

·专题·先天性肺隔离症·

不同手术方式治疗小儿肺隔离症的比较研究

王允金 周朝明 崔旭 吴典明 陈流 林宇 张建钦

【摘要】 目的 比较胸腔镜手术与传统开胸手术治疗小儿肺隔离症的临床疗效,探讨胸腔镜手术治疗小儿肺隔离症的优势。 **方法** 收集2012年3月至2017年3月入住本院小儿外科并实施手术治疗的26例肺隔离症患儿临床资料,根据采用手术方式的不同分为胸腔镜手术组和传统开胸手术组。比较两组手术时间、术中出血量、术后胸腔引流时间及住院时间。 **结果** 26例均顺利完成手术,无手术死亡病例。平均手术时间:胸腔镜手术组(118.36 ± 7.61) min,传统开胸手术组(119.60 ± 7.11) min,差异无统计学意义($t = -0.425, P = 0.674$)。平均术中出血量:胸腔镜手术组(2.18 ± 0.40) mL,开胸手术组(4.47 ± 0.64) mL,差异有统计学意义($t = -11.125, P = 0.000$)。胸腔引流管平均留置时间:胸腔镜手术组(3.54 ± 0.69) d,开胸手术组(6.67 ± 0.98) d,差异有统计学意义($t = -9.064, P = 0.000$)。术后平均住院时间:胸腔镜手术组(7.54 ± 0.82) d,开胸手术组(8.80 ± 0.77) d,差异有统计学意义($t = -3.981, P = 0.001$)。术后并发症:胸腔镜手术组3例,其中肺部感染2例,肺不张1例;开胸手术组6例,其中肺部感染4例,肺不张2例,差异无统计学意义($P < 0.05$)。除4例失访以外,其余22例随访1~2年,其中2例发生肺炎,其余病例均恢复良好。 **结论** 胸腔镜手术治疗肺隔离症较传统开胸手术具有切口小、术中出血少、恢复快、术后住院时间短等优点,是一种安全可靠的手术方式。

【关键词】 支气管肺隔离症;胸腔镜;传统开胸手术;不同手术方式;儿童

Clinical efficacies of different surgical approaches for pediatric pulmonary sequestration. Wang Yunjin, Zhou Chaoming, Cui Xu, Wu Dianming, Chen Liu, Lin Yu, Zhang Jianqin. Department of Pediatric Surgery, Fujian Provincial Maternity & Children's Hospital, Fuzhou 350001, China. Corresponding author: Zhou Chaoming, Email: zhouchaoming204@163.com

【Abstract】 Objective To compare the clinical efficacy of thoracoscopy versus traditional thoracotomy for pediatric pulmonary sequestration (PS). **Methods** Twenty-six cases of PS were operated from March 2012 to March 2017. According to different surgical approaches, they were divided into thoracoscopy and traditional thoracotomy groups. The parameters of operative duration, blood loss, postoperative chest drainage time and postoperative hospitalization stay were analyzed. **Results** All procedures were successfully completed without mortality. Independent sample t test indicated that the mean operative duration was (118.36 ± 7.61) min in thoracoscopy group and (119.60 ± 7.11) min in traditional thoracotomy group ($t = -0.425, P = 0.674$). The intraoperative blood loss in endoscopic group was less than that in open thoracotomy group [(2.18 ± 0.40) vs (4.47 ± 0.64) mL] ($t = -11.125, P = 0.000$). The average length of chest tube placement was (3.54 ± 0.69) days in endoscopic group and (6.67 ± 0.98) days in open thoracotomy group. The thoracoscopic group had less postoperative chest drainage time than thoracotomy group. And there were significant inter-group differences ($t = -9.064, P = 0.000$). The mean postoperative hospitalization stay of thoracoscopic group was less than that of thoracotomy group [(7.54 ± 0.82) vs (8.80 ± 0.77) days]. And the inter-group difference was statistically significant ($t = -3.981, P = 0.001$). Three postoperative complications occurred in thoracoscopic group, including pulmonary infection ($n = 2$) and atelectasis ($n = 1$). And 6 cases of postoperative complications occurred in thoracotomy group, including pulmonary infection ($n = 4$) and atelectasis ($n = 2$). And the inter-group incidence of postoperative complications was not statistically significant by chi-square test. Four patients were lost and the remainder was followed up for 1 to 2 years. Among them, 2 patients developed pneumonia and others recovered well. **Conclusion** Thoracoscopy for PS has smaller incision, less bleeding, faster re-

DOI:10.3969/j.issn.1671-6353.2018.05.007

作者单位:福建省妇幼保健院小儿外科(福建省福州市,350001)

通讯作者:周朝明, Email:zhouchaoming204@163.com

covery, shorter length of postoperative hospitalization stay and fewer postoperative complications, etc.

【Key words】 Bronchopulmonary Sequestration; Thorascopes; Traditional thoracotomy; Different surgical; Child

肺隔离症(pulmonary sequestration, PS) 又称隔离肺,是以血管异常为基础的先天性肺发育畸形,发病率占肺畸形的0.15%~6.4%^[1]。隔离肺直接由体循环动脉分支供血,本质上是无功能的肺组织,可分为叶内型、叶外型及混合型^[2]。Lee DI等^[3]报道,隔离肺的主要异常供血动脉是胸主动脉,其次为腹主动脉,其余为锁骨下动脉、肋间动脉等。Long Q^[4]等报道,80%的隔离肺由一支来自胸主动脉或腹主动脉的异常动脉直接供血。目前关于胸腔镜在小儿肺隔离症治疗的报道较少。本文选取2012年3月至2017年3月本院手术治疗的26例隔离肺患儿,依据手术方式的不同进行分组,比较不同手术方式的差别和利弊,为临床选择更为优化的手术方式,提高手术效果提供参考。

材料与方法

一、临床资料

回顾性分析2012年3月至2017年3月入住本院接受手术治疗的26例肺隔离症患儿临床资料,根据家长自愿的原则,按照手术方式的不同分为胸腔镜手术组和开胸手术组,其中胸腔镜手术组11例,开胸手术组15例;男童16例,女童10例;8例为体检发现,11例因气促、7例因咳嗽就诊发现。胸部CT扫描显示17例病灶位于左下肺(图3),9例位于右下肺。叶内型19例,叶外型7例。心脏彩超提示11例合并卵圆孔未闭,13例合并卵圆孔未闭及动脉导管未闭,2例合并永存左上腔静脉,3例合并左侧膈疝。两组一般资料比较无统计学意义,具有可比性(表1)。患儿家长均于术前签署知情同意书。

表1 两组患儿一般资料比较

Table 1 Comparison of baseline data for two groups

组别	日龄(d)	体重(kg)	性别(例)		部位(例)		分型(例)	
			男	女	左下肺	右下肺	叶内型	叶外型
胸腔镜组(n=11)	40(1.5~58)	4.827±2.195	7	4	8	3	9	2
传统开胸组(n=15)	22(1.8~52)	4.393±1.891	9	6	9	6	10	5
t/χ^2 值	0.422	0.54	0.035		0.454		0.74	
P 值	0.677	0.594	0.851		0.5		0.39	

二、手术方法

两组均采用气管插管全身麻醉。胸腔镜手术组取健侧卧位,患侧上肢自然屈曲上举至耳侧。术者站立于患儿头侧,扶镜者站立于患儿健侧。在患侧肩胛下开放置入1个5 mm Trocar作为腔镜操作孔,置入胸腔镜,胸腔内气压6~8 mmHg。在胸腔镜监视下于第五肋间腋中线及肩胛下角线与脊柱中点分别置入1个5 mm Trocar作为操作孔。叶内型隔离肺由于病变常与周围组织紧密粘连,一般先分离下叶与膈面、纵隔面与胸壁之间的粘连,分离至肺下韧带处,切开肺下韧带。在纵隔胸膜间寻找并暴露畸形的动脉分支,予1号丝线双道结扎并缝扎切断,确定畸形动脉分支已全部处理后再向下叶与上叶间隙处分离叶间胸膜,暴露出下叶背段和基底段动脉,分别予以结扎切断,再暴露肺下静脉予以结扎,切断和缝合下叶支气管。对叶外型隔离肺

可作胸腔镜下隔离肺组织切除。传统开胸手术组常规采用后外侧手术切口经第六肋间进胸,依次切开皮肤、皮下、肌层及壁胸膜,进胸探查。分离至肺下韧带时应警惕异常血管。叶外型隔离肺只做隔离肺组织切除,叶内型以肺叶切除为主。术中监测血气,术后常规留置胸腔闭式引流管。

三、观察指标

观察指标包括:①手术时间;②术中出血量;③胸腔闭式引流时间;④术后住院时间;⑤术后并发症,包括肺部感染、肺不张。拔除胸腔闭式引流管的指征^[5]:胸片提示肺复张,水柱无明显波动,夹闭胸腔闭式引流管24 h后无气促,无呼吸困难。出院指征:一般情况好,精神及饮食良好,胸腔闭式引流管已拔除,胸片提示肺复张,切口愈合良好。

四、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,数据比较采用两独立样本 t 检验,如果不符合正态分布则以中位数(四分位间距)表示,组间比较采用非参数检验。

结 果

两组术中发现胸腔粘连9例,其中1例粘连较重,8例仅轻微粘连;17例无粘连。16例隔离肺组织有1支异常供血动脉,9例有2支异常供血动脉,

1例有3支。20例异常供血动脉来自胸主动脉,5例来自腹主动脉,1例来自脾动脉。

两组平均手术时间比较,差异无统计学意义($P>0.05$);平均术中出血量、术后平均胸腔引流时间及平均住院时间比较,胸腔镜手术组均优于开胸手术组,差异均有统计学意义(P 值均 <0.05);两组术后并发症的发生率比较,差异无统计学意义($P>0.05$),详见表2。

表2 两组手术情况比较

Table 2 Comparison of surgical outcomes for two groups

组别	平均手术时间(min)	平均术中出血量(mL)	术后平均胸腔引流时间(d)	术后平均住院时间(d)	并发症	
					肺部感染(例)	肺不张(例)
胸腔镜手术组($n=11$)	118.36 \pm 7.61	2.18 \pm 0.40	3.54 \pm 0.69	7.54 \pm 0.82	2(18.18%)	1(9.09%)
传统开胸组($n=15$)	119.60 \pm 7.11	4.47 \pm 0.64	6.67 \pm 0.98	8.80 \pm 0.77	4(26.67%)	2(13.33%)
t/χ^2 值	-0.425	-11.125	-9.064	-3.981	0.561	0.245
P 值	0.674	0.000	0.000	0.001	0.755	0.885

26例患儿均顺利完成手术,痊愈出院。术中所见及术后病理结果均为肺隔离症(图1,图2)。出院后4例失访,22例获随访1~2年,2例随访期间发生肺炎,其余病例均恢复良好。

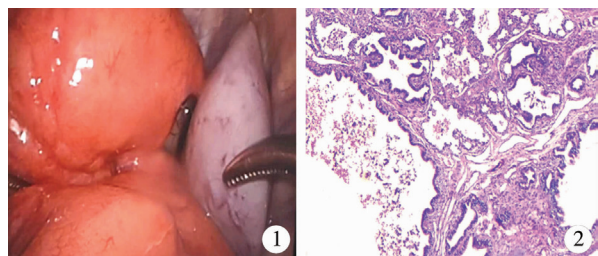


图1 术中所见隔离肺组织 图2 术后病理检查结果提示左侧隔离肺(HE, $\times 40$)

Fig. 1 Intraoperative finding of pulmonary sequestration Fig. 2 Postoperative pathology hinted at left pulmonary sequestration (HE, $\times 40$)

讨 论

由于小儿肺隔离症缺乏典型的影像学表现及临床症状,因而容易漏诊和误诊^[6];严重者危及患儿生命,给家庭和社会带来沉重的负担。因此,早期诊断显得尤为重要。胸部CT平扫主要表现为肿块影或囊肿,增强后异常血管可表现为与主动脉呈条索状或点状相连,异常血管断面位于肿块旁、肿块内,其时相与强化密度都和主动脉一致^[7]。因此,胸部CT血管造影(CTA)对肺隔离症的诊断具

有很高的诊断价值,能全面评价肺部情况和立体显示异常的供应血管,是肺隔离症术前诊断中最重要的检查方法^[8,9]。

肺隔离症临床上较少见,症状不典型,常被误诊为肺囊腺瘤样畸形、肺脓肿、先天性肺囊肿等而延误治疗。原则上一经明确诊断即应择期手术切除^[10]。目前临床上常用治疗方法即手术^[11]。传统开胸手术存在切口范围大、手术时间长以及术后并发症多等弊端,近年来胸腔镜技术被越来越多地应用于肺隔离症切除手术中^[12,13]。手术适应证为:反复或持续肺部感染,压迫邻近组织而影响相应功能,肺内阴影与纵隔肿物、肺囊肿等难以区分者。合并严重肺部感染、心肺功能不全者禁忌手术。

叶外型肺隔离症可行单纯隔离肺组织切除术,叶内型以肺叶切除为主。术中切忌在分离不佳的情况下钳夹血管,以防血管断裂缩回膈下,引起难以控制的出血。手术的关键是寻找并结扎异常供血血管。在处理肺下韧带时应警惕异常血管,以免盲目分离肺下韧带而撕裂异常动脉。由于肺隔离症经常反复感染,周围组织多粘连,影响手术暴露,容易引起出血。因此,在游离血管周围组织和松解粘连时应动作轻柔,以免损伤血管造成大出血。术后常见并发症有:①肺不张:一旦出现,应调整体位,翻身拍背;②食管胸腔瘘:一旦发生,需充分引流,必要时需再次开胸处理;③大出血:常需再次开胸止血;④脓胸:应使用有效抗生素,保持胸腔引流

通畅。

本研究结果显示:胸腔镜手术在减少术中出血、缩短胸腔引流时间及术后住院时间上,较传统开胸手术占优势,其原因可能与胸腔镜手术切口小,创伤小有关。这也与 Shen JF 等^[14]的研究结果相符。胸腔镜下手术与开胸手术操作时间相近,其原因可能与腔镜手术存在学习曲线有关。

胸腔镜下手术治疗肺隔离症安全、可行,应由有经验的外科医师操作,术中要警惕血管损伤的潜在风险^[15]。若术中胸腔镜处理出血存在困难,应立即中转开胸手术。另外,要注意气胸所致高碳酸血症、酸中毒以及操作时间更长等危险因素和操作者的学习曲线、手术技巧等问题。

参考文献

- Liu HS, Li SQ, Qin YZ, et al. Surgical treatment of intralobar pulmonary sequestration[J]. Chin Med Sci J, 2010, 25(1): 53-56.
- Wei Y, Li F. Pulmonary sequestration: a retrospective analysis of 2625 cases in China[J]. Eur J Cardiothorac Surg, 2011, 40(1): 39-42. DOI: 10.1016/j.ejcts.2011.01.080.
- Lee DI, Shim JK, Kim JH, et al. Pulmonary sequestration with right coronary artery supply[J]. Yonsei Med J, 2008, 49(3): 507-508. DOI: 10.3349/ymj.2008.49.3.507.
- Long Q, Zha Y, Yang Z. Evaluation of pulmonary sequestration with multidetector computed tomography angiography in a select cohort of patients: a retrospective study[J]. Clinics (Sao Paulo), 2016, 71(7): 392-398. DOI: 10.6061/clinics/2016(07)07.
- 王新. 中心静脉导管行胸腔闭式引流治疗气胸的临床观察[J/CD]. 中华肺部疾病杂志(电子版), 2012, 5(6): 526-530. DOI: 10.3877/cma.j.issn.1674-6902.2012.06.010.
- Wang X. Clinical observations of central venous catheter closed drainage in treating pneumothorax[J/CD]. Chin J Lung Dis (Electronic Edition), 2012, 5(6): 526-530. DOI: 10.3877/cma.j.issn.1674-6902.2012.06.010.
- 梁建华, 刘威, 汪风华, 等. 小儿肺隔离症 20 例临床分析[J]. 临床小儿外科杂志, 2016, 15(4): 386-388. DOI: 10.3969/j.issn.1671-6353.2016.04.022.
- Liang JH, Liu W, Wang FH, et al. Clinical analyses of pulmonary sequestration in children: a report of 20 cases[J]. J Clin Ped Surg, 2016, 15(4): 386-388. DOI: 10.3969/j.issn.1671-6353.2016.04.022.
- Clemente A, Morra A. Use of multidetector CT angiography and 3D postprocessing in a case of pulmonary sequestration[J]. Clin Imaging, 2007, 31(3): 210-213. DOI: 10.1016/j.clinimag.2006.12.028.
- Abbey P, Das CJ, Pangtey GS, et al. Imaging in bronchopulmonary sequestration[J]. J Med Imaging Radiat Oncol, 2009, 53(1): 22-31. DOI: 10.1111/j.1754-9485.2009.02033.
- Kang M, Khandelwal N, Ojili V, et al. Multidetector CT angiography in pulmonary sequestration[J]. J Comput Assist Tomogr, 2006, 30(6): 926-932. DOI: 10.1097/01.rct.0000224626.94703.61.
- 洪淳, 俞钢, 余攀, 等. 胸腔镜下婴幼儿隔离肺的处理分析[J]. 临床小儿外科杂志, 2016, 15(2): 117-120. DOI: 10.3969/j.issn.1671-6353.2016.02.005.
- Hong C, Yu G, Yu P, et al. Analysis of thoracoscopic managements for congenital bronchopulmonary sequestration[J]. J Clin Ped Surg, 2016, 15(2): 117-120. DOI: 10.3969/j.issn.1671-6353.2016.02.005.
- Yamasaki M, Suzuki M, Misumi H, et al. Hybrid surgery for intralobar pulmonary sequestration with aortic aneurysm[J]. Ann Thorac Surg, 2014, 98(1): 11-13. DOI: 10.1016/j.athoracsur.2014.04.054.
- Gonzalez D, Garcia J, Fieira E, et al. Video-assisted thoracoscopic lobectomy in the treatment of intralobar pulmonary sequestration[J]. Interact Cardiovasc Thorac Surg, 2011, 12(1): 77-79. DOI: 10.1510/icvts.2010.254177.
- Sun X, Xiao Y. Pulmonary sequestration in adult patients: a retrospective study[J]. Eur J Cardiothorac Surg, 2015, 48(2): 279-282. DOI: 10.1093/ejcts/ezu397.
- Shen JF, Zhang XX, Li SB, et al. Complete video-assisted thoracoscopic surgery for pulmonary sequestration[J]. J Thorac Dis, 2013, 5(1): 31-35. DOI: 10.3978/j.issn.2072-1439.2013.01.01.
- Liu C, Pu Q, Ma L, et al. Video-assisted thoracic surgery for pulmonary sequestration compared with posterolateral thoracotomy[J]. J Thorac Cardiovasc Surg, 2013, 146(3): 557-561. DOI: 10.1016/j.jtcvs.2013.04.027.

(收稿日期:2018-01-17)

本文引用格式:王允金,周朝明,崔旭,等. 不同手术方式治疗小儿肺隔离症的比较研究[J]. 临床小儿外科杂志, 2018, 17(5): 345-348. DOI: 10.3969/j.issn.1671-6353.2018.05.007.

Citing this article as: Wang YJ, Zhou CM, Cui X, et al. Clinical efficacies of different surgical approaches for pediatric pulmonary sequestration[J]. J Clin Ped Surg, 2018, 17(5): 345-348. DOI: 10.3969/j.issn.1671-6353.2018.05.007.