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单纯右美托咪定滴鼻与水合氯醛复合右美托咪定滴鼻在脑瘫患儿MRI检查中的应用效果*

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摘要 目的:比较单纯右美托咪定滴鼻与水合氯醛复合右美托咪定滴鼻在脑瘫患儿核磁共振成像(MRI)检查中的应用效果。**方法:**收集我院2015年1月到2016年7月收治的160例脑瘫患儿，按照就诊号排序后取随机数字分为单纯组和复合组，每组各80例。单纯组给予右美托咪定2 μg/kg滴鼻+生理盐水口服(0.1 mL/kg),复合组给予口服水合氯醛50 mg/kg+右美托咪定(2 μg/kg)滴鼻,采用密歇根大学小儿镇静评分(UMSS)评价镇静效果、镇静成功率,检测和比较两组患儿给药前后心率(HR)、血氧饱和度(SpO_2)、呼吸频率(RR)及入睡时间、苏醒时间、检查时间与父母分离时间等。**结果:**给药前,两组UMSS评分比较差异无统计学意义(*P>0.05*),给药15 min、30 min,复合组UMSS评分明显高于单纯组(*P<0.05*);给药30 min时,复合组镇静成功率为98.8%,单纯组为91.3%,差异具有统计学意义(*P<0.05*);两组给药前后HR、SpO_2、RR水平比较差异均无统计学意义(*P>0.05*)。单纯组入睡、苏醒、检查时间及与父母分离时间长于复合组(*P<0.05*)。**结论:**水合氯醛复合右美托咪定滴鼻在脑瘫患儿MRI检查中的镇静效果明显优于单纯右美托咪定滴鼻。

关键词:右美托咪定;水合氯醛;脑瘫;MRI

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Comparison of the Effect of Intranasal Dexmedetomidine Combined with Chloral Hydrate and Dexmedetomidine Nasal Drops on the MRI Examination of Children with Cerebral Palsy*

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ABSTRACT Objective: To compare the effect of intranasal dexmedetomidine and chloral hydrate combined with dexmedetomidine on the MRI Examination of children with cerebral palsy. **Methods:** 160 cases of cerebral palsy were collected in our hospital from January 2015 to July 2016 and divided into the simple group and the complex group according to the number of visits sorted random numbers, 80 cases in each group. The simple group was given Dexmedetomidine 2 g/kg+saline nasal oral (0.1 mL/kg), the compound group was given oral chloral hydrate 50 mg/kg+ dexmedetomidine (2 g/kg) by nasal drip, University of Michigan pediatric sedation score (UMSS) was used to evaluate the effect and success rate of sedation, the heart rate (HR), oxygen saturation (SpO_2), respiratory rate (RR) before and after administration, sleep time, recovery time, check time and separation time with parents were compared between the two groups. **Results:** Before administration, no significant difference was found in the UMSS score between two groups (*P>0.05*), at 15min and 30 min after administration, the UMSS score of complex group were significantly higher than those of simple group (*P<0.05*); at 30min after administration, the success rate of sedation in complex group was 98.8%, which was 91.3% in the simple group and obviously lower than that of the complex group (*P<0.05*); no statistical difference was found in the HR, SpO_2, RR before and after administration (*P>0.05*). The sleep, recovery, examination time and separation time of simple group were longer than those of the complex group(*P<0.05*). **Conclusions:** Chloral hydrate combined with dexmedetomidine nasal drops showed better sedative effect on the MRI examination of children with cerebral palsy than simple dexmedetomidine nasal drops.

Key words: Dexmedetomidine; Chloral hydrate; Cerebral palsy; MRI

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前言

小儿脑瘫是指患儿出生后一个月发生的脑发育尚未成熟阶段,因为非进行性的脑组织损伤导致的以姿势各运动功能障碍为主的综合性疾病[1],是小儿常见的神经系统疾病,临床表现主要为缺陷、癫痫、行为异常、精神障碍及视、听觉、语言障碍等,严重的影响小儿的生长发育[2]。核磁共振成像(MRI)检查是诊断和鉴别诊断脑瘫较为常用的影像学方法[3],但是由于 MRI 检测过程中噪音大、环境密闭、检查时间长,及小儿发育特点或者天性,无法很好的配合这项检测,需要给予患儿相应的药物辅助镇静、麻醉等方法。

右美托咪定和水合氯醛是临床应用较多的辅助影像学检查的药物,已经应用很多疾病检查,比如先天性心脏病患儿心脏超声检查、肿瘤患儿 MRI/CT 检查等,但是较少研究应用于脑瘫患儿检查[4]。水合氯醛已有 100 多年的应用历史,但是仍有失败的案例,有研究显示小于 1 岁的患儿口服水合氯醛的成功率仅为 86%[5]。而右美托咪定鼻腔内给药可定向于中枢神经系统,虽然经鼻腔给药较为安全,但国内没有小儿应用的适应症。本研究收集了 160 例脑瘫患儿,对比分析了单纯右美托咪定滴鼻与水合氯醛复合右美托咪定滴鼻在脑瘫患儿 MRI 检查中的应用效果。

1 资料与方法

1.1 纳入及排除标准

纳入标准:① 符合全国小儿脑瘫座谈会诊断标准(2005 年昆明)[6],并且经过临床确诊为脑瘫,具有相关的临床表现;② 可以收集到患儿病历、检测以及高危因素等相关资料;③ 研究符合伦理道德, 整个研究均对患儿本身或者之后研究均具有益处。排除标准:① 合并对本研究有影响的相关疾病,比如进行性脊髓肌萎缩症、运动发育迟缓、先天性肌弛缓或者遗传性疾病等;② 其他原因导致的运动功能障碍;③ 对本次研究药物具有过敏或者不适症状;④ 患儿家属依从性差,拒绝参加研究者。

1.2 一般资料

收集我院 2015 年 1 月到 2016 年 7 月收治的 160 例脑瘫患儿,其中男 95 例,女 65 例,其中＜6 岁 137 例,7~12 岁 23 例,临床分型:痉挛型 45 例、混合型 84 例、手足徐动型 20 例,其他 11 例。损伤类型:智力低下 51 例、视神经萎缩 13 例、听力损伤 14 例、语言障碍 57 例、继发癫痫 25 例;160 患儿按照就诊号排序后取随机数字,分为单纯组和复合组,各 80 例,两组基本资料间差异无统计学意义(*P*>*0.05*),具有可比性,见表 1。

表 1 两组基本资料间比较

Table 1 Comparison of the general information between the two groups

Factors	Subgroup	Single gruop(80 cases)	Compound group(80 cases)	*P*
Sex	Male	50	45	0.675
	Female	34	31	
Age	＜6 year	72	65	0.897
	7~12 year	13	10	
Clinical classification	Spastic form	20	25	0.112
	Mixed type	46	38	
	Athetosis	10	10	
	Others	5	6	
Injury type	Mental retardation	26	25	0.339
	Optic atrophy	6	7	
	Hearing impairment	7	7	
	Language barrier	28	29	
	Patients with epilepsy secondary	13	12	

1.3 研究方法

患儿给药前常规的禁食、禁饮,采取坐位 / 仰卧位给药,单纯组:按照右美托咪定(江苏恒瑞医药股份有限公司,批准文号国药准字 H20090248, 批准日期 2014-05-30)2 μg/kg 滴鼻 + 生理盐水口服(0.1 mL/kg),注射器吸取 1 mL,将药物分次滴入患儿双侧鼻孔,并且保持 1 min;复合组:采用口服水合氯醛(上海新华医院, 批注文号:H03180450, 批准日期 2014-12-08)50 mg/kg+ 右美托咪定(2 μg/kg)滴鼻,水合氯醛按照一次按体重 50 mg/kg 或按体表面积 1.5 g/m^2, 生理盐水和水合氯醛一次最大剂量不能超过 10 mL 或者 1 g, 详细记录患儿相关指标和观察患儿状态。整个给药操作和指标观察人员都是专业的医护人员,并且经过相关的培训,对采用的辅助药物和分组情况不知。

1.4 研究指标

镇静效果评价[7,8]:采用密歇根大学小儿镇静评分(University of Michigan Sedation Scale,UMSS),评分标准:0 分代表清醒或者警觉,1 分表示轻度镇静,2 分表示中度镇静、3 分表示深度镇静,4 分表示无法唤醒,分别采用用药后 15 min、30 min 进行评价,给药 30 min 后评分＜2 分判断为失败[9],需要补救给

予相关麻醉镇静；检测两组患儿给药前后心率(Heart rate，HR)、血氧饱和度 (oxygen saturation，SpO_2)、呼吸频率(respiratory rate，RR)。比较两组入睡时间、苏醒时间、检查时间与父母分离时间[10]。

1.5 统计学方法

用 SPSS13.0 软件进行统计学分析，计量资料以($\bar{x}\pm s$)表示，两组间比较采用 t 检验；计数资料用(%)表示，两组间比较采用卡方检验(x^2)，以 $P<0.05$ 为差异具有统计学意义。

2 结果

2.1 两组患者不同时点 UMSS 评分比较

两组给药前 UMSS 评分比较差异无统计学意义 ($P>0.05$)，给药 15 min、30 min，复合组 UMSS 评分明显高于单纯组评分，差异具有统计学意义($P<0.05$)，见表 2。给药 30 min 时，复合组 UMSS 评分在 2 分以上者 79 例，镇静成功率为 98.8%，单纯组 2 分以上者 73 例，镇静成功率为 91.3%，两组率比较差异具有统计学意义(P=0.030)。

表 2 两组患者 UMSS 评分比较($\bar{x}\pm s$)

Table 2 Comparison of the UMSS scores between the two groups($\bar{x}\pm s$)

Groups	Cases	Pre-dose	After dosing for 15min	After dosing for 30min	P
Single group	80	0.45± 0.01	1.57± 0.11	2.54± 0.06	0.000
Compound group	80	0.44± 0.04	1.89± 0.05	2.85± 0.07	0.001
P	-	0.164	0.001	0.013	-

2.2 两组给药前后 HR、SpO_2、RR 比较

两组给药前后 HR、SpO_2、RR 水平差异无统计学意义 ($P>0.05$)，两组治疗后 HR、SpO_2、RR 水平与治疗前相比稍微下降，并且复合组较单纯组降低幅度稍微大，但是差异无统计学意义($P>0.05$)，见表 3。

表 3 两组给药前后 HR、SpO_2、RR 比较($\bar{x}\pm s$)

Table 3 Comparison of the HR, SpO_2, RR between two group before and after dosing

Groups	Cases	HR(times/min)		SpO_2(%)		RR(counts/min)	
		Pre-dose	After dosing	Pre-dose	After dosing	Pre-dose	After dosing
Single group	80	123.45± 9.87	120.46± 7.75	99.23± 5.47	98.78± 3.28	24.21± 3.68	23.12± 4.49
Compound group	80	122.52± 10.47	115.78± 12.96	99.26± 4.39	98.44± 4.36	23.95± 4.52	22.14± 3.23
P	-	0.324	0.125	0.897	0.889	0.453	0.386

2.3 两组入睡、苏醒、检查时间及与父母分离时间比较

单纯组的入睡、苏醒、检查时间及与父母分离时间均长于复合组相关时间，差异具有统计学意义($P<0.05$)，见表 4。

表 4 两组入睡、苏醒、检查时间及与父母分离时间的比较($\bar{x}\pm s$，分)

Table 4 Comparison of the sleep, awakening, check time and separation time with parents between two groups($\bar{x}\pm s$，min)

Groups	Cases	Sleep Latency	Awakening time	Check time	Separation time with parents
Single group	80	23.45± 4.25	65.48± 5.69	18.37± 3.31	20.10± 5.12
Compound group	80	19.67± 2.39	52.44± 4.95	16.55± 6.19	12.24± 4.12
P	-	0.000	0.000	0.022	0.000

3 讨论

流行病学研究资料显示引起小儿脑瘫的原因较多 [11,12]，主要包括父母亲吸毒、吸烟、母患精神病，早产、流产史等，胎儿发育迟缓、宫内窘迫、胎盘功能不良、产钳分娩、早产儿、低出生体重儿、缺氧缺血性脑病、感染、核黄疸、营养不良等，我国小儿脑瘫的发病率大约 2%[13,14]，并且呈逐年上升趋势[15]。脑瘫检查最为常见和无创的方法为影像学检查，其中应用较多的为 CT 和 MRI [16,17]，小儿临床进行 MRI 检查时因为小儿特点配合性较差，因此镇静和麻醉是最为常用的临床辅助检测方法[18,19]，以减轻患儿紧张及运动造成的伪影等。理想的镇静剂为对代谢无影响、副作用少、无蓄积作用、半衰期短等[20]，临床上常用苯二氮卓类(镇静、催眠)、水合氯醛、右美托咪定、咪唑安定等，本研究选择的右美托咪定和水合氯醛具有明显的优势[21]。

水合氯醛是催眠药的一种，对于失眠具有诱导作用，作用温和，30 分钟内即可诱导入睡，也是抗惊厥药，可用于烦躁不安和惊厥的治疗[22,23]，无明显副作用，主要适用于入睡困难的患者、麻醉前、手术前、CT 及磁共振检查和睡眠脑电图检查前用药，可镇静和解除焦虑，使相应的处理过程比较安全和平稳，效果较为明显，并且安全性较高，临床上应用较为广泛，但是半衰期较长[24,25]。右美鼻腔内给药以其生物利用度高、起效快、使用方便、无创和实现脑靶向等优势备受青睐。右美托咪定具有高

度选择性,是效果明显的的 α2- 肾上腺素受体激动剂,有抗焦虑、镇痛和镇静功能,很少会引起呼吸抑制,药效可持续 2 h 左右,是理想的镇静药物[26,27]。

本研究收集了 160 例脑瘫患儿,对比分析单用右美托咪定滴鼻与水合氯醛复合右美托咪定滴鼻在脑瘫患儿 MRI 检查中的应用效果,结果显示在给药 15~30 min 后,所有患儿达到镇静要求,二者联合镇静成功率为 98.8%,明显高于单纯右美托咪定滴鼻用药(91.3%),说明二者联合具有明显优势。目前,用于镇静评价的方法较多,比如 Rassay 评分、RASS 镇静程度评估、Riker 镇静、躁动评分、UMSS 评分[28,29],本研究采用的 UMSS 评分可以应用于小儿评价,并且效果较好[30]。通过对患儿各种生命特征监测,结果显示两组给药前后 HR、SpO_2、RR 水平差异无统计学意义,说明在患儿镇静和催眠后对患儿健康为明显影响,这符合临床治疗的要求,符合伦理道德标准。此外,单纯组的入睡、苏醒、检查时间及与父母分离时间均长于复合组相关时间,说明两种药物复合起效时间提前,苏醒时间延长,更加给予检查充足时间。

综上所述,水合氯醛复合右美托咪定滴鼻在脑瘫患儿 MRI 检查中的镇静效果明显优于单纯右美托咪定滴鼻,并且经过观察后两组均未出现明显的不良反应或者副作用,效果较为满意。

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