得尤为重要。鉴于此,本研究回顾分析淮安市第一人民医院于2018年1月至2020年1月收治的180例肺癌手术患者的临床资料,采用单因素分析及logistic多因素回归分析术后肺部感染影响因素,并制订临床预防控制策略,希望能进一步改善预后。

## 1 对象与方法

### 1.1 对象

回顾分析淮安市第一人民医院于2018年1月至2020年1月共收治的肺癌手术患者180例,其中男96例,女84例;年龄41~75( $56.08 \pm 7.66$ )岁。根据术后是否出现肺部感染分为两组。研究组( $n=17$ )为出现肺部感染患者,对照组( $n=163$ )为未出现肺部感染患者。纳入标准:1)符合《中国

原发性肺癌诊疗规范(2015年版)<sup>[4]</sup>中肺癌诊断标准,通过常规X线片检查和DSA造影检查、病理检查后确诊;2)术后48 h内出现肺部感染症状;3)临床资料完整。排除标准:1)合并严重器官功能不全者;2)入院前7 d内接受过抗感染治疗;3)临床资料不全者;4)依从性较低;5)精神异常,沟通障碍。

### 1.2 方法

分析两组患者的性别、年龄、肺癌解剖类型、既往病史、手术资料、住院情况等基线资料,分析肺癌术后出现肺部感染的单因素,采用logistic多因素回归分析肺部感染相关影响因素,并制订针对性临床预防控制策略。

### 1.3 观察指标

结合《2015年肺癌诊疗指南》<sup>[4]</sup>相关标准分析肺癌术后出现肺部感染的单因素,采用美国胸科协会制定的院内肺部感染诊断标准对感染程度分为轻度、中度、重度。采用logistic多因素回归分析肺部感染相关影响因素,并制定针对性临床预防控制策略。

### 1.4 统计学处理

采用SPSS 22.0统计学软件进行数据分析,计量资料以均数 $\pm$ 标准差( $\bar{x} \pm s$ )表示,采用 $t$ 检验;计数资料用频数(率)表示,采用 $\chi^2$ 检验。 $P < 0.05$ 为差异有统计学意义。

## 2 结果

### 2.1 患者一般资料分析

对研究组和对照组进行了匹配, 两组的基线资料经统计学分析对比, 差异无统计学意义 ( $P>0.05$ ), 排除基线不同等因素导致的偏差, 可作对比分析(表1)。

### 2.2 180例肺癌患者术后出现肺部感染情况

在180例肺癌患者中, 术后出现肺部感染率为9.44%(17/180), 根据感染程度分为轻度3例(17.65%)、中度9例(52.94%)、重度5例(29.41%)。

### 2.3 两组患者术后出现肺部感染的单因素分析

两组患者的年龄 $\geq 60$ 岁、手术时间 $\geq 3$  h、侵入性操作、合并糖尿病、合并慢性阻塞性肺疾病、切口疼痛经统计学分析对比, 差异有统计学意义( $P<0.05$ , 表2)。

### 2.4 肺癌患者术后出现肺部感染的logistic多因素回归分析

经logistic回归分析结果得出: 高龄、切口疼痛、合并糖尿病与慢性阻塞性肺疾病是肺癌术后出现肺部感染的独立影响因素( $P<0.05$ , 表3)。

表1 患者一般资料分析

Table 1 Analysis of general data of patients

组别	<i>n</i>	男/[例(%)]	女/[例(%)]	中央型肺癌/ [例(%)]	周围型肺癌/ [例(%)]	全肺切除术/ [例(%)]	肺叶切除术/ [例(%)]
研究组	17	9 (52.94)	8 (47.06)	2 (11.76)	15 (88.24)	8 (47.06)	9 (52.94)
对照组	163	87 (53.37)	76 (46.63)	15 (9.20)	148 (90.80)	85 (52.14)	78 (56.52)
$\chi^2/t$		0.004	0.004	0.349	0.349	0.516	0.259
<i>P</i>		0.951	0.951	0.555	0.555	0.472	0.611

表2 两组患者术后出现肺部感染的单因素分析

Table 2 Single factor analysis of postoperative pulmonary infection in two groups

单因素	研究组( <i>n</i> =17)	对照组( <i>n</i> =163)	$\chi^2$	<i>P</i>
性别/[例(%)]			0.004	0.951
男	9 (52.94)	87 (53.37)		
女	8 (47.06)	76 (46.63)		
年龄/[例(%)]			4.608	0.032
<60岁	6 (35.29)	82 (50.31)		
$\geq 60$ 岁	11 (64.71)	81 (49.69)		
年龄/岁	56.01 $\pm$ 7.61	56.12 $\pm$ 7.73	0.056	0.956
侵入性操作/[例(%)]			9.626	0.002
是	12 (70.59)	80 (49.08)		
穿刺	7 (41.18)	46 (28.22)		
封闭	5 (29.41)	34 (20.86)		
否	5 (2.41)	83 (50.92)		
合并糖尿病/[例(%)]			4.684	0.030
是	12 (70.59)	91 (55.83)		
否	5 (29.41)	72 (44.17)		

续表2

单因素	研究组(n=17)	对照组(n=163)	$\chi^2$	P
合并慢性阻塞性肺疾病/[例(%)]			3.964	0.046
是	12 (70.59)	93 (57.06)		
否	5 (59.41)	70 (42.94)		
切口疼痛/[例(%)]			4.684	0.030
是	12 (70.59)	91 (55.83)		
否	5 (29.41)	72 (44.17)		
使用抗菌药/[例(%)]			0.082	0.775
是	9 (52.94)	83 (50.92)		
否	8 (47.06)	80 (49.08)		
手术时间/[例(%)]			7.526	0.006
<3 h	4 (23.53)	68 (41.72)		
$\geq 3$ h	13 (76.47)	95 (58.28)		
ERAS/[例(%)]			6.962	0.008
有	11	53		
无	6	110		

表3 肺癌患者术后出现肺部感染的logistic多因素回归分析

Table 3 Logistic regression analysis of postoperative pulmonary infection in patients with lung cancer

影响因素	OR	95%CI	P
年龄 $\geq 60$ 岁	6.35	1.380~6.419	<0.001
术后切口疼痛	5.08	2.530~5.251	0.020
合并糖尿病	5.42	4.461~6.359	0.018
合并慢性阻塞性肺疾病	4.57	2.633~5.693	0.006

### 3 讨论

肺癌术后出现肺部感染若治疗不当, 导致病情逐步恶化, 严重影响患者生存时间与生活质量<sup>[5-6]</sup>。一旦感染后可出现咳嗽、咳痰、胸痛等无特异性症状, 肺部感染多由肺炎克雷伯菌入侵人体后感染所致, 其属于一种条件性感染菌株, 存在于上呼吸道、肠道正常菌群内, 若抵抗力下降, 出现肺部感染的概率更高<sup>[7-8]</sup>。因此, 在临床预防控制中需根据患者实际病情, 并加强药敏试验、痰培养, 正确使用抗生素, 避免出现术后肺部感染。

本研究结果显示: 180例肺癌患者中, 术后出现肺部感染率为9.44%(17/180), 根据感染程度分为轻度、中度、重度。经单因素分析显示:

两组患者的年龄 $\geq 60$ 岁、手术时间 $\geq 3$  h、侵入性操作、合并糖尿病、合并慢性阻塞性肺疾病、切口疼痛经统计学分析对比, 差异有统计学意义。Logistic回归分析结果显示: 年龄 $\geq 60$ 岁、切口疼痛、合并糖尿病与慢性阻塞性肺疾病是肺癌术后出现肺部感染的独立影响因素, 提示60岁及以上的肺癌患者因自身器官功能减退、抵抗力下降、支气管黏膜防御功能下降, 术后出现肺部感染的概率更高<sup>[9-10]</sup>。因此, 医护人员需指导患者适当进行肢体功能锻炼, 并制订合理膳食搭配计划, 加强营养干预, 可有效增强其免疫力与抵抗力。此外, 糖尿病与慢性阻塞性肺疾病同样好发于老年患者, 合并这两类慢性疾病也容易出现肺部感染, 究其原因是由于合并糖尿病后患者机体内血



糖水平异常升高, 不仅会促使病原菌生长、繁殖, 还会影响神经系统与微循环系统, 不利于术后切口愈合<sup>[11-12]</sup>。合并慢性阻塞性肺疾病主要表现为程度不一的支气管狭窄、气道慢性炎症等, 从而致使患者术后气道内可能会残留部分分泌物, 这样一来就为病原菌提供了良好的生长环境<sup>[13]</sup>。另外, 术后切口疼痛明显的患者往往不敢咳痰、咳嗽, 长此以往致使难以彻底排出呼吸道内所残留的分泌物, 容易引起肺不张, 肺部感染可能性更高<sup>[14-15]</sup>。因此, 护理人员需对糖尿病、慢性阻塞性肺疾病进行针对性治疗, 例如对于合并糖尿病患者需加强饮食干预, 积极限制摄入高糖高热量等食物, 每天监测并记录患者血糖水平, 遵医嘱适当给予降糖药物干预。对于合并慢性阻塞性肺疾病患者需帮助患者及时排痰、清除气道内分泌物, 遵医嘱适当给予痰热清、头孢唑肟等消炎药物干预。若部分患者咳痰较困难, 可给予雾化吸入疗法、纤维支气管镜辅助排痰, 目的就在于尽可能避免该原发疾病影响肺癌患者术后康复进程<sup>[16-17]</sup>。对于术后切口疼痛明显患者, 护理人员需定时勤换无菌敷料, 确保切口干燥、清洁; 指导患者取舒适体位, 保持深呼吸, 必要时可遵医嘱给予镇痛药物缓解。与此同时, 需注意在手术过程中严格遵循无菌操作, 做好手卫生, 严密配合手术医师, 尽可能缩短手术时间, 降低手术视野受污染概率。密切观察患者在围术期呼吸、血压、脉搏等各项生命体征变化, 便于及时处理异常反应。术后做好病房环境护理, 确保室内环境干净、舒适, 定期消毒灭菌处理, 确保室内空气通畅。为有效提高肺癌患者术后生存时间, 患者通常需要接受放化疗, 但在放化疗期间, 患者营养状态较差, 易出现肺部感染<sup>[18-20]</sup>。因此, 给予早期营养支持干预, 在营养支持期间观察患者不良反应。早期营养支持干预不仅能促使肠道吸收与利用, 从而满足患者营养需求, 还能维持肠黏膜屏障功能与结构的完整性, 提高抵抗力, 避免术后出现肺部感染<sup>[21-22]</sup>。口腔是呼吸道、消化道起端, 由于人们口腔内往往存在许多定制菌群, 一旦抵抗力减弱, 则容易出现肺部感染<sup>[23-25]</sup>。因此, 指导患者进食后使用抗菌漱口液10 mL, 漱口时间2 min, 加强口腔护理, 嘱其注意口腔卫生。张化芝等<sup>[26]</sup>的研究显示: 高龄、切口疼痛明显、糖尿病、慢性阻塞性肺疾病是肺癌术后出现肺部感染的独立影响因素, 这与本研究结论基本一致。

综上所述, 年龄超过60岁、术后切口疼痛、合并糖尿病与慢性阻塞性肺疾病的肺癌患者可能

更容易出现术后肺部感染, 需采取相关有效临床预防控制策略, 最大化地避免患者出现术后肺部感染, 有利于改善预后。

## 参考文献

1. 葛宏飞, 林玲, 翁贤福, 等. 肺癌术后并发肺部感染病原学及危险因素分析[J]. 浙江中西医结合杂志, 2016, 26(5): 98-100.  
GE Hongfei, LIN Ling, WENG Xianfu, et al. Etiology and risk factors of pulmonary infection after lung cancer surgery[J]. Zhejiang Journal of Integrated Traditional Chinese and Western Medicine, 2016, 26(5): 98-100.
2. 周晨, 陆云良, 叶英, 等. 肺癌患者术后医院感染临床分析及头孢唑肟的预防疗效[J]. 中华医院感染学杂志, 2018, 28(23): 3564-3567.  
ZHOU Chen, LU Yunliang, YE Ying, et al. Clinical analysis of postoperative nosocomial infection in patients with lung cancer and preventive effect of cefotaxime[J]. Chinese Journal of Nosocomiology, 2018, 28(23): 3564-3567.
3. 彭武君, 张文林, 刘君德, 等. 气道定植菌对肺癌患者术后肺部感染的影响因素分析[J]. 中华医院感染学杂志, 2019, 29(4): 508-511.  
PENG Wujun, ZHANG Wenlin, LIU Junde, et al. Analysis of influencing factors of airway colonization on postoperative pulmonary infection in patients with lung cancer[J]. Chinese Journal of Nosocomiology, 2019, 29(4): 508-511.
4. 梁颖. AME指南解读|《中国原发性肺癌诊疗规范(2015年版)》更新要点[J]. 临床与病理杂志, 2015, 35(4): 543-544.  
LIANG Ying. Interpretation of AME guidelines | update points of Chinese code for diagnosis and treatment of primary lung cancer (2015 edition)[J]. Journal of Clinical and Pathological Research, 2015, 35(4): 543-544.
5. Assante J, Collins S, Hewer I. Infection associated with single-dose dexamethasone for prevention of postoperative nausea and vomiting: a literature review[J]. AANA J, 2015, 83(4): 281-288.
6. Miwa S, Shirai T, Yamamoto N, et al. Risk factors for postoperative deep infection in bone tumors[J]. PLoS One, 2017, 12(11): e0187438.
7. Jung DH, Lee YC, Kim JH, et al. Postoperative helicobacter pylori infection as a prognostic factor for gastric cancer patients after curative resection[J]. Gut Liver, 2017, 11(5): 635-641.
8. Ghattas PJ, Mehlman CT, Eichten D. Treatment of postoperative infection after posterior spinal fusion and instrumentation in a patient with neuromuscular scoliosis[J]. Am J Orthop (Belle Mead NJ), 2014, 43(2): 89-93.
9. 彭彬, 李国锋, 许明明. 高龄肺癌根治术患者围术期肺部感染的高危因素分析及预防[J]. 中国肿瘤临床与康复, 2018, 25(12): 1435-1438.

- PENG Bin, LI Guofeng, XU Mingming. Analysis of high risk factors and prevention of perioperative pulmonary infection in elderly patients undergoing radical resection of lung cancer[J]. *China cancer clinic and rehabilitation*, 2018, 25(12): 1435-1438.
10. 谢永强. 痰热清与头孢唑肟联用对肺癌患者化疗后肺部感染的临床疗效及其对炎症因子水平改善的影响[J]. *抗感染药学*, 2018, 15(9): 1589-1592.
- XIE Yongqiang. Clinical effect of Tanreqing combined with ceftizoxime on pulmonary infection after chemotherapy in patients with lung cancer and its influence on the improvement of inflammatory factors[J]. *Anti-Infection Pharmacy*, 2018, 15(9): 1589-1592.
11. Rohner-Spengler M, Frotzler A, Honigmann P, et al. Effective treatment of posttraumatic and postoperative edema in patients with ankle and hindfoot fractures: a randomized controlled trial comparing multilayer compression therapy and intermittent impulse compression with the standard treatment with ice[J]. *J Bone Joint Surg Am*, 2014, 96(15): 1263-1271.
12. Zhu Z, Wang C, Xu C, et al. Influence of patient-controlled epidural analgesia versus patient-controlled intravenous analgesia on postoperative pain control and recovery after gastrectomy for gastric cancer: a prospective randomized trial[J]. *Gastric Cancer*, 2013, 16(2): 193-200.
13. 郭广民. 用早期肠内营养支持疗法为术后的肺癌患者预防肺部感染的效果研究[J]. *当代医药论丛*, 2016, 14(20): 63-64.
- GUO Guangmin. Study on the effect of early enteral nutrition support therapy in the prevention of pulmonary infection in patients with postoperative lung cancer[J]. *Contemporary Medicine Forum*, 2016, 14(20): 63-64.
14. Park SY, Kim MS, Eom JS, et al. Risk factors and etiology of surgical site infection after radical neck dissection in patients with head and neck cancer[J]. *Korean J Intern Med*, 2016, 31(1): 162-169.
15. Wang Y, Li JP, Song YL, et al. Intensive insulin therapy for preventing postoperative infection in patients with traumatic brain injury: A randomized controlled trial[J]. *Medicine (Baltimore)*, 2017, 96(13): e6458.
16. 文艺, 谢延芳, 张少见. 沐舒坦雾化吸入治疗联合针对性护理对肺癌患者术后肺部感染的影响[J]. *海峡药学*, 2017, 29(2): 157-158.
- WEN Yi, XIE Yanfang, ZHANG Shaojian. Effect of Mucosolvan aerosol inhalation therapy combined with targeted nursing on postoperative pulmonary infection in patients with lung cancer[J]. *Strait Pharmaceutical Journal*, 2017, 29(2): 157-158.
17. 李国燕, 张华, 陈建丽, 等. 120例老年肺癌化疗患者伴肺部感染的影响因素分析[J]. *抗感染药学*, 2019, 16(2): 88-90.
- LI Guoyan, ZHANG Hua, CHEN Jianli, et al. Analysis of the influencing factors of pulmonary infection in 120 elderly patients with lung cancer chemotherapy[J]. *Anti-Infection Pharmacy*, 2019, 16(2): 88-90.
18. 马继龙, 赵静, 柏启州, 等. VSD应用于胸部手术后感染防治体会[J]. *中国肺癌杂志*, 2018, 21(4): 343-347.
- MA Jilong, ZHAO Jing, BAI Qizhou, et al. Application of VSD in 6 cases of postoperative infection-a clinical experience sharing[J]. *Chinese Journal of Lung Cancer*, 2018, 21(4): 343-347.
19. Liu BC. Treatment of postoperative infectious complications in patients with human immunodeficiency virus infection[J]. *World J Emerg Med*, 2014, 5(2): 103.
20. Liu Z, Xiong Z, Wu J, et al. Clinical curative effect of mesalt combined with mepilex dressing in postoperative infection of inguinal hernia[J]. *Med Sci Monit*, 2015, 21: 1038-1042.
21. 刘华峰, 卢燕军, 刘学文, 等. 氨溴索注射液与头孢哌酮-舒巴坦钠对肺癌患者化疗后肺部感染的临床效及其对炎症因子水平的影响[J]. *抗感染药学*, 2018, 15(7): 1265-1267.
- LIU Huafeng, LU Yanjun, LIU Xuewen, et al. Clinical effect of ambroxol injection and cefoperazone sulbactam sodium on pulmonary infection after chemotherapy in patients with lung cancer and its influence on inflammatory factors[J]. *Anti-Infection Pharmacy*, 2018, 15(7): 1265-1267.
22. Azouni MA, Petre G. Screening of *Toxoplasma gondii* infection among childbearing age females and assessment of nurses' role in prevention and control of toxoplasmosis[J]. *J Egypt Soc Parasitol*, 2014, 44(2): 329-342.
23. Kitaev S, Rimmel J, Tiefenbruck M. Analysis on influencing factors in postoperative incision infection of patients of general surgery[J]. *Modern Preventive Med*, 2014, 15(4): 31-65.
24. Wang Z, Cai XJ, Shi L, et al. Risk factors of postoperative nosocomial pneumonia in stage I-IIIa lung cancer patients[J]. *Asian Pac J Cancer Prev*, 2014, 15(7): 3071-3074.
25. Ghobrial GM, Harrop JS, Sasso RC, et al. Anterior cervical infection: presentation and incidence of an uncommon postoperative complication[J]. *Global Spine J*, 2017, 7(Suppl 1): 12S-16S.
26. 张化芝, 郭晓焯, 李晓双, 等. 肺癌术后并发肺部感染的病原学分析及影响因素分析[J]. *中华医院感染学杂志*, 2018, 28(1): 84-87.
- ZHANG Huazhi, GUO Xiaoye, LI Xiaoshuang, et al. Etiological analysis and influencing factors of pulmonary infection after lung cancer surgery[J]. *Chinese Journal of Nosocomiology*, 2018, 28(1): 84-87.

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