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纤维支气管镜吸痰对全肺切除术后心衰治疗效果观察*

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摘要 目的:探讨规律纤维支气管镜吸痰对全肺切除术后心衰的治疗效果。**方法:**选取唐都医院胸外科于2012年1月至2014年1月行开胸全肺切除术,且术后并发心衰的患者184例进行前瞻性随机对照研究,将所选患者分为研究组(96例)和对照组(88例),前者除常规心衰治疗外,每天至少1次使用纤维支气管镜吸痰,必要时可根据痰量增加吸痰次数;后者仅采用利尿、强心、扩血管等常规疗法,比较两组患者的心指数、呼吸频率、动脉血气分析等指标,同时测定和比较两组患者治疗后72h的血浆脑钠肽浓度。**结果:**治疗后1h,对照组患者的心指数由 (2.7 ± 0.2) L/min·m²升高至 (3.1 ± 0.3) L/min·m²,呼吸频率由 (35.4 ± 2.9) 次/分降至 (21.3 ± 2.5) 次/分,PaO₂由 (57.4 ± 3.9) mmHg升至 (60.3 ± 3.4) mmHg, SaO₂由 $(83.5 \pm 7.1)\%$ 升至 $(86.3 \pm 3.7)\%$;研究组患者的心指数由 (2.8 ± 0.1) L/min·m²升高至 (3.5 ± 0.2) L/min·m²,呼吸频率由 (34.2 ± 3.1) 次/分降至 (19.2 ± 2.2) 次/分,PaO₂由 (56.5 ± 4.8) mmHg升至 (66.2 ± 7.1) mmHg, SaO₂由 $(84.5 \pm 6.5)\%$ 升至 $(91.6 \pm 3.5)\%$,差异具有统计学意义($P < 0.05$),研究组患者治疗后的以上指标水平均明显优于对照组($P < 0.05$)。治疗后24h内,79.2%的研究组患者咳嗽、咳痰及肺部湿罗音基本缓解,对照组患者以上症状、体征的缓解率为47.7%,差异具有统计学意义($P < 0.05$)。治疗后72h,研究组患者的血浆脑钠肽浓度显著低于对照组患者 $(576.3 \pm 77.6$ vs $894.6 \pm 86.5, P < 0.01)$ 。**结论:**支气管镜吸痰有助于改善全肺切除术后心衰患者的心肺功能。

关键词:全肺切除术;心衰;纤维支气管镜;吸痰

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The Effects of Sputum Suction Treatment by Fiberoptic Bronchoscopy on Patients with Heart Failure after Pneumonectomy*

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ABSTRACT Objective: To explore the effects of sputum suction treatment by fiberoptic bronchoscopy on patients with heart failure after pneumonectomy. **Methods:** 120 patients who had accepted pneumonectomy and underwent postoperative heart failure in Tangdu hospital from January 2012 to January 2014 were selected. All the patients were divided into study group and control group equally. The patients in study group accepted sputum suction treatment by fiberoptic bronchoscopy and classic therapy including diuretic, heart enhance and hemangiectasis therapy. Fiberopticbronchoscopy was used at least 1 times per day, the frequency could be increased if patients' sputum was too much. Patients in control group only received classic therapy. The heart index, respiratory rate, arterial blood gas analysis and serum brain natriuretic peptide level at 72h after treatment were measured and compared between two groups. **Results:** At 1h after treatment, the heart index of patients in control group increased from (2.7 ± 0.2) L/min·m² to (3.1 ± 0.3) L/min·m², the respiratory rate decreased from 35.4 ± 2.9 times per min to 21.3 ± 2.5 times per min, the PaO₂ increased from 57.4 ± 3.9 mmHg to 60.3 ± 3.4 mmHg, the SaO₂ increased from $(83.5 \pm 7.1)\%$ to $(86.3 \pm 3.7)\%$, and the differences were statistically significant($P < 0.05$); while the heart index of patients in study group increased from (2.8 ± 0.1) L/min·m² to (3.5 ± 0.2) L/min·m², the respiratory rate decreased from 34.2 ± 3.1 times per min to 19.2 ± 2.2 times per min, the PaO₂ increased from 56.5 ± 4.8 mmHg to 66.2 ± 7.1 mmHg, the SaO₂ increased from $(84.5 \pm 6.5)\%$ to $(91.6 \pm 3.5)\%$, and the differences were statistically significant($P < 0.05$). Moreover, the levels of index mentioned above were all better in study group than those in the control group ($P < 0.05$). The cough, expectoration and pulmonary moist rales significantly relieved in 79.2% of patients in study group within 24 h, while in control group, this percentage was 47.7%, which was obviously lower than that of the study group ($P < 0.05$). The serum BNP level of study group was much lower than that of the control group (576.3 ± 77.6 vs $894.6 \pm 86.5, P < 0.01$) at 72 h after treatment. **Conclusion:** Sputum suction treatment by fiberoptic bronchoscopy was an efficient therapy in patients with heart failure after pneumonectomy.

Key words: Pneumonectomy; Heart failure; Fiberoptic bronchoscopy; Sputum suction

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前言

心功能衰竭是全肺切除术后的常见并发症^[1,2],主要表现为急性肺水肿、心源性休克,该病起病急,若不及时治疗,患者的死亡率非常高^[3]。胸部手术对患者的心肺功能有较大影响,手术的打击可造成患者心脏功能的急剧改变,进而引发急性心衰、急性肺水肿,这对于本身就处于高消耗状态的术后患者而言很难纠正。术后吸痰可以保证呼吸道通畅,促进肺叶复张,是预防肺部感染的关键;同时,其可以改善低氧血症,减轻心脏负荷^[4,5]。因此,本研究主要探讨了纤维支气管镜吸痰对全肺切除术后并发心衰患者的临床效果,现将结果报道如下。

表 1 两组患者的基线临床资料比较

Table 1 Comparison of the baseline clinical characteristics between two groups

Characteristics	Study group	Control group	P Value
No. of cases	96	88	1.000
Gender			0.178
Male	57	59	
Female	39	29	
Age(years)			0.236
Mean (mean± s)	55.16± 12.13	57.83± 10.27	
Total pneumonectomy			0.080
Left total pneumonectomy	50	52	
Right total pneumonectomy	46	36	

1.2 心衰的诊断^[6]

(1)体征:两肺或健肺听诊会满布哮鸣音及湿罗音,心尖部第一心音有所减弱且频率较快,同时肺动脉瓣第二心音亢进,出现舒张早期第3心音,构成奔马律,支气管镜吸痰:两肺或健肺有大量稀薄的痰液,白色或淡粉色。

(2)床旁胸部X检查示:早期间质性水肿,小叶间隔增厚,肺门血管影模糊,上肺静脉充盈,严重肺水肿弥漫满肺大片阴影,心脏指数随时病情加重而降低,肺动脉楔压随时病情加重而升高,痰培养无细菌。

(3)临床表现:患者发病时呼吸30~40次/分,心指数大于100次/分,面色苍白,烦躁不安,强迫坐位,频繁咳嗽,大汗淋漓,呼吸困难,紫绀,胸痛。

(4)抢救措施:心电监护动态监测生命体征变化,减少静脉血回流,让患者取坐位,双腿下垂,及时给吗啡镇静,吸氧,呋塞米利尿,加用血管扩张剂和小剂量洋地黄药物,根据血压,心指数调整用药量。研究组患者除以上治疗方法外,给予纤维支气管镜吸痰,每天至少1次,可根据患者痰量适当增加至2~3次/日。

1.3 纤维支气管镜经鼻吸痰

常规消毒纤维支气管镜,镜身涂无菌液体石蜡滑润,到达声门处时用注射器管经活检孔注入1~2 mL利多卡因做局部麻醉,声门开放时镜体迅速进入气管,再进入主支气管及各段支气管将分泌物逐步吸出,痰多者给予多次反复吸痰,若痰液黏稠不易吸出,可用生理盐水稀释,整个操作过程中要密切关

1 资料与方法

1.1 一般资料

选取我院胸外科于2012年1月至2014年1月接受开胸全肺切除术且术后并发心功能衰竭的患者184例,其中男性116例,女性68例;年龄40~80周岁,平均年龄 58.43 ± 12.68 岁;左全肺切除的患者102例,右全肺切除患者82例。将所选患者分为研究组(96例)和对照组(88例),前者除常规心衰治疗外,每天至少1次使用纤维支气管镜吸痰,必要时可根据痰量增加吸痰次数;后者仅采用利尿、强心、扩血管等常规疗法。两组患者的基线资料比较未见统计学差异,具有可比性($P>0.05$,表1)。

注血氧饱和度的变化,低于90%时,应给予高浓度大流量吸氧,血氧饱和度过低应立即停止吸痰或退镜,待血氧饱和度升至正常后继续吸痰,或尽量缩短操作时间,每次约为1~3 min,对严重低氧血症者,应间断分次操作。

1.4 统计学方法

采用SPSS 17.0软件进行统计学分析,治疗前后的指标比较及两组患者各指标的比较采用t检验,以 $P<0.05$ 认为差异具有统计学意义。

2 结果

治疗后1 h,研究组患者的心指数由 (2.8 ± 0.1) L/min·m²升高至 (3.5 ± 0.2) L/min·m²,呼吸频率由 (34.2 ± 3.1) 次/分降至 (19.2 ± 2.2) 次/分,PaO₂由 (56.5 ± 4.8) mmHg升至 (66.2 ± 7.1) mmHg, SaO₂由 $(84.5 \pm 6.5)\%$ 升至 $(91.6 \pm 3.5)\%$;对照组患者的心指数由 (2.7 ± 0.2) L/min·m²升高至 (3.1 ± 0.3) L/min·m²,呼吸频率由 (35.4 ± 2.9) 次/分降至 (21.3 ± 2.5) 次/分,PaO₂由 (57.4 ± 3.9) mmHg升至 (60.3 ± 3.4) mmHg, SaO₂由 $(83.5 \pm 7.1)\%$ 升至 $(86.3 \pm 3.7)\%$ 。两组患者治疗前的观测指标与治疗后相比差异具有统计学意义。研究组患者治疗后的心肺功能指标明显好于对照组。79.2%(76/96)的研究组患者经治疗后24 h内咳嗽、咳痰及肺部湿罗音基本缓解,对照组患者以上症状、体征的缓解率为47.7%(42/88),两组比较差异具有统计学意义($P<0.05$)。治疗后72 h,研究组患者的血浆脑钠肽浓度明显低于对照组 $(576.3 \pm 77.6$ vs 894.6 ± 86.5 , $P<0.01$)(表2)。

表 2 两组患者治疗效果的比较(均数± 标准差)

Table 2 Comparison of the treatment effects between two groups

Group	Time	HR(beats/min)	CI(L/min·m ²)	RR(times/min)	PaO ₂ (mmHg)	SaO ₂ (mmHg)
Study Group	Before treatment	125.5± 56.3	2.8± 0.1	34.2± 3.1	56.5± 4.8	84.5± 6.5
	After treatment	85.4± 12.3* ^{&}	3.5± 0.2* ^{&}	19.2± 2.2* ^{&}	66.2± 7.1* ^{&}	91.6± 3.5* ^{&}
Control Group	Before treatment	122.4± 48.7	2.7± 0.2	35.4± 2.9	57.4± 3.9	83.5± 7.1
	After treatment	97.6± 13.3 [#]	3.1± 0.3 [#]	21.3± 2.5 [#]	60.3± 3.4 [#]	86.3± 3.7 [#]

Note: *P<0.05 Compared with control group after treatment; [#]P<0.05 Compared with control group before treatment, &P<0.05 Compared with study group before treatment; HR= 心率 (Heart Rate); CI= 心指数 (Cardiac index); RR= 呼吸频率 (Respiratory rate); PaO₂= 动脉氧分压 (Arterial oxygen); SaO₂= 血氧饱和度(Oxygen saturation).

3 讨论

全肺切除术曾经被当作肺癌外科治疗的标准术式^[78]。近年来,随着外科手术技术和器材的不断发展,全肺切除术在肺癌手术中所占的比例逐渐下降,但其仍是治疗中央型肺癌以及中、晚期周围型肺癌最积极、有效的方法^[9]。随着对围手术期处理认识的不断深入,全肺切除术的安全性已得到显著性提高。

全肺切除术创伤大,且术后容易发生心、肺功能不全等并发症^[11,12],在全肺切除术后的低氧、肺动脉高压等因素的作用下,心功能衰竭成为术后常见的并发症之一^[13],其发病急、进展迅速、预后差。据报道,左肺功能占全肺的 45%,右肺占 55%,因而右全肺切除更容易引起血流动力学改变和心功能障碍^[10]。肺水肿导致的痰量增加也是致命的威胁,早期吸痰有助于保持呼吸道通畅,促使健肺代偿作用充分发挥^[14,15]。普通的吸痰管无法做到可视化操作,因此具有一定的盲目性,对于大气道的痰液清除效果尚可,但对于次级支气管中的痰液往往无能为力。经纤维支气管镜吸痰能在直视下逐级吸净气道内的分泌物,改善通气及换气功能,解除“痰液阻塞-心衰加重-肺水肿加重-痰液瘀滞”的恶性循环,同时也可针对病侧支气管进行灌洗,还可根据痰灌洗液培养结果,指导临床抗生素的使用^[16-18]。本研究表明:在全肺切除术后发生心衰的患者中,相比于常规的心衰治疗,联合纤维支气管镜吸痰可更加明显地改善患者的血氧饱和度,同时降低心指数和呼吸频率,从而更大程度地减轻心脏负荷^[19]。

为了避免全肺切除术后的心肺并发症,充分的围手术期处理至关重要,术前应完善检查,全面评估病情并给予相应处理,如戒烟、控制感染、患者支气管痉挛、控制血压、调价血糖、改善营养状态、维持水电解质平衡等。此外,进行呼吸锻炼也非常必要,如爬楼梯、吹气球、雾化吸入以及咳痰训练等。研究表明术中和术后输入液体过多是术后并发症及死亡的重要危险因素^[20]。因此,术中和术后需要严格限制液体的输入量,每 24 h 入量应控制在 1500~2000 mL,可酌情利尿防止心衰和肺水肿;术后还应加强抗感染治疗,纠正水电解质失衡。有学者提倡术后常规进行有创血流动力学监测^[21],这或许对术后液体治疗有一定的参考价值。总之,患者术后一旦发生心衰,应积极展开治疗,除利尿、强心、扩血管等常规处理外,早期纤维支气管镜吸痰有助于更快地纠正心衰,提高术后患者的生存率。

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