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儿童哮喘与肺炎支原体感染关系的探讨

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摘要 目的:探讨儿童哮喘发作与肺炎支原体(MP)感染之间的关系,并分析合并 MP 感染的患儿的临床表现。**方法:**将 79 例 2-14 岁急性哮喘发作的患儿依据病史分做两组:第一次哮喘发作的 35 人(始发哮喘组),已经有哮喘病史的 44 人(复发哮喘组)。采用被动冷凝集法检测两组患儿肺炎支原体抗体(MP-IgM)。**结果:**始发哮喘组和复发哮喘组分别有 16 例(45.7%)和 10 例(22.7%)患儿 MP-IgM 阳性 ($P<0.05$)。始发哮喘组与复发哮喘组 MP-IgM 阳性的患儿发热和肺部啰音发生率明显高于 MP-IgM 阴性的患儿 ($P<0.05$),血清 IgE 水平也明显高于 MP-IgM 阴性的患儿($P<0.05$)。**结论:**MP 感染与儿童哮喘发作关系密切,合并 MP 感染的哮喘患儿发热或肺部啰音发生率明显高于未合并 MP 感染的哮喘患儿。

关键词:儿童;哮喘;肺炎支原体

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Study on Relationship Between the Infection of Mycoplasma pneumoniae and Bronchial Asthma in Children

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ABSTRACT Objective: to test the connection between acute Mycoplasma pneumoniae (MP) infection and the exacerbation of asthma. The clinical characteristics of asthmatic children with MP infection were reviewed. **Methods:** We examined the cases of 79 asthma exacerbation patients aged from two to fourteen years old. They were divided into two groups according to their asthma history. 35 had only had their first asthma attack (initial group) and 44 cases had evidence of a history of asthma (known group). MP infection was defined by positive results in serologic testing with Passive condensation set method. **Results:** MP infection was found in 16 children (45.7%) in initial group and 10 children (22.7%) in known group ($P<0.05$). In two groups, compared with children without MP infection, the incidence of fever and rales among children with MP infection and the level of serum IgE were significantly higher ($P<0.05$). **Conclusions:** MP may play a role in asthmatic exacerbation among children. Moreover, among children with MP infection, the number was significantly increased of children having fever as the chief complaint and rales in auscultations compared with those without MP infection.

Key words: Children; Asthma; Mycoplasma pneumoniae

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前言

肺炎支原体(Mycoplasma pneumoniae, MP)是一种细胞外病原体,可粘附并破坏呼吸道黏膜纤毛上皮细胞,导致儿童肺炎、支气管炎和咽炎^[1,2]。近年来,肺炎支原体与哮喘发生的关系已愈来愈被人们所认识,认为 MP 感染可能引发和加重支气管哮喘^[2-5]。本文采用被动冷凝集测试法检测哮喘急性发作患儿外周血肺炎支原体抗体(MP-IgM),分析与探讨 MP 感染与儿童哮喘发作的时空关系,对相关指标进行统计分析,获得了一些值得参考的数据,现报告如下。

1 资料与方法

1.1 临床资料

2012 年 1 月~2012 年 12 月本院儿科收治哮喘急性发作

患儿 79 例,均符合儿童哮喘防治常规诊断标准^[6]。按患儿既往有无哮喘发作分为始发哮喘组和复发哮喘组。始发哮喘组 35 例,男 21 例,女 14 例,年龄 2-14 岁。复发哮喘组 44 例,男 28 例,女 16 例,年龄 2-13 岁。

1.2 检查方法

所有病例入院后次日晨 7 时采集空腹静脉血 2~3 mL。MP-IgM 采用被动冷凝集法检测,严格按照说明书操作方法进行。判定标准:样品与未致敏粒子(最终稀释倍数 1:20)出现反应图像判定为阴性,而与致敏粒子(最终稀释倍数 $\geq 1:40$)出现反应图像判定为阳性,提示 MP 感染。所有患儿均进行血常规,肝肾功能,血清 IgE 水平,胸部 X 线等检查。

1.3 药物治疗

所有患儿均按 2004 年儿童支气管哮喘防治常规规范治疗^[6],MP-IgM 阳性的患儿还静脉滴注红霉素(西安利君制药有限公司)10 mg/kg,3 次/d,疗程 7 天。静脉治疗结束后口服阿奇霉素(辉瑞制药有限公司)10 mg/(kg·d),每日 1 次,疗程

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1-2 周。

1.4 统计学方法与处理

所有数据资料均采用 SPSS19.0 统计软件进行数据管理和统计学处理,计量资料结果以均数 $\pm$ 标准差($\bar{x} \pm s$)表示,采用 t 检验。计数资料采用 χ^2 检验。 $P \leq 0.05$ 为差异有统计学意义。

2 结果

2.1 始发哮喘组与复发哮喘组外周血 MP-IgM 的比较

从表 1 可以获知:始发哮喘组 MP-IgM 阳性率达 45.7%,而复发哮喘组为 22.7%,两组比较差异有显著性($P < 0.05$)。始发哮喘组与复发哮喘组胸部 X 线异常分别为 85.7%和 81.8%,两

组比较差异无显著性($P > 0.05$)。

2.2 组 MP-IgM 阳性与 MP-IgM 阴性哮喘患儿临床特征比较

从表 2 可以获知:始发哮喘组与复发哮喘组 MP-IgM 阳性的患儿发热和肺部啰音发生率明显高于 MP-IgM 阴性的患儿($P < 0.05$),喘息和呼吸运动减弱两组比较差异无显著性 ($P > 0.05$)。血清 IgE 水平明显高于 MP-IgM 阴性的患儿($P < 0.05$),血细胞计数和胸部 X 线异常两组比较差异无显著性($P > 0.05$)。

2.3 MP-IgM 阳性与 MP-IgM 阴性始发哮喘患儿的临床特征比较

从表 3 可以获知:始发哮喘组 MP-IgM 阳性的患儿哮喘家族史和体温明显高于 MP-IgM 阴性的患儿($P < 0.05$)。

表 1 始发哮喘组与复发哮喘组外周血 MP-IgM 的比较

Table 1 Demographic characteristics of children with MP infections in two groups

	Initial asthma group (n=35)	Recurrent asthma group (n=44)
男 / 女(Male/female)	21/14	28/16
年龄(Age)	8.3 $\pm$ 1.2	7.9 $\pm$ 1.5
MP-IgM(+)	16(45.7%) $^{\Delta}$	10(22.7%)
胸部 X 线异常(Abnormal chest X ray)	30(85.7%)	36(81.8%)

Note: Compared with recurrent asthma group, $\Delta P < 0.05$.

表 2 组 MP-IgM 阳性与 MP-IgM 阴性哮喘患儿临床特征比较

Table 2 Comparison of clinical characteristics between patients with and without MP infections in two groups

	Initial asthma group		Recurrent asthma group	
	MP-IgM(+) (n=16)	MP-IgM(-) (n=19)	MP-IgM(+) (n=16)	MP-IgM(-) (n=19)
体格检查(Physical examination)				
发热(Fever)	9(56.3%) $^{\Delta}$	6(31.6%)	5(50.0%) $^{\Delta}$	4(11.8%)
肺部啰音(Rales)	8(50.0%) $^{\Delta}$	4(21.1%)	4(40.0%) $^{\Delta}$	7(20.6%)
喘息(Wheeze)	14(87.5%)	16(84.2%)	9(90.0%)	29(85.3%)
呼吸运动减弱(Decreased)	13(81.3%)	14(73.7%)	8(80.0)	28(82.4%)
实验室检查(Laboratory data)				
血小板($\times 10^9/L$)(Platelet)	296.3 $\pm$ 75.6	286.5 $\pm$ 86.2	302.5 $\pm$ 89.6	293.3 $\pm$ 95.2
红细胞($\times 10^{12}/L$)(RBC)	4.9 $\pm$ 0.6	5.3 $\pm$ 0.5	5.1 $\pm$ 0.5	5.0 $\pm$ 0.4
白细胞($\times 10^9/L$)(WBC)	10.6 $\pm$ 1.7	9.5 $\pm$ 1.2	10.8 $\pm$ 2.1	9.7 $\pm$ 1.5
中性粒细胞(%) (Neutrophil)	71.2 $\pm$ 12.6	68.6 $\pm$ 13.5	69.8 $\pm$ 14.2	70.3 $\pm$ 10.1
淋巴细胞(%) (Lymphocytes)	20.4 $\pm$ 12.3	20.5 $\pm$ 13.1	21.5 $\pm$ 15.8	22.4 $\pm$ 11.2
单核细胞(%) (Monocytes)	6.5 $\pm$ 2.3	6.9 $\pm$ 2.1	7.2 $\pm$ 2.5	6.9 $\pm$ 2.4
嗜酸性粒细胞(%) (Eosinophils)	2.6 $\pm$ 0.8	2.4 $\pm$ 0.6	2.5 $\pm$ 0.7	2.7 $\pm$ 0.3
IgE($\geq 300IU/mL$)	11(68.8%) $^{\Delta}$	5(26.3%)	6(60.0%) $^{\Delta}$	11(32.4%)
胸部 X 线异常(Abnormal chest X ray)	14(87.5%)	16(84.2%)	9(90.0%)	27(79.4%)

Note: Compared with MP-IgM(-), $\Delta P < 0.05$.

表 3 MP-IgM 阳性与 MP-IgM 阴性始发哮喘患儿临床特征比较

Table 3 Clinical characteristics between patients with and without MP infections in initial asthma group

	MP-IgM(+)(n=16)	MP-IgM(-)(n=19)
男 / 女(Male/female)	10/6	11/8
年龄(Age)	8.1 $\pm$ 1.2	8.5 $\pm$ 1.2
哮喘家族史(Familial asthma)	11(68.75%)	7(36.8%)
体温(Temperature)	37.5 $\pm$ 1.3 $^{\Delta}$	36.4 $\pm$ 1.2

Note: Compared with MP-IgM(-), $\Delta P < 0.05$.

3 讨论

哮喘的病因学非常复杂,涉及遗传易感性,过敏原暴露和环境因素之间的相互作用。尽管病毒感染导致急性哮喘发作已得到共识,但是细菌感染在哮喘中的作用的还没有完全阐明^[7,8]。越来越多的研究表明,非典型细菌感染与哮喘相关联,尤其是肺炎支原体^[9]。研究显示某些细胞因子,如 IL-2, IL-5 和 IL-6 和 TNF- α , 在 MP 感染病理生理机制中发挥重要作用^[10,11]。Hardy 等采用已致敏的动物实验模型证实 MP 感染可诱发气道炎症和明显增加气道阻力^[12]。本组资料显示始发哮喘患儿 MP 感染率达 45.7%,复发哮喘患儿 MP 感染率达 22.7%,与彭健等报道基本一致^[13-15]。这些结果说明 MP 感染与儿童哮喘发作关系密切,对哮喘急性发作期患儿要考虑 MP 感染的可能性。实验室检查结果还显示两组哮喘 MP-IgM 阳性的患儿血清 IgE 水平也明显高于 MP-IgM 阴性的患儿,说明 MP 感染可特异性诱导 IgE 产生。

许多研究表明,发热、咳嗽和肺部啰音是 MP 感染后最常见的症状和体征^[10,11]。本组资料也显示两组 MP-IgM 阳性的哮喘患儿发热和肺部啰音发生率明显高于 MP-IgM 阴性的患儿。MP 感染后细胞因子产生和淋巴细胞激活一方面加强宿主防御机制,另一方面也可通过免疫学机制加重损伤。所以说,发热和肺部啰音提示 MP 感染诱发哮喘并已加重损伤。两组哮喘患儿多数胸部 X 线有异常发现,与李川宝等报道一致^[16,17]。因此,对哮喘患儿常规摄胸片很有必要。本组资料对 MP-IgM 阳性的哮喘患儿不仅给予常规抗哮喘治疗,还给予了大环内酯类抗生素,取得了较好的疗效。彭健等对 MP-IgM 阳性的哮喘发作患儿一组给予常规抗哮喘和阿奇霉素联合治疗,一组仅给予常规抗哮喘治疗,前组有效率明显高于后组^[9]。在哮喘有明确病因时,针对病因治疗意义将更重大^[13]。

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