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纤维支气管镜灌洗术治疗不同病程小儿大叶性肺炎的疗效

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[摘要] 目的: 探讨纤维支气管镜灌洗术治疗不同病程小儿大叶性肺炎的疗效。方法: 选取2017年1月至2019年2月在保定市儿童医院接受治疗的大叶性肺炎患儿96例, 按随机数表法分为2组, 对照组48例采用常规内科治疗, 实验组48例在对照组基础上加用纤维支气管镜灌洗术治疗, 根据实验组患儿病程, 将其分为早期灌洗组(病程<7 d, n=23)和晚期灌洗组(病程≥7 d, n=25)。对比3组临床症状、治疗有效率、治疗前后肺功能指标、病原学检测情况。结果: 治疗后, 3组患儿治疗有效率比较差异有统计学意义($P<0.05$), 其中早期灌洗组治疗有效率显著高于对照组($t=4.434$, $P=0.035$)。3组治疗后, 发热、咳嗽、肺部啰音消失时间和抗生素使用时间比较有差异($P<0.05$), 其中早期灌洗组各指标时间均短于晚期灌洗组和对照组($P<0.05$)。3组治疗后, 最高呼气流量(peak expiratory flow, PEF), 第1秒用力呼气量(forced expiratory volume in 1 second, FEV₁), 用力肺活量(forced vital capacity, FVC)比较有差异($P<0.05$), 其中早期灌洗组PEF, FEV₁, FVC均高于晚期灌洗组和对照组($P<0.05$)。3组患儿经病原学检测发现病毒、细菌、支原体阳性率比较, 差异无统计学意义($P>0.05$)。结论: 纤维支气管镜灌洗术用于治疗小儿大叶性肺炎疗效显著, 可显著改善病程7 d内患儿的临床症状和肺功能。

[关键词] 大叶性肺炎; 小儿; 纤维支气管镜灌洗术; 病程

Curative effect of fibrobronchoscope lavage on lobar pneumonia in children with different disease courses

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Abstract **Objective:** To explore curative effect of fibrobronchoscope lavage on lobar pneumonia in children with different disease courses. **Methods:** Ninety-six children with lobar pneumonia who were treated in the hospital from January 2017 to February 2019 were enrolled. They were divided into two groups by random number table method, 48 cases in each group. The control group was treated with routine medical treatment, while experimental group was additionally treated with fibrobronchoscope lavage. According to disease courses of children in

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experimental group, they were divided into an early lavage group (disease courses shorter than 7 d, $n=23$) and a late lavage group (disease courses not shorter than 7 d, $n=25$). The clinical symptoms, response rate of treatment, pulmonary function indexes before and after treatment, and etiology detection were compared among the 3 groups. **Results:** After treatment, there were significant differences in response rate of treatment among the 3 groups ($P<0.05$). The response rate of treatment in the early lavage group was significantly higher than that in the control group ($t=4.434$, $P=0.035$). After treatment, there were significant differences in disappearance time of fever, cough and lung rale, and antibiotic usage time among the 3 groups ($P<0.05$). The time of all indexes in the early lavage group was shorter than that in the late lavage group and control group ($P<0.05$). After treatment, there were significant differences in peak expiratory flow (PEF), forced expiratory volume in 1 second (FEV₁) and forced vital capacity (FVC) among the 3 groups ($P<0.05$). PEF, FEV₁ and FVC in the early lavage group were all higher than those in the late lavage group and the control group ($P<0.05$). The etiology detection found that there were no significant differences in positive rates of viruses, bacteria and mycoplasma among the 3 groups ($P=0.05$). **Conclusion:** The curative effect of fibrobronchoscope lavage is significant on pediatric lobar pneumonia, which can significantly improve clinical symptoms and pulmonary function of children with disease course within 7 d.

Keywords lobar pneumonia; child; fibrobronchoscope lavage; course of disease

大叶性肺炎多见于3岁及以上的儿童,是一种较为严重的呼吸道疾病,起病急且病程长,主要是因为病原体引发的感染,常见于下叶,容易合并如肺实质变、脓胸等并发症,严重影响患儿的成长^[1-2]。近年来,由于环境改变、抗生素的滥用等原因,大叶性肺炎的病原谱发生变化,临床治疗方案也随之改变^[3]。纤维支气管镜灌洗术在治疗难治性肺部感染、支气管异物、慢性咳嗽等方面均有良好的疗效,主要利用纤维支气管镜直视炎性病灶并用药物进行冲洗,同时可以获取肺泡灌洗液进行病原学分析,指导临床用药^[4-5]。本研究探讨了纤维支气管镜灌洗术治疗不同病程小儿大叶性肺炎的疗效。

1 对象与方法

1.1 对象

选取2017年1月至2019年2月在保定市儿童医院接受治疗的大叶性肺炎患儿96例,按随机数表法分为对照组和实验组。对照组48例,年龄3~12(6.24±1.21)岁;男27例,女21例;病程1~12(7.21±1.21) d。实验组48例,根据患儿病程,将其分为早期灌洗组(病程<7 d, $n=23$)和晚期灌洗组(病程≥7 d, $n=25$),早期灌洗组,年龄3~13(6.41±1.09)岁;男13例,女10例;病程1~14(3.36±1.14) d;晚期灌洗组,年龄3~13(6.33±1.02)岁;男14例,女11例;病程1~14(9.29±1.11) d。3组患儿性别、年龄比较,差

异无统计学意义($P>0.05$)。纳入标准:1)符合《褚福棠实用儿科学》^[6]中大叶性肺炎的诊断标准,经胸部影像学检查提示至少一个肺段显示大片致密实变影;2)伴随发热、咳嗽;3)叩诊病灶区闻浊音或实音;4)经医院伦理委员会审批,患儿及其家属签署知情同意书。排除标准:1)合并肝、肾功能障碍者;2)合并血液系统疾病、代谢性疾病者;3)不耐受纤维支气管镜治疗者;4)合并肺结核等肺部基础疾病者;5)6个月内曾使用糖皮质激素、干扰素等药物者;6)中途退出研究者。

1.2 方法

对照组:患儿入院后接受常规内科治疗,包括止咳、化痰、抗感染、营养支持等;实验组:在常规内科治疗基础上辅用纤维支气管镜肺泡灌洗术,术前6 h禁水食,术前30 min,静脉推注咪达唑仑0.1~0.15 mg/kg, 2 mL 2%利多卡因进行局部麻醉,同时给予吸氧,术中需严密监测患儿血氧饱和度;纤维支气管镜由鼻腔-咽部-声门途径进入气道,结合肺部影像学结果,对病变区域进行观察,找出炎症最严重肺段进行灌洗,灌洗液为37℃生理盐水,1.0 mL/kg,反复灌洗3次(控制总用量≤2.0 mL/kg),随即负压吸引,回收率>40%,控制灌洗时间≤10 min,留取肺部灌洗液5~10 mL,术毕,缓慢拔出纤维支气管镜。若术中患儿血氧饱和度出现异常下降,应及时停止操作,给予吸氧、拍背,恢复后继续手术;若遇到难以去除的痰栓、组织,可辅以支气管刷、钳夹处理。

1.3 观察指标

1) 治疗有效率。根据患儿临床症状及影像学检查结果评估治疗效果。显效: 治疗3 d内, 发热、咳嗽等临床症状得到缓解, 治疗10 d内, 经影像学检查发现肺部阴影基本消失, 干湿性啰音基本消失。有效: 治疗7 d内患儿体温正常, 咳嗽仍持续, 经影像学检查发现肺部阴影缩小。无效: 患儿临床症状未得到缓解, 影像学检查未达标。治疗有效率=(显效+有效)/总人数×100%; 2) 治疗后临床症状比较。记录所有患儿发热症状、咳嗽、肺部啰音持续时间, 记录抗生素药物使用天数; 3) 治疗后肺功能指标变化。所有患儿均于术前和出院时测量肺功能指标, 采用德国耶格公司生产的JAEGGER Flowscreen肺功能仪, 患儿处于安静状态下10 min后取坐位, 测试其肺通气功能, 包括最高呼气流量(peak expiratory flow, PEF), 第1秒用力呼气量(forced expiratory volume in 1 second, FEV₁), 用力肺活量(forced vital capacity, FVC)3项指标, 共测3次左右, 取其最佳值与预计值的百分比为最终结果; 4) 病原学检查结果, 实验组患儿留取肺泡灌洗液5~10 mL, 进行一般细菌培养、支原体DNA检测、病毒抗原检测; 对照组患儿留取痰液, 进行痰培养及咽拭子支原体DNA检测; 5) 治疗安全性评价。观察实验组患儿经纤维支气管灌洗术治疗后, 发生咳嗽加重、低氧血症、呼吸急促、发热的情况。

1.4 统计学处理

采用SPSS18.0统计学软件进行数据分析, 计数资料用率表示, 采用 χ^2 检验, 计量资料采用均数±标准差($\bar{x} \pm s$)表示, 组间比较采用单方差分析, 两两比较采用SNK-*q*法。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 治疗有效率

治疗后, 3组患儿治疗有效率比较, 差异有统计学意义($P < 0.05$, 表1), 其中早期灌洗组治疗有效率显著高于对照组($t=4.434$, $P=0.035$), 早期灌洗组与晚期灌洗组治疗有效率比较, 差异无统计学意义($P > 0.05$)。

2.2 临床症状比较

3组治疗后, 发热、咳嗽、肺部啰音消失时间和抗生素使用时间比较, 差异有统计学意义($P < 0.05$, 表2); 其中早期灌洗组发热、咳嗽肺部啰音消失时间和抗生素使用时间均短于晚期灌洗组和对照组($P < 0.05$); 晚期灌洗组肺部啰音消失时间明显短于对照组($t=4.335$, $P=0.025$), 晚期灌洗组与对照组发热、咳嗽症状消失以及抗生素使用时间的比较, 差异无统计学意义($P > 0.05$)。

2.3 治疗后肺功能指标变化

3组治疗后, PEF、FEV₁、FVC比较, 差异有统计学意义($P < 0.05$, 表3); 其中早期灌洗组PEF、FEV₁、FVC均高于晚期灌洗组和对照组($P < 0.05$); 晚期灌洗组PEF、FEV₁、FVC均高于对照组($P < 0.05$)。

2.4 病原学检查结果

3组患儿经病原学检测发现病毒、细菌、支原体阳性率比较, 差异无统计学意义($P > 0.05$, 表4)。

2.5 治疗安全性评价

实验组患儿咳嗽重、低氧血症、呼吸急促及发热的发生率比较, 差异无统计学意义($P > 0.05$, 表5)。

表1 3组治疗有效率

Table 1 Response rates of treatment in the 3 groups

组别	<i>n</i>	显效/例	有效/例	无效/例	治疗有效/[例(%)]
早期灌洗组	23	15	7	1	22 (95.65)
晚期灌洗组	25	10	13	2	23 (92.00)
对照组	48	20	16	12	36 (75.00)
χ^2					6.521
<i>P</i>					0.038

表2 3组临床症状比较($\bar{x} \pm s$)Table 2 Comparison of clinical symptoms among the 3 groups ($\bar{x} \pm s$)

组别	<i>n</i>	发热症状消失时间/d	咳嗽症状消失时间/d	肺部啰音消失时间/d	抗生素使用时间/d
早期灌洗组	23	7.14 ± 1.25**	12.48 ± 2.11**	6.63 ± 1.63**	9.28 ± 1.35**
晚期灌洗组	25	11.10 ± 1.62	15.49 ± 3.13	8.24 ± 2.58*	12.60 ± 2.12
对照组	48	11.28 ± 1.22	15.43 ± 3.18	10.57 ± 2.18	12.28 ± 2.30
<i>F</i>		80.996	6.860	27.581	20.026
<i>P</i>		<0.001	0.002	<0.001	<0.001

与晚期灌洗组比较, **P*<0.05, 与对照组比较, **P*<0.05

Compared with late lavage group, **P*<0.05, compared with control group, **P*<0.05.

表3 3组治疗后肺功能指标变化($\bar{x} \pm s$)Table 3 Changes of pulmonary function indexes in the 3 groups after treatment ($\bar{x} \pm s$)

组别	<i>n</i>	PEF/(L·s ⁻¹)	FEV ₁ /L	FVC/L
早期灌洗组	23	5.64 ± 0.55**	2.18 ± 0.19**	2.61 ± 0.23**
晚期灌洗组	25	4.60 ± 0.38*	2.03 ± 0.18*	2.42 ± 0.18*
对照组	48	3.39 ± 0.27	1.89 ± 0.11	2.11 ± 0.17
<i>F</i>		284.893	29.260	60.490
<i>P</i>		<0.001	<0.001	<0.001

与晚期灌洗组比较, **P*<0.05, 与对照组比较, **P*<0.05

Compared with late lavage group, **P*<0.05, compared with control group, **P*<0.05.

表4 3组治疗有效率

Table 4 Response rates of treatment in the 3 groups

组别	<i>n</i>	病毒/[例(%)]	细菌/[例(%)]	支原体/[例(%)]
早期灌洗组	23	5 (21.74)	11 (47.83)	8 (34.78)
晚期灌洗组	25	5 (20.00)	12 (48.00)	9 (36.00)
对照组	48	10 (20.83)	19 (39.58)	9 (18.75)
χ^2		0.022	0.677	3.385
<i>P</i>		0.989	0.713	0.184

表5 实验组治疗安全性评价

Table 5 Evaluation of treatment safety in the experimental group

组别	<i>n</i>	咳嗽加重/[例(%)]	低氧血症/[例(%)]	呼吸急促/[例(%)]	发热/[例(%)]
早期灌洗组	23	0 (0.00)	1 (4.00)	1 (4.00)	0 (0.00)
晚期灌洗组	25	1 (4.00)	2 (8.00)	2 (8.00)	1 (4.00)
χ^2		0.940	0.273	0.273	0.940
<i>P</i>		0.332	0.602	0.602	0.332

3 讨论

作为儿科常见疾病的一种, 大叶性肺炎由肺泡内纤维素性炎, 引起肺不张或实变, 临床表现为发热、肺功能下降、咳嗽等^[7]。既往研究^[8]指出: 疾病早期经痰培养而得的病原学诊断准确率较低, 依赖于医师的经验治疗, 往往难以取得满意的疗效, 而病程的延长可能会引起并发症, 进一步损害肺功能。现今, 临床上对大叶性肺炎的治疗提倡快速、安全, 纤维支气管镜的使用为大叶性肺炎的治疗提供了新思路^[9]。

岳芳等^[10]研究发现利用纤维支气管镜肺泡灌洗术治疗小儿急性肺脓肿, 取得显著疗效, 患儿临床症状、炎症指标得到改善, 住院天数亦明显缩短。纤维支气管镜肺泡灌洗术的优点在于可以直视病灶, 明确肺部病变性质, 同时根据肺泡灌洗液细菌培养结果及耐药性检测, 可以指导临床用药, 降低耐药率^[11-12]。刘阳等^[13]研究发现纤维支气管镜肺泡灌洗术可以提高重症肺炎患儿的痰细菌清除率, 有助于治疗的顺利进行。但是, 有研究^[14]提出纤维支气管镜介入治疗的时机会影响治疗效果, 本研究以7 d为分界点, 分析不同病程大叶性肺炎患儿的治疗效果差异。

本研究中, 3组患儿治疗有效率比较有差异, 其中早期灌洗组治疗有效率显著高于对照组; 早期灌洗组发热、咳嗽肺部啰音消失时间和抗生素使用时间均短于晚期灌洗组和对照组, 而晚期灌洗组只有肺部啰音消失时间低于对照组, 以上结论提示与传统经验治疗相比, 联合纤维支气管镜肺泡灌洗术治疗大叶性肺炎患儿疗效显著, 且病程越短, 治疗效果越好。推测原因是大叶性肺炎肝样病变期在6 d左右, 早期炎性渗出物多为黏液, 经灌洗后易吸出, 但是病程延长导致肺部积液变多, 细菌清除效果不如早期灌洗组显著。与宋春炳等^[15]和董朝晖等^[16]研究结果相似。

本研究中, 3组治疗后, 早期灌洗组肺功能指标均高于晚期灌洗组和对照组($P < 0.05$), 提示尽早采用肺泡灌洗治疗, 可改善肺功能, 这是因为患儿病程越短, 各类病原菌对肺部的毒性作用越小, 灌洗术后患儿通气得以改善, 可以减少后遗症的发生。戴晓乔等^[17]指出纤维支气管镜肺泡灌洗术治疗后, 患者有出现呛咳、心动过速的情况。本研究对其安全性进行评价, 实验组患儿共发现3例低血氧症, 3例呼吸急促, 1例咳嗽加重及发热, 均于治疗结束后2 d内得到缓解, 提示纤维支气管镜肺泡灌洗术安全性较高。

综上所述, 纤维支气管镜灌洗术可显著改善大叶性肺炎患儿的临床症状及肺功能指标, 对病程7 d内的患儿治疗效果最佳。

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