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硫酸镁微量气泵吸入治疗毛细支气管炎患儿的疗效及对肺功能的影响

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摘要 目的:探讨硫酸镁微量气泵吸入治疗毛细支气管炎患儿的疗效及对肺功能的影响。**方法:**选择2012年1月-2014年8月我院收治的毛细支气管炎患儿120例,随机分为研究组和对照组各60例。两组均给予吸氧、吸痰、镇静、止咳、抗感染和支气管扩张剂治疗,研究组再加用25%硫酸镁溶液0.1~0.2ml/(kg·次)气泵吸入治疗,比较两组临床疗效及患儿肺功能变化。**结果:**研究组总效率为98.3%,显著高于对照组的88.3%($P < 0.05$);研究组患儿咳嗽、气促、喘息、肺部哮鸣音/啰音消失时间及住院时间显著短于对照组($P < 0.05$);治疗后两组患儿潮气量(VT)、达峰时间比(tPTEF/tE)和vPTEF/vE均明显升高,吸呼比(Ti/Te)明显降低($P < 0.05$),研究组VT、tPTEF/tE和vPTEF/vE显著高于对照组,Ti/Te显著低于对照组($P < 0.05$)。**结论:**硫酸镁微量气泵吸入治疗小儿毛细支气管炎可以改善患儿喘憋、气促、呼吸困难等症状以及肺功能,临床效果较好。

关键词:毛细支气管炎;硫酸镁;气泵吸入;呼吸功能

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Curative Effect of Magnesium Sulfate Micro Pump Inhalation in the Treatment of Children With Bronchiolitis and Its Effect on Pulmonary Function

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ABSTRACT Objective: To investigate the effect of magnesium sulfate micro pump inhalation in the treatment of children with bronchiolitis and its effect on pulmonary function. **Method:** Selected 120 cases of children with bronchiolitis who were treated in our hospital from January 2012 to August 2014, which were randomly divided into study group and control group with 60 cases in each group. The two groups were given oxygen inhalation, cough, sputum suction, sedation, anti infection and bronchodilator treatment, the study group were added with 25% magnesium sulfate solution 0.1~0.2 mL/(kg) pump inhalation treatment, compared the clinical curative effect and the changes of pulmonary function between the two groups. **Results:** The total efficiency of the study group was 98.3%, significantly higher than that 88.3% in the control group ($P < 0.05$). Disappear time of children with cough, shortness of breath, wheezing, pulmonary wheezing/rales and the hospitalization time in the study group was significantly shorter than that of the control group ($P < 0.05$). The tidal volume (VT), time to peak ratio (tPTEF/tE) and (vPTEF/vE) significantly increased and respiratory ratio (Ti/Te) decreased significantly after treatment ($P < 0.05$), the VT, tPTEF/tE and vPTEF/vE of study group were significantly higher than that of the control group, Ti/Te was significantly lower than that of the control group ($P < 0.05$). **Conclusion:** Magnesium sulfate micro pump inhalation in the treatment of children with bronchiolitis can improve the symptoms such as wheezing, shortness of breath, dyspnea, improve lung function, and the clinical effect is good.

Key words: Bronchiolitis; Magnesium Sulfate; Pump suction; Respiratory function

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前言

毛细支气管炎是儿科常见病与多发病,好发于2岁以下儿童,尤其是6个月以内小儿^[1]。患儿多表现为咳嗽、喘息、憋闷等症状,如不及时治疗可引起呼吸衰竭、心力衰竭而危及患儿生

命^[2]。目前,对于毛细支气管炎仍无特效治疗方法,临床上主要给予吸氧、抗感染和支气管扩张剂治疗,但不良反应较多,且临床疗效有限^[3,4]。硫酸镁是一种镁盐类制剂,具有阻断钙离子的功能,同时是良好的支气管平滑肌舒张剂,但由于该药物非选择性,静脉点滴不良反应较多,影响其临床应用^[5,6]。近年来,随着医学技术的进步,局部气泵硫酸镁治疗得以实现,并取得了一定效果。为探讨硫酸镁微量气泵吸入治疗毛细支气管炎患儿的疗效及对肺功能的影响,笔者进行了研究,现报道如下。

1 资料和方法

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1.1 一般资料

选择 2012 年 1 月~2014 年 8 月间我院收治的毛细支气管炎患儿 120 例,所有患儿均符合毛细支气管炎诊断标准^[7]:患儿急性起病,1~3d 内出现气急、发作性喘息、憋闷,板厚鼻翼煽动、烦躁、发绀等,体格检查肺部有细湿罗音及喘鸣音等。排除先天性心脏病、先天性支气管疾病、气道异物及肺部发育不良等。120 例患儿按数字表法随机分为研究组和对照组各 60 例。研究组男 38 例,女 22 例;年龄 42 d~2 岁,平均年龄(6.8± 0.6)个月;病程 1~6 d,平均(2.8± 1.2) d。对照组男 36 例,女 24 例;年龄 42 d~2 岁,平均年龄(6.5± 0.7)个月;病程 1~6 d,平均(2.6± 1.4) d。两组患儿性别构成、年龄及病程比较无统计学差异($P>0.05$),具有可比性,且家属对研究知情同意,研究经医院伦理委员会同意。

1.2 治疗方法

两组患儿入院后均给予吸氧、吸痰、镇静、止咳、抗感染和支气管扩张剂治疗,在治疗期间不应用激素类药物。研究组同时加用 25%硫酸镁溶液 0.1~0.2 mL/(kg·次)与生理盐水配成等渗液,应用意大利生产的压缩空气式雾化泵泵入,5~10 min/次,急性期次 /4 h,根据患儿临床症状、体征变化可酌情减少泵入次数,直至患儿气喘消失,总疗程不可超过 1 周。

1.3 观察指标及方法

观察患儿症状、体征改善时间,并评价治疗效果^[8];痊愈:治

疗 7d 后患儿呼吸困难、咳嗽、喘息、憋闷等症状消失,肺部哮鸣音及湿罗音消失,缺氧症状改善;有效:治疗 7 d 后呼吸困难好转,咳嗽、喘息、憋闷等症状减轻,肺部哮鸣音及湿罗音减少;无效:治疗 7 d 后症状体征无好转,肺部仍有较多哮鸣音及湿罗音;总有效 = 痊愈 + 有效。于治疗前(入院当天)、治疗后应用德国 Jaeger 公司生产的 Master Screenios 肺功能仪测定两组患儿肺功能,包括潮气量 (VT)、吸呼比 (Ti/Te)、达峰时间比 (tPTEF/TE)和(vPTEF/vE)。

1.4 统计学方法

应用 SPSS18.0 统计软件进行数据分析,计量数据以($\bar{x} \pm s$)表示,实施 t 检验,计数资料比较采用 X² 检验, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 两组临床疗效比较

研究组痊愈 45 例,有效 14 例,无效 1 例,总有效率为 98.3%;对照组痊愈 34 例,有效 19 例,无效 7 例,总有效率为 88.3%,研究组总有效显著高于对照组($X^2=4.821, P<0.05$)。

2.2 两组临床症状、体征消失时间及住院时间比较

研究组患儿咳嗽、气促、喘息、肺部哮鸣音 / 啰音消失时间及住院时间显著短于对照组 ($P<0.05$),见表 1。

表 1 两组临床症状、体征消失时间及住院时间比较($\bar{d}, \bar{x} \pm s$)

Table 1 Comparison of the clinical symptoms, signs disappeared time and hospitalization time in the two groups ($\bar{d}, \bar{x} \pm s$)

组别 Groups	n	咳嗽 Cough	气促 Shortness of breath	喘息 Wheezing	肺部哮鸣音 / 啰音 pulmonary wheezing/rales	住院时间 Hospitalization time
研究组 Study group	60	3.8± 1.5	1.2± 0.5	3.8± 1.4	5.1± 1.6	7.5± 2.6
对照组 Control group	60	5.6± 1.2	2.4± 0.6	5.9± 1.2	7.9± 1.5	9.8± 3.2
t	-	2.884	3.207	2.913	2.703	2.862
P	-	0.017	0.005	0.014	0.022	0.018

2.3 两组治疗前后肺功能指标比较

治疗前两组患儿 VT、Ti/Te、tPTEF/TE 和 vPTEF/vE 比较无统计学差异 ($P>0.05$), 治疗后两组患儿 VT、tPTEF/TE 和

vPTEF/vE 均明显升高, Ti/Te 明显降低($P<0.05$),研究组 VT、tPTEF/TE 和 vPTEF/vE 显著高于对照组, Ti/Te 显著低于对照组 ($P<0.05$),见表 2。

表 2 两组治疗前后肺功能指标比较($\bar{x} \pm s$)

Table 2 Comparison of pulmonary function indexes before and after treatment in the two groups($\bar{x} \pm s$)

组别 Groups	时间 Time	n	VT(ml/kg)	Ti/Te	tPTEF/TE	vPTEF/vE
研究组 Study group	治疗前 Before treatment	60	5.62± 0.77	0.73± 0.04	19.19± 3.42	23.31± 3.55
	治疗后 After treatment	60	6.65± 0.52 ^{ab}	0.62± 0.05 ^{ab}	26.73± 3.58 ^{ab}	27.64± 3.28 ^{ab}
对照组 Control group	治疗前 Before treatment	60	5.71± 0.68	0.74± 0.06	19.27± 3.39	22.83± 3.86
	治疗后 After treatment	60	6.15± 0.62 ^a	0.69± 0.07 ^a	23.13± 4.72 ^a	25.55± 2.79 ^a

注:与治疗前相比,^a $P<0.05$;与对照组相比,^b $P<0.05$ 。

Note:compared with before treatment,^a $P<0.05$;compared with control group,^b $P<0.05$.

3 讨论

毛细支气管炎是一种主要累及 75~300 μm 毛细支气管的疾病,好发于 2 岁以下儿童,主要病理改变是细支气管炎性细胞浸润,气管黏膜充血、水肿,平滑肌痉挛,导致肺泡通气量降低,加之腺体分泌物增多,堵塞支气管腔导致通气障碍,患儿出现喘息、憋闷等呼吸功能障碍,其本质是细支气管炎^[9,10]。目前,对于毛细支气管炎仍无特效治疗方法,解除患儿气道平滑肌痉挛,减少分泌物渗出和保持呼吸道通畅是治疗毛细支气管炎的关键^[11]。

硫酸镁是一种镁盐类制剂,可以激活胆碱酯酶,有降解乙酰胆碱,降低气道平滑肌的作用;该药还可以抑制钙离子内流,降低平滑肌细胞内钙离子浓度,从而松弛支气管平滑肌^[12,13],在治疗哮喘等疾病中早已被医学界关注。但由于该药物是一种非选择性药物,在扩张支气管平滑的同时也具有舒张血管平滑肌的作用,静脉点滴不良反应较多,影响了临床应用。近年来,随着医学技术的进步,局部气泵硫酸镁治疗得以实现。目前,已有研究表明^[14,15],局部气泵硫酸镁可以有效解除毛细支气管炎患儿气道痉挛,缓解患儿喘息、憋闷及呼吸肌疲劳等症状。另外,由于硫酸镁还具有镇静、利尿、祛痰等作用,应用后可以有效减轻气道黏膜水肿,促进痰液稀释,特别适合小儿应用^[16]。

本研究结果显示,硫酸镁微量气泵治疗的患儿咳嗽、气促、喘息、肺部哮鸣音/啰音消失时间及住院时间显著短于对照组,临床疗效显著优于对照组。提示硫酸镁在小儿毛细支气管炎治疗中具有一定优势。从两组患儿治疗前后呼吸功能比较来看,两组患儿治疗后呼吸功能均显著提高,但应用硫酸镁微量气泵治疗的患儿 VT、tPTEF/tE 和 vPTEF/vE 显著高于对照组, Ti/Te 显著低于对照组。与相关研究报道一致^[17,18],表明硫酸镁微量气泵治疗能有效改善患儿呼吸功能。笔者认为这与硫酸镁具有缓解呼吸肌痉挛,降低气道阻力,改善通气有密切关系。同时和静脉给药相比,气泵给药药物颗粒能均匀分布在呼吸道表面,药物颗粒易于吸收,可以最大程度的发挥作用,避免了全身的不良反^[19,20]。在小儿毛细支气管炎治疗中具有重要意义。

综上所述,硫酸镁微量气泵吸入治疗小儿毛细支气管炎可以改善患儿喘憋、气促、呼吸困难等症状,改善肺功能,临床效果显著,值得临床推广。

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