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肺炎支原体感染与小儿支气管哮喘急性发作的关系

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摘要 目的:研究肺炎支原体(MP)感染与支气管哮喘急性发作的相关性。方法:选择我院 2012 年 10 月~2013 年 9 月收治的支气管哮喘急性发作和缓解期患儿,作为观察组和对照组,分析两组患儿血清中 MP 特异性 IgM(MP-IgM)和咽拭子 MP-DNA 的检测结果。结果:观察组 MP-IgM 和 MP-DNA 阳性率以及 MP-DNA 拷贝量均显著高于对照组($P<0.05$)。结论:MP 感染与小儿支气管哮喘急性发作具有密切关系,MP-IgM 和 MP-DNA 检测,可为临床诊疗提供一定的参考依据。

关键词:肺炎支原体感染;支气管哮喘;急性发作;相关性

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Correlation between Mycoplasma Pneumonia Infection and Acute Episode of Infantile Bronchial Asthma

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ABSTRACT Objective: To study the correlation between mycoplasma pneumonia (MP) infection and infantile bronchial asthma acute episode. **Methods:** Patients with acute episode or paroxysms of infantile bronchial asthma in our hospital between October 2012 and September 2013 were chosen and divided into observation group and control group. The detection results of MP immunoglobulin M (MP-IgM) and throat swab MP-DNA were analyzed. **Results:** The masculine rates of MP-IgM and MP-DNA were significantly higher in observation group than in control group ($P<0.05$). The copy quantities of MP-DNA in observation group were obviously higher than in control group ($P<0.05$). **Conclusion:** MP infection is closely related to the acute episode in the infantile bronchial asthma. MP-IgM and MP-DNA test can provide some references for clinical diagnosis and treatment of acute episode in infantile bronchial asthma.

Key words: Mycoplasma pneumonia infection; Bronchial asthma; Acute episode; Correlation

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前言

支气管哮喘是儿科呼吸系统常见疾病之一,是一种表现反复发作性咳嗽、喘鸣和呼吸困难,并伴有气道高反应性的可逆性、梗阻性呼吸道疾病^[1-3]。肺炎支原体(Mycoplasma pneumoniae, MP)是引起小儿呼吸道感染的重要病原体,感染后可诱发和加重哮喘,感染率在支气管哮喘患儿中有逐年增高的趋势^[4-6]。近年来 MP 感染和小儿支气管哮喘的关系越来越引起人们的关注,MP 特异性抗体 IgM(MP-IgM)和 MP-DNA 是临床诊断和鉴别 MP 感染的重要检测指标^[7-9],本文对支气管哮喘急性发作期和缓解期患儿进行 MP-IgM 和咽拭子 MP-DNA 检测,分析 MP 感染与支气管哮喘急性发作的关系,报道如下。

1 资料与方法

1.1 一般资料

选择我院 2012 年 10 月~2013 年 9 月收治的支气管哮喘

患儿 80 例,其中男童 42 例,女童 38 例,年龄 4 岁~14 岁,平均 8.32 ± 4.38 岁,均符合 2008 年儿童支气管哮喘的诊断标准^[10],均无使用激素史。其中急性发作期患儿和缓解期患儿各 40 例,分别作为观察组和对照组,两组患儿在性别、年龄方面差异均无统计学意义($P>0.05$)。

1.2 方法

对两组患儿血清中 MP-IgM 和咽拭子 MP-DNA 进行检测。MP-IgM 采用血凝集法定量检测,试剂盒由日本富士瑞必欧株式会社提供,空腹抽取静脉血 2ml,按试剂盒说明书进行操作,滴度大于 1:80 判定为阳性。咽拭子 MP-DNA 测定采用荧光定量 PCR 法,对患儿咽分泌物标本进行检测,由美国通用 ABI 仪器自动算出 DNA 拷贝量($\geq 5.0E+02$ 为阳性)。

1.3 统计学方法

全部数据录入 SPSS10.0 分析,计量资料以均值 $\pm$ 标准差($\bar{x} \pm s$)表示,以 t 检验分析,计数资料采用 χ^2 分析,以 $P<0.05$ 为差异有统计学意义。

2 结果

观察组和对照组患儿 MP-IgM 阳性检出例数分别为 24 例和 6 例,阳性率分别为 37.5%和 7.5%,差异有统计学意义($P<0.05$);

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MP-DNA 阳性检出例数分别为 22 例和 5 例, 阳性率分别为 55.0%和 12.5%, 差异有统计学意义($P<0.05$);MP-DNA 检出阳性率在观察组中显著高于 MP- IgM 的阳性率, 差异有统计学意义 ($P<0.05$)。观察组 MP-IgM 和 MP-DNA 均为阳性者 15 例 (37.5%), 均为阴性者 17 例(42.5%), 检测符合率为 80.0%;对照组 MP-IgM 和 MP-DNA 均为阳性者 1 例 (2.5%), 均为阴性者

33 例(82.5%), 检测符合率为 85.0%。

MP-DNA 拷贝量在观察组和对照组的阳性病例中平均分别为 $(3.89 \pm 2.34) \times 10^3$ 和 $(1.38 \pm 1.52) \times 10^3$, 差异有统计学意义($P<0.05$)。

3 讨论

表 1 两组 MP-IgM 和 MP-DNA 检测结果比较

Table 1 Comparison of detection result of the two groups between MP-IgM and MP-DNA

组别 Groups	例数(n) Cases(n)	MP- IgM			MP-DNA			
		+	-	阳性率(%) Positive rate(%)	+	-	阳性率(%) Positive rate(%)	DNA 拷贝量(copy/ml) DNA copy(copy/ml)
观察组 Observation group	40	15	25	37.5*	22	18	55.0*#	$(3.89 \pm 2.34) \times 10^3$
对照组 Control group	40	3	37	7.5	5	35	12.5	$(1.38 \pm 1.52) \times 10^3$

注:与对照组相比,* $P<0.05$;与 MP- IgM 阳性率相比,* $P<0.05$ 。

Note: Compared with the control group,* $P<0.05$; Compared with the positive rate of MP- IgM,* $P<0.05$.

随着对支气管哮喘发病机制及影响因素研究的日益深入, 呼吸道感染作为支气管哮喘发作的常见影响因素, 其与支气管哮喘间的关系研究已成为近年来研究的热点之一。国外学者报道, 哮喘急性发作期的哮喘初发患儿中, MP 感染率达约 50%, 哮喘复发患儿中达 20%以上^[11-14]。国内报道支气管哮喘患儿 MP-IgM 的阳性率要显著高于正常儿童, 阳性率约 35%~82%之间, 且年龄较低者更易发生 MP 感染^[15-17]。本研究分别对急性发作期和缓解期的小儿支气管哮喘患者的 MP-IgM 和 MP-DNA 进行了检测和对比分析, 支气管哮喘急性发作期患儿 MP-IgM 和 MP-DNA 阳性率分别为 37.5%和 55.0%, 均显著高于缓解期患儿(7.5%和 12.5%)($P<0.05$), 但与冯力^[18]报道的 MP-IgM 的阳性率为 81.25%相比, 本组患儿 MP-IgM 的阳性率较低。本研究对 MP 感染者支气管哮喘的咽拭子 MP-DNA 拷贝量进行测定, 结果急性发作期亦显著高于缓解期($P<0.05$)。以上均表明支气管哮喘急性发作与 MP 感染密切相关, MP 感染可能是诱发小儿支气管哮喘急性发作的一个重要因素, 与文献报道相符合^[19,20]。MP 感染可能直接损伤呼吸道黏膜, 诱导炎症细胞增殖并释放更多炎性介质和生长因子, 引发呼吸道高反应性和慢性炎症, 及引起气管狭窄和加重炎症, 使哮喘的发生、加重和反复。

肺炎支原体感染在临床上并不具有典型的临床表现, 冷凝集法定量 MP-IgM 检测和荧光定量 PCR 咽拭子 MP-DNA 检测均为诊断 MP 感染的有效手段。本研究对 MP-IgM 和 MP-DNA 均进行了检测, 二者检测符合率在 80%以上, 在支气管哮喘急性发作患儿中, MP-DNA 检测的阳性率显著高于 MP-IgM 的检测的阳性率($P<0.05$)。可能与小儿感染后免疫功能较成人更低, 感染后并不能产生足够抗体, 使血清抗体未出现升高等原因均可造成 MP 感染患者 MP-IgM 检测并不呈阳性有关, 对于小儿患者, 单纯应用 MP-IgM 作为 MP 感染的检测具有一定的局限性。荧光定量 PCR 兼具光谱的敏感性与 PCR 技术的高度特异性, 检测迅速, 封闭式操作使污染造成的

假阳性减少, 并可定量分析, 正常咽部几乎没有 MP 的存在, 所以咽拭子 MP-DNA 检测阳性更具有诊断的可靠性, 且小儿呼吸道标本取样方便, 被认为是 MP 感染早期诊断的重要的有效的方法, 更有利于提高小儿 MP 感染的诊断率。

总之, MP 感染与小儿支气管哮喘急性发作具有密切关系, 对支气管哮喘患儿 MP 感染应给予足够重视, 对其进行 MP 感染检测, 有利于为临床诊疗提供一定的参考依据。

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