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儿童社区获得性支原体肺炎病原学与影像学特征分析

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摘要 目的: 回顾性分析我院儿童社区获得性肺炎(Community-acquired pneumonia, CAP)患儿病原学检测结果,为本地地区 CAP 患儿的临床治疗提供参考依据。**方法:** 选取 2014 年 5 月—2018 年 5 月 812 例符合中华医学会儿科学分会制定的儿童社区获得性肺炎(2013 修订)诊断标准的 CAP 患儿,分析患儿的临床特征及影像学检查结果,并进行分析。**结果:** 非重症 CAP 患儿 812 例, CAP 占 10.2%;感染病原体例数 481 例,阳性检出率为 59.2%;1 月-1 岁龄组与 1-5 岁龄组比较差异无统计学意义($P>0.05$);5-14 岁龄组发热发生率明显高于前两组,差异均有统计学意义($P<0.05$)。咳嗽、喘息、固定湿啰音发生率集中在 1 月-1 岁龄组与 1-5 岁龄组,且高于 5-14 岁龄组发生率($P<0.0$);肺部影像学改变的患儿共 657 例,占 80.9%。三个年龄组;肺部影像学改变差异有统计学意义($P<0.05$)。**结论:** 不同年龄段 CAP 患儿病原体检出率不同;不同年龄和不同病原学感染的儿童 CAP 的影像学表现各有特点,对于临床医生早发现、早诊断、早治疗具有一点的指导性意义。

关键词: 儿童;社区获得性支原体肺炎;病原学;影像学

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Community Acquired Mycoplasma Pneumonia in Children and Its Imaging Analysis

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ABSTRACT Objective: The results of pathogen of children with Community-acquired pneumonia (CAP) in our hospital were analyzed retrospectively, so as to provide reference for the clinical treatment of children with CAP in the local area. **Methods:** 812 children with children's community acquired pneumonia (2013 Revised) diagnosed as CAP were selected from May 2014 to May 2018. The clinical features and imaging findings of children were analyzed and analyzed. **Results:** There were 812 cases of non-severe CAP, CAP accounted for 10.2%; 481 cases of infectious pathogens, positive detection rate was 59.2%; there was no significant difference between 1-1 year-old group and 1-5 year-old group ($P>0.05$); the incidence of fever in 5-14 year-old group was significantly higher than that in the first two groups ($P<0.05$). The incidence of cough, wheezing and fixed moist rales was higher in 1-1 year-old group and 1-5 year-old group than that in 5-14 year-old group ($P<0.0$); 657 cases (80.9%) had lung imaging changes. There were significant differences in pulmonary imaging between the three age groups ($P<0.05$). **Conclusion:** the pathogeny rate of CAP in children of different age groups is different, and the imaging manifestations of CAP in children with different age and pathogenic infection have their own characteristics. It has a guiding significance for the early detection, early diagnosis and early treatment of the clinicians.

Key words: Children; Community-acquired mycoplasma pneumonia; Iconography

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前言

儿童社区获得性肺炎(Community-acquired pneumonia, CAP)是健康的儿童在入院前就已经感染肺炎亦或者在入院前处于感染的潜伏期,入院后发生儿童肺炎的情况^[1-3]。CAP 在我国儿童中是常见的感染性疾病之一,占全国住院收治的 CAP 患儿的 40%左右,是 5 岁以内儿童死亡的首要原因^[4,5]。由于普通门诊及私人诊所抗生素的滥用,引起 CAP 的病原体基因变异加快,耐药的 CAP 菌株逐渐增多^[6]。本文回顾性分析上海市第十人民医院儿科 2014 年 5 月—2018 年 5 月 CAP 患儿病原

学检测结果及肺部影像学改变差异特征,为上海市 CAP 患儿的临床治疗提供参考依据。

1 资料与方法

1.1 研究对象

选取 2014 年 5 月—2018 年 5 月 812 例 CAP 患儿,并均符合中华医学会儿科学分会制定的儿童社区获得性肺炎(2013 修订)诊断标准^[7]的病例作为研究对象。患儿年龄范围为 1 个月至 14 岁之间。

儿童社区获得性肺炎的诊断标准^[7]:① 新近出现的咳嗽、咳

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痰,或者原有呼吸道疾病症状加重,部分可有胸痛;② 发热;③ 呼吸急促,伴或不伴呼吸困难;④ 肺实变体征和(或)肺部听诊闻及湿性啰音;⑤ 胸部 X 线检查可见斑片状、片状浸润阴影或间质性改变,可伴有胸腔积液;⑥ 前 4 项中具备任何 1 项及以上并加上第 5 项,同时需排除非感染性间质性疾病、肺结核、肺不张、肺水肿、肺嗜酸性粒细胞浸润症、肺栓塞、肺血管征、肺部肿瘤等,可建立临床诊断。

排除标准:① 慢性呼吸疾病患儿;② 过敏性肺炎、支气管哮喘等基础疾病者;③ 拥有慢性疾病患儿,例如自身免疫疾病、心血管疾病等。

1.2 研究方法

1) 静脉血采集:所有患儿入院 24 小时内抽取 5 mL 静脉血送检,检测血常规、C 反应蛋白、肌酶谱、肝肾功能、细菌培养等指标。直接免疫荧光法检测痰呼吸道病毒抗原;间接酶联免疫法检测血病毒抗体;痰或血培养。2) 患儿基本信息资料由病历资料获取。

1.3 统计方法

采用 SPSS20.0 软件进行数据处理,CAP 患儿计量资料采用均值±标准差($\bar{x} \pm s$)表示,CAP 患儿计数资料以构成比(%)表示。CAP 患儿率的比较采用 χ^2 检验。 $P < 0.05$ 为差异具有统计学意义。

2 结果

2.1 患儿基本资料分析

2016 年 6 月—2017 年 12 月期间儿科住院患儿 7936 例,其中非重症 CAP 患儿 812 例,CAP 占 10.2%。812 例患儿中:1 月 -1 岁龄组 385 例(47.4%),>1 岁 -5 岁龄组 265 例(32.6%),>5 岁 -14 岁龄组 162 例(20.0%),男女之比为 1.6:1。住院治疗的 CAP 患儿以岁以下为多。

2.2 患儿病原学检查资料分析

812 例 CAP 患儿中明确感染病原体例数 481 例,阳性检出率为 59.2%。其中单纯细菌感染 81 例,占 16.8%;单纯病毒感染 102 例,占 21.2%;单纯支原体感染 165 例,占 34.3%,细菌、病毒、支原体混合感染 133 例,占 27.7%。

表 1 不同年龄组感染病原体情况
Table 1 Pathogen infection in different age groups

Groups	N	Positive	Negative	χ^2	P
1 month-1 age	385	216(56.1)	169(43.9)	11.290	<0.001
1-5 age	265	174(65.7)	91(34.3)		
5-14 age	162	91(56.2)	71(43.8)		

2.3 患儿发热及其他临床表现资料分析

各年龄组发热发生率差异有统计学意义。1 月 -1 岁龄组与 1-5 岁龄组比较差异无统计学意义 ($P > 0.05$);5-14 岁龄组发热

发生率明显高于前两组,差异均有统计学意义 ($P < 0.05$)。咳嗽、喘息、固定湿啰音发生率集中在 1 月 -1 岁龄组与 1-5 岁龄组,且高于 5-14 岁龄组发生率 ($P < 0.0$)。见表 2,3。

表 2 不同年龄组患儿发热情况
Table 2 Fever in children of different age groups

Groups	N	Fever	No fever	χ^2	P
1month-1age	385	187(48.6)	198(51.4)	17.113	<0.001
1-5 age	265	143(54.0)	122(46.0)		
5-14 age	162	108(66.7)	54(33.3)		

表 3 不同年龄组临床表现情况
Table 3 Clinical manifestations of different age groups

Groups	N	Cough	Wheezing	Respiratory rate	Moist rales
1 month-1 age	385	351(91.2)	193(50.1)	338(87.8)	329(85.5)
1-5 age	265	243(91.7)	109(41.1)	236(89.1)	215(81.1)
5-14 age	162	125(77.2)	45(27.8)	116(71.6)	75(46.3)
χ^2	--	4.569	9.361	3.148	14.716
P	--	0.032	0.005	0.079	<0.001

2.4 影像学检查特征

儿童社区获得性支原体肺炎与其影像学分析显示,1 月 -1 岁龄组儿童社区获得性支原体肺炎主要表现为小斑片影;5 岁

-14 岁龄组儿童社区获得性支原体肺炎则多为大叶受累阴影。812 例患儿中,有肺部影像学改变的患儿共 657 例,占 80.9%。将所得数据进行统计学分析,三个年龄组相比差异有统计学意义。

义($P<0.05$)。见表 4。

表 4 不同年龄组患儿影像学检查结果
Table 4 Imaging examination of different age groups

Groups	N	Imaging examination				χ^2	P
		Small patchy	Big patchy	Interstitial	Pulmonary hilar thickening		
1 month-1 age	385	274(71.2)	34(8.8)	41(10.6)	11(2.9)	87.620	<0.001
1-5 age	265	187(70.6)	73(27.5)	30(11.3)	7(2.6)		
5-14 age	162	46(28.4)	79(48.8)	14(8.6)	6(3.7)		

3 讨论

CAP 是世界范围内严重威胁儿童健康的一种常见且后果严重的疾病。婴幼儿因为生理及解剖特点导致呼吸道功能发育不够完善,管腔比较狭窄,粘液分泌少,纤毛运动差,缺乏弹力组织,黏膜柔嫩,血管丰富易充血,肺泡数量少,加上婴幼儿呼吸道的非特异性和特异性免疫功能均较差,对外界病原体感染的抵抗能力不足,故易患呼吸道感染^[2,8-10]。在全世界 5 岁以下儿童死亡的病因中,肺炎占第一位,且大部分儿童死亡的病例发生在发展中国家,而我国 CAP 死亡的病例仅次于印度,每年有 2110 万新发 CAP^[4,11,12]。国内外的 CAP 肺炎均依靠经验治疗^[13-15],总结儿童 CAP 临床、病原学、实验室检查、影像学特点,为临床早期经验诊治儿童 CAP 提供依据,有利于合理治疗及降低儿童 CAP 发病率及死亡率,提高治愈率。本次研究选取了 2016 年 6 月—2017 年 12 月期间住院的 812 例非重症儿童 CAP 患儿作为研究对象,探讨非重症儿童 CAP 患儿的发病规律及不同病原体临床表现特征,从而为本地区儿童 CAP 的经验性诊疗提供参考依据。

CAP 是儿科的常见疾病,其常见的症状有发热、咳嗽、呼吸增快、和肺部固定湿啰音等呼吸道征象^[16-18]。发热的产生机制为各种病原在体内产生内生致热原。内生致热原释放后可作用于病灶组织的化学感受器,引起体温调节中枢兴奋,也可以致热原进入血循环后,作用于血管内感受器或直接作用于体温调节中枢而引起发热^[11,19]。本研究结果,非重症 CAP 患儿 812 例, CAP 占 10.2%。812 例 CAP 患儿中明确感染病原体例数 481 例,阳性检出率为 59.2%。各年龄组发热发生率差异有统计学意义,5-14 岁年龄组发热发生率明显高于前两组($P<0.05$)。说明年龄与发热的发生比及高低程度呈正相关,年龄组越大表现的发热发生比率越高^[20]。咳嗽、喘息、固定湿啰音发生率集中在 1 月-1 岁年龄组与 1-5 岁年龄组,且高于 5-14 岁年龄组发生率($P<0.0$),以此推测可能与儿童的免疫系统随着年龄的增长而不断发育和完善的結果。咳嗽既是生理性的防御反映也可作为呼吸道疾病的常见症状之一,全身性疾病也可出现咳嗽症状,因无特异性区分标准,造成了临床判断的困难^[11,21]。

不同年龄组影像学检查结果提示:有肺部影像学改变的患儿共 657 例,占 80.9%。通过 spss 统计分析三个年龄组的相关数据,三组儿童 CAP 差异有统计学意义($P<0.05$),而且儿童社区获得性支原体肺炎与其影像学分析显示,1 月-1 岁年龄组儿童

社区获得性支原体肺炎主要表现为小斑片影;5 岁-14 岁年龄组儿童社区获得性支原体肺炎则多为大叶受累阴影^[6]。

综上所述,我院儿童 CAP 的单纯支原体感染最高,其次是细菌、病毒、支原体混合感染;患儿发热及临床体征各年龄组也存在不同,发热主要体现在高年龄段;不同年龄和不同病原学感染的儿童 CAP 的影像学表现各有特点。

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