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原发性肝癌根治术后病人肺部并发症危险因素的单因素及 Logistic 分析*

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摘要 目的:探讨原发性肝癌根治术后病人肺部并发症发生的危险因素。**方法:**收集 2011 年 3 月至 2014 年 2 月间因原发性肝癌行肝癌根治术病人 120 例,根据有无并发症将两组病人分为肺部并发症和无肺部并发症组,对病人的一般情况、术前检查及手术情况设置变量首先用单因素方法筛选与肝癌根治术后肺部并发症相关的危险因素,进一步行多因素 logistic 分析这些相关危险因素中的独立危险因素。**结果:**入组病人中术后有 25 例(20.83%)发生了肺部并发症。单因素分析结果显示肝癌根治术后肺部并发症发生的危险因素有:慢性呼吸道疾病史、术前 2 周呼吸道感染史、术前白蛋白水平、手术时间、麻醉时间、术中出血量及术后使用镇痛泵($P < 0.05$)。Logistic 分析显示肝癌根治术后肺部并发症发生的独立危险因素为:慢性呼吸道疾病史、术前白蛋白水平及术后使用镇痛泵($P < 0.05$)。**结论:**原发性肝癌根治术患者存在术后肺部并发症危险因素,临床工作中对其进行评估可减少或避免发生并发症。

关键词:原发性肝癌;肝癌根治术;肺部并发症;危险因素;Logistic 分析

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Single Factor and Logistic Analysis of Risk Factors of Pulmonary Complications in Patients with Primary Hepatic Carcinoma after Radical Resection*

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ABSTRACT Objective: To investigate the risk factors of pulmonary complications in patients with primary hepatic carcinoma(HCC) after radical resection. **Methods:** 120 cases with radical resection for HCC from March 2011 to February 2014 were enrolled in this study and then divided into two groups according to whether the patients had pulmonary complications. Screening for the risk factors of pulmonary complications after radical resection of HCC were performed using single factor analysis, and further screening for independent factors in the risk factors were conducted using the multi-variate logistic regression analysis. **Results:** Among the 120 cases with radical resection for HCC, there were 25 cases (20.83%) with pulmonary complications. The risk factors for these complications that identified by single factor analysis included chronic respiratory disease history, history of respiratory tract infection at 2 weeks before operation, preoperative albumin level, operation duration, anesthesia duration, amount of bleeding during operation and postoperative using of analgesia pump($P < 0.05$). Logistic analysis results showed that chronic respiratory disease history, preoperative albumin level and postoperative analgesia pump were the independent risk factors of postoperative pulmonary complications for patients with HCC after radical resection ($P < 0.05$). **Conclusion:** There are several risk factors of pulmonary complications in patients with HCC after radical resection. To evaluate suitably can reduce or avoid these complications in clinical practices.

Key words: Primary hepatic carcinoma; Radical mastectomy; Pulmonary complications; Risk factors; Logistic analysis

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前言

原发性肝癌(Primary hepatic carcinoma, HCC)是一种临床上常见的消化系统恶性肿瘤,其死亡率很高^[1-6]。全球每年有 100 多万肝癌新发病例^[1,7]。肝癌最好的治疗方法是手术切除^[5,8],

但肝癌根治术后肺部并发症发生率较高,文献报道其发生率为 36.96%^[9-13]。多种肺部并发症常合并存在,不但增加了临床诊治难度,对患者造成极大的痛苦,更对社会带来严重的经济负担,同时使得术后死亡率居高不下。因此,积极探讨肝癌根治术后发生肺部并发症的危险因素,以便寻找如何减少或避免其发生

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的有效方法极为关键。本文对 120 例原发性肝癌根治术后病人肺部并发症危险因素的单因素及多因素分析,旨在探明肝癌根治术后发生肺部并发症的危险因素,从而在临床工作中更好对其进行评估减少或避免发生此类并发症。

1 临床资料与方法

1.1 一般资料

1.1.1 病人入组标准 收集 2011 年 3 月至 2014 年 2 月期间就诊病人, B 超、CT 或磁共振结果显示肝脏占位, 乙肝五项 1、3、5 或 1、4、5 阳性, 排除多个病灶者及肝转移性肿瘤病人。病人进行了手术治疗且手术方式为肝癌根治术, 术中选用的麻醉方式为全麻。术后病理诊断为原发性肝细胞肝癌。共收集符合要求患者 120 例, 其中男 100 例, 女 20 例。

1.1.2 肺部并发症的诊断依据 肺部并发症的诊断依据以下临床症状、实验室检查和影像学结果综合确诊^[8,9,12,13]。(1)临床症状: 1)咳嗽、咳痰; 发热; 2)术后 3 天内患者体温下降后再上升, 或体温持续不降; 3)肺部听诊闻及湿啰音、或呼吸音减低。(2)实验室检查: 血常规、急性期反应蛋白、血气分析符合相应疾病改变。(3)影像学结果: 常规胸部 X 片、胸部 CT 或 MRI 及超声显示术后出现的感染或相应并发症的影像学征象。

1.1.3 肺部并发症的诊断标准 具备上述 1.1.2 的标准计算为发生了肺部并发症。并发症以例次计算, 1 例患者可以出现一种或一种以上的并发症。

1.2 变量设置

依据文献结果^[8,9,12,13], 选取可能与肺部并发症相关的以下变量进行分析: (1)一般资料变量: 性别、年龄、体重、吸烟史、慢性呼吸道疾病史, 心脏疾病史、脑血管意外史、糖尿病史、术前

2 周呼吸道感染史; (2)术前检查结果有关的变量: 肿瘤大小、甲胎蛋白、总胆红素、白蛋白、血红蛋白、红细胞压积、凝血酶原时间、腹水、Child-Pugh 分级); (3)与手术有关的变量: 切除方式、手术时间、麻醉时间、术中出血量、术中血流阻断、术后使用镇痛泵。

1.3 统计学方法

所有数据使用 SPSS18.0 统计学软件进行分析。肝癌根治术后肺部并发症与各危险因素之间的单因素分析: 两组计数资料采用卡方检验或秩和检验; 两组计量资料以均数 $\pm$ 标准差($\bar{x} \pm s$)表示, 采用 student-t 检验。多因素分析采用 Logistic 回归分析, $P < 0.05$ 认为差异有统计学意义。

2 结果

2.1 本组肝癌病人肺部并发症的一般资料

本组术后共发生肺部并发症 25 例 (20.83%), 其中男 21 例, 女 4 例; 年龄 38-70 岁, 平均 (55.26 $\pm$ 12.39) 岁。并发症类型中支气管炎 7 例、肺部感染 18 例、胸腔积液 9 例、肺不张 3 例、急性呼吸窘迫 1 例。

未发生肺部并发症者 95 例。其中男 79 例, 女 16 例; 年龄 36-72 岁, 平均 (54.62 $\pm$ 11.05) 岁。

2.2 肝癌根治术后合并肺部并发症和无肺部并发症的单因素分析

2.2.1 一般情况单因素分析 一般情况单因素分析结果显示, 25 例肝癌根治术后肺部并发症的发生与慢性呼吸道疾病史、术前 2 周呼吸道感染史均有关 ($P < 0.05$)。而与患者的性别、年龄、体重、吸烟史、心脏疾病史、脑血管意外史及糖尿病史均无关 ($P > 0.05$), 见表 1。

表 1 肝癌根治术后合并肺部并发症和无肺部并发症的一般情况的单因素分析

Table 1 Single factor analysis of general situation in patients with or without pulmonary complications after Radical Resection

Risk factors	Pulmonary complications (n=25)	No pulmonary complications (n=95)	P
Gender (male / female)	21 / 4	79 / 16	0.920
Age (Year)	55.26 $\pm$ 12.39	54.62 $\pm$ 11.05	0.652
Weight (kg)	59.12 $\pm$ 11.47	61.28 $\pm$ 13.79	0.743
History of smoking (Yes/No)	7 / 18	27 / 68	0.967
History of chronic respiratory diseases (Yes/No)	17 / 8	11 / 84	0.000
History of chronic heart diseases (Yes/No)	1 / 24	3 / 92	0.835
History of stroke (Yes/No)	4 / 21	15 / 80	0.980
History of diabetes mellitus (Yes/No)	3 / 22	10 / 85	0.833
History of chronic respiratory tract infection at 2 weeks before operation (Yes/No)	15 / 10	19 / 76	0.000

2.2.2 术前检查结果的单因素分析 单因素分析结果显示: 25 例肝癌根治术后肺部并发症的发生与术前白蛋白水平有关 ($P < 0.05$)。而与患者的肿瘤大小、甲胎蛋白、总胆红素、血红蛋白、红细胞压积、凝血酶原时间、腹水及 Child-Pugh 分级均无关 ($P > 0.05$), 见表 2。

2.2.3 手术情况的单因素分析 手术情况单因素分析结果显示: 本组病人术后肺部并发症的发生与手术时间、麻醉时间、术中出血量及术后使用镇痛泵均有关 ($P < 0.05$)。而与患者肿瘤的

切除方式及术中血流阻断均无关 ($P > 0.05$), 见表 3。

2.3 肝癌根治术后与肺部并发症相关的危险因素的多因素 Logistic 回归分析

多因素 Logistic 回归分析的结果显示: 慢性呼吸道疾病史、术前白蛋白水平及术后使用镇痛泵为本组肝癌根治术后发生肺部并发症的独立危险因素 ($P < 0.05$), 见表 4。

3 讨论

表 2 肝癌根治术后合并肺部并发症和无肺部并发症的术前检查结果的单因素分析

Table 2 Single factor analysis of the examination results before the operation in patients with or without

Risk factors	Pulmonary complications (n=25)	No pulmonary complications (n=95)	P
Tumor size(cm)			
≤ 3.0	9	41	0.515
3.1~5.0	15	51	
> 5.0	1	3	
alpha fetoprotein(μg/L)			
≤ 20	12	44	0.881
> 20	13	51	
Total bilirubin (mg/dL)	0.82± 0.21	0.86± 0.19	0.312
Albumin(g/dL)	3.58± 0.65	4.14± 0.71	
Hemoglobin(g/L)	127.18± 22.32	125.43± 20.79	
Hematokrit(%)	38.67± 7.29	39.04± 8.12	0.709
Prothrombin time(s)	12.36± 0.95	11.93± 0.86	0.475
Ascites(Yes/No)	2 / 23	4 / 91	0.568
Child-Pughscore			0.439
A	22	95	0.712
B	3	10	
C	0	0	

表 3 肝癌根治术后合并肺部并发症和无肺部并发症的手术情况的单因素分析

Table 3 Single factor analysis of the operation situation in patients with or without pulmonary complications after Radical Resection

Risk factors	Pulmonary complications (n=25)	No pulmonary complications (n=95)	P
Hepatectomy(n)			
Right hepatectomy	9	32	0.783
Left hepatectomy	7	26	
Unregular hepatectomy	9	37	
Operation duration(min)	206.77± 36.52	165.41± 27.63	0.000
Anesthesia duration(min)	287.39± 49.70	258.03± 45.18	0.001
Amount of bleeding during operation(mL)	1126.90± 231.45	893.54± 175.25	0.000
Vascular occlusion during operation(Yes/No)	11 / 14	26 / 69	0.109
Analgesia pump after operation(Yes/No)	10 / 15	71 / 24	0.001

表 4 肝癌根治术后肺部并发症相关危险因素的多因素 Logistic 回归分析

Table 4 Multi-variate logistic regression analysis of related risk factors in patients with pulmonary complications after Radical Resection

Risk factors	Parameter estimation	S.E	OR	The 95% confidence interval	P
History of chronic respiratory diseases	3.269	1.053	1.435	1.003-1.270	0.035
History of chronic respiratory tract infection at 2 weeks before operation	2.457	0.839	1.246	1.131-2.435	0.052
Albumin	-3.241	1.285	0.056	0.005-0.483	0.019
Operation duration	1.832	0.726	3.108	0.523-14.298	0.135
Anesthesia duration	-0.479	0.823	0.385	0.244-2.325	0.376
Amount of bleeding during operation	0.428	0.212	1.139	1.008-1.624	0.235
Using analgesia pump after operation	-1.536	0.482	0.279	0.078-0.527	0.005

肝癌根治术后患者肺部并发症主要包括支气管炎、肺部感染、胸腔积液、肺不张、急性呼吸窘迫和呼吸衰竭等。国外研究报道，肝癌术后患者胸腔积液、肺炎、肺不张等发生率约 44.45%^[14]。本组发生肺部并发症的 25 例(20.83%)患者中，胸

腔积液有 9 例(7.50%)，肺不张有 3 例(2.50%)。本组结果显示，肝癌根治术后肺部并发症患者的慢性呼吸道疾病史、术前 2 周呼吸道感染史、术前白蛋白水平、手术时间、麻醉时间、术中出血量及术后使用镇痛泵与未出现肺部并发症的患者比较

差异具有统计学意义($P < 0.05$),因此提示这些因素为肝癌根治术后患者发生肺部并发症的相关危险因素。进一步经 Logistic 回归分析结果显示慢性呼吸道疾病史、术前白蛋白水平及术后使用镇痛泵均是肝癌根治术后发生肺部并发症的独立危险因素($P < 0.05$)。

肝癌根治术后患者的肺部感染的表现形式多样,患者出现咳嗽、咳痰及呼吸困难,进而导致肺不张、急性呼吸窘迫等严重并发症^[9]。在合并有慢性支气管炎、慢性阻塞性肺疾病等呼吸道病史的患者,其肺部感染并发症的发生常增加,推测与呼吸道上皮细胞病变导致的纤毛粘液系统功能障碍,气管内粘液分泌量增加和/或排痰功能减弱有关。有学者报道腹部手术后并发肺部感染的发生率为 1.3-18.6%^[10],本研究结果肝癌根治术后并发肺部感染发生为 15%(18/120)与其相似。因此,对术前 2 周病人有呼吸道感染史者要给予抗菌药物治疗。此外,原发性肝癌患者白蛋白水平低下,进一步导致了机体免疫力低下,增加了术后肺部并发症发生的概率。本研究的多因素 Logistic 回归分析也显示术前白蛋白水平偏低为肺部并发症的独立危险因素。相关研究也显示血清白蛋白水平能一定程度代表患者当前的一般营养状况和肝脏储备功能,可以作为肝癌术后肺部并发症的较强的危险因素^[17],作为预测腹部术后肺部并发症的指标逐渐引起重视。

胸腔积液亦是肝癌切除术后常见的并发症,据报道胸腔积液可占到 6.64%^[8],积液的产生机制复杂,与淋巴循环、蛋白合成的变化及手术创伤有关^[18]。手术时间长度、麻醉时间长短决定了患者暴露于感染高危环境的时间,二者延长都会损害肺免疫细胞的功能,增加术后感染的易感性。加上原发性肝癌的多数肝硬化的基础及肝癌本身肝功能下降,使此类病人对麻醉和手术的耐受能力也下降^[19]。术中引起的失血、输血及缺血-再灌注等都可对机体免疫系统及呼吸系统造成一定的损伤,降低机体抵抗力,增加全身炎症反应综合征肺损害、肺部感染发生的可能性^[20]。此外,由于疼痛病人多不愿深呼吸,因此常造成痰液在呼吸道内的停滞与阻塞,有利于细菌的繁殖从而发生致肺部感染。而术后使用镇痛泵进行适度镇痛,有利于患者术后增加呼吸活动度、减慢呼吸频率、增加肺泡通气量,进行有效地呼吸排痰活动。本研究肺部并发症患者只有 40%(10/25)术后使用了镇痛泵,明显低于未发生肺部并发症组的 74.74%(71/95)。因此本研究结果提示术后适当镇痛对减少肺部并发症具有积极作用。

总之,原发性肝癌患者行根治术后发生肺部并发症的影响因素较多,特别是是与慢性呼吸道疾病史、术前白蛋白水平及术后使用镇痛泵极为相关,应给予足够重视。而针对相关危险因素积极采取防治措施有利于减少术后肺部并发症的发生。可通过术前认真评估、改良手术器械、改进手术方法来缩短手术和麻醉时间,减少术中出血量,再积极进行术后镇痛以减少肝癌根治术后肺部并发症的发生。

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(上接第 5734 页)

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