

doi: 10.13241/j.cnki.pmb.2017.16.035

七氟醚复合瑞芬太尼对扁挑体切除术患儿苏醒期躁动及术后镇痛的影响 *

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摘要 目的:探究七氟醚复合瑞芬太尼对扁挑体切除术患儿苏醒期躁动及术后镇痛的影响。**方法:**选入我院择期行扁挑体切除术患儿 39 例,随机将患儿划分为实验组及对照组。对照组 18 例予七氟醚行吸入诱导及维持麻醉;实验组 21 例予七氟醚及瑞芬太尼静吸复合维持麻醉。记录两组血压心率,比较两组患儿苏醒期的躁动评分、术后镇痛、及是否发生恶心呕吐情况。**结果:**实验组总有效率高于对照组,差异存在统计学意义($P<0.05$);与对照组相比,实验组患儿的苏醒期躁动评分较低、发生率较低,镇静指数评分较高,呼吸功能恢复快、拔管时间短,差异有统计学意义($P<0.05$);实验组血压及心率较对照组平稳,差异有统计学意义($P<0.05$)。**结论:**七氟醚复合瑞芬太尼在进行全身麻醉时,麻醉效果良好,能够明显减少苏醒期患儿躁动的发生,降低患儿术后疼痛,并且呼吸系统恢复快,较小影响心血管系统,值得推广。

关键词:瑞芬太尼;七氟醚;小儿扁挑体切除术;麻醉苏醒期躁动;术后镇痛

中图分类号:R614;R766.1 **文献标识码:**A **文章编号:**1673-6273(2017)16-3136-04

Effect of Sevoflurane Combined with Remifentanyl on the Restlessness of Recovery and Postoperative Analgesia of Children with Tonsillectomy*

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ABSTRACT Objective: To investigate the effect of sevoflurane combined with remifentanyl on the restlessness on the recovery and postoperative analgesia of children with tonsillectomy. **Methods:** 39 cases with tonsillectomy who were treated in our hospital were selected and randomly divided into the control group and the experiment group. 18 cases in the control group were treated with sevoflurane inhalation, and 21 cases in the experiment group were treated with sevoflurane and remifentanyl anesthesia. Then the blood pressure, heart rate, the agitation score, the postoperative analgesia, and the incidence of complications between the two groups were observed and compared. **Results:** The total effective rate of the experimental group was higher than that of the control group, and the difference was statistically significant ($P<0.05$). Compared with the control group, the emergence agitation score and the incidence rate were lower in the experimental group, the sedation index was higher, the recovery of respiratory function was faster and the extubation time was shorter, and the differences were statistically significant ($P<0.05$). The blood pressure and heart rate in the experimental group were more stable than those of the control group, and the differences were statistically significant ($P<0.05$). **Conclusion:** Sevoflurane and remifentanyl in general anesthesia has better effect which can significantly reduce the occurrence of agitation in the recovery and the postoperative pain in children with respiratory system, and less impact on the cardiovascular system, and it is worthy of clinical promotion.

Key words: Remifentanyl; Sevoflurane; Pediatric tonsillectomy; Anesthesia restlessness; Postoperative analgesia

Chinese Library Classification(CLC): R614; R766.1 **Document code:** A

Article ID: 1673-6273(2017)16-3136-04

前言

扁挑体属于人体免疫器官,当吸入较多病原微生物或遇到毒力强的病原微生物后,就会发生炎症。在季节更替时,小儿常发生扁挑体炎,表现为高烧 39~40℃,伴全身乏力、头痛及食欲不振等症状^[1]。多数患儿第一次扁挑体发炎时治疗并不彻底,反复发作导致扁挑体出现慢性炎症病变,为避免严重并发症的发

生,临床上采用扁挑体切除术治疗^[2]。扁挑体炎高发于 4~6 岁儿童,少见 2 岁以下小儿,扁挑体切除术指经全身麻醉,对患儿的扁挑体及其腺样体进行切除治疗^[3]。七氟醚是具有芳香味的含氟药物,在儿童手术的诱导及维持中具有显著优点,用药方便而且对呼吸系统及心血管系统的影响较小^[4]。瑞芬太尼在临床上多用于全身麻醉的诱导及维持,属 μ 型阿片受体激动剂,经静脉给药后,1 分钟达有效浓度,起效快维持时间短,会被血

* 基金项目:辽宁省自然科学基金项目(20032113)

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(收稿日期:2016-11-21 接受日期:2016-12-18)

浆及组织中非特异性酯酶水解,可以减轻对患者肝脏及肾脏的负担^[5]。本实验通过评价扁桃体切除术后患儿苏醒期躁动及术后镇痛等疗效指标,来探究七氟醚复合瑞芬太尼对扁桃体切除术患儿苏醒期躁动及术后镇痛的影响。

1 资料与方法

1.1 临床资料

收集我院择期行扁桃体切除术的患儿 39 例,将患儿划分成对照组和实验组。对照组 18 例,其中男 7 例,女 11 例,年龄 4~6 岁,平均(5.2±0.6)岁,体重 12~22 kg,平均(16.2±1.8)kg;实验组 21 例,男 11 例,女 10 例,年龄 4~6 岁,平均(5.1±0.6)岁,体重 14~23 kg,平均(17.8±1.9)kg。两组患儿的性别、年龄及体重等比较,差异无统计学意义($P>0.05$)。本研究获得本院伦理委员会批准,获得患者监护人的同意并已签署知情同意书。患儿符合美国麻醉医生学会(ASA)分级 I 级。排除急性扁桃体炎正在发作的患者;严重凝血功能障碍及血液系统疾病的患者;肾炎及风湿热患者;心脏系统疾病患者;神经系统疾病患者;肝肾功能不全患者。

1.2 方法

术前对两组患儿行常规禁食禁水 6~8h,手术期间使用心电图及血压、血氧饱和度等监测患儿生命体征。术前 30 分钟予阿托品(江苏永大药业有限公司,国药准字 H32022526),按照 0.01 mg/kg 肌肉注射。对照组予 8%七氟醚联合氧气以 4 L/min 的流量,行面罩加压吸入诱导,顺阿曲库铵(东英(江苏)药业有限公司,国药准字 H20060927),按 0.1 mg/kg 给药;实验组予 8%七氟醚联合氧气以 4 L/min 的流量,行面罩加压吸入诱导,(东英(江苏)药业有限公司,国药准字 H20060927),按 0.1 mg/kg

给药,瑞芬太尼(国药集团工业有限公司廊坊分公司,国药准字 H20123421),按照 0.4 $\mu\text{g}/(\text{kg}\cdot\text{min})$ 持续泵入维持。手术结束后停止吸入七氟醚及泵入瑞芬太尼,清醒后拔出气管导管。

1.3 评价指标

躁动评分指标:0 分为患儿安静能合作;1 分是指刺激患儿的肢体,患儿会发生躁动;2 分为患儿在不接受刺激时,仍会出现躁动但不需他人约束控制;3 分,剧烈挣扎,患儿肢体需多人约束。Ramsay 镇静评分:6 分,大声刺激,患儿没有反应;5 分,大声刺激时患儿有较为迟钝的反应;4 分,大声刺激时患儿能够发生敏捷反应;3 分,对别人的命令能做出反应;2 分,安静,患儿对他人要求能够配合;1 分,患儿呈焦虑或烦躁。

依照患儿苏醒期状况将临床疗效划分为显效、有效和无效这三个等级。显效:患儿苏醒期躁动评分 ≤ 1 分,咳嗽反射、肌力等已恢复;有效:患儿苏醒期躁动评分 ≤ 2 分,咳嗽反射、肌力等已恢复;无效:患儿苏醒期躁动评分 >2 分,咳嗽反射以及患儿的肌力等已恢复。治疗总有效率的计算=(显效例数+有效例数)/总病例数 $\times 100\%$ 。

1.4 统计学方法

根据 SPSS 19.0 统计软件对所得数据进行分析,按照 " $\bar{x}\pm s$ " 统计呈现正态分布的数据,卡方检验来检验数据直接的差别,用率来计数资料, $P<0.05$ 认为差异具有统计学意义。

2 结果

2.1 两组疗效比较

实验组总有效率高于对照组,差异具有统计学意义($P<0.05$)。见表 1。

表 1 两组患者治疗后临床疗效的比较[n(%)]

Table 1 Comparison of the clinical curative effect between two groups [n(%)]

Groups	n	Excellent	Effective	Invalid	Total effect rate
Control group	18	5(27.8)	7(38.9)	6(33.3)	12(66.7)
Experimental group	21	9(42.9)	10(47.6)	2(9.5)	19(90.5)*

Note: compared with the control group, * $P<0.05$.

2.2 患儿苏醒期指标比较

与对照组相比,实验组患儿的苏醒期躁动评分较低、发生

率较低,镇静指数评分较高,拔管时间短、呼吸功能恢复快,差异有统计学意义($P<0.05$)。见表 2。

表 2 两组患儿苏醒期指标比较($\bar{x}\pm s$)

Table 2 Comparison of the indexes when waking up between two groups($\bar{x}\pm s$)

Groups	n	Extubation (min)	Respiration recovery (min)	Paed	Agitation (%)	Ramsay
Control group	18	12.1±1.4	7.3±0.8	2.1±0.2	7(38.9)	1.2±0.1
Experimental group	21	7.5±0.9*	3.9±0.4*	0.9±0.1*	2(9.5)	2.2±0.2*

Note: compared with the control group, * $P<0.05$.

2.3 两组患儿围术期情况比较

对照组患儿苏醒期的收缩压、舒张压及心率与本组麻醉前相比,波动较大($P<0.05$),实验组患儿苏醒期的收缩压、舒张压及心率与本组麻醉前相比,无统计学意义($P>0.05$)。见表 3。

3 讨论

扁桃体炎是发生于咽部扁桃体的慢性病症,常发生于青少年,在春秋季节时,易发生溶血链球菌感染而发病^[6]。患儿身体抵抗力低,感冒受凉会使口腔及咽部外的细菌侵入扁桃,引发炎症。发生急性扁桃体炎时患儿常出现发热、寒战等表现,不彻底治疗后还会迁延成慢性扁桃体炎,会引起肾炎等并发症,切除

表 3 两组患儿围术期情况比较($\bar{x} \pm s$)Table 3 Comparison of the perioperative situations between two groups ($\bar{x} \pm s$)

Groups	n	SBP (mmHg)		DBP (mmHg)		Heart rate (time/min)	
		Before anesthesia	After anesthesia	Before anesthesia	After anesthesia	Before anesthesia	After anesthesia
Control group	18	94.5± 9.6	90.5± 9.3*	61.2± 6.5	55.9± 5.9*	121.1± 13.2	98.1± 9.9*
Experimental group	21	93.5± 9.6	95.5± 9.4*	61.8± 6.6	59.5± 6.2*	122.4± 12.6	118.1± 12.4*

Note: compared with before treatment, *P<0.05.

扁桃体能够有效治疗慢性扁桃体炎^[7]。尤其是① 扁桃体反复急性发作或有周围脓肿,② 诱发其他部位病变的原发病灶,③ 造成患儿不能正常呼吸或吞咽等情况,要及时行扁桃体切除术来预防并发症的发生。

对患儿进行麻醉诱导时,常选用吸入性麻醉药物,使用方便且易被接受。七氟醚是临床上常用的吸入药物,具有芳香味,被广泛应用于儿童的全麻诱导及维持^[8,9]。在进行全身麻醉时,七氟醚起效快需要较短的诱导时间,对心血管及呼吸系统的影响小,不会引起过敏等反应等优点^[10]。但同时① 扁桃体切除术手术刺激强度大,会引起患儿神经系统的兴奋极易引起误吸,② 因手术时间短,患儿会较快苏醒,但个体对七氟醚的代谢速度并不相同,导致各个患儿中枢恢复时间不一致,称为中枢局灶敏化,当大脑皮质被抑制时,其皮质下中枢得到解放造成中枢局灶敏化,中枢功能完整性缺失会影响患儿的感觉反应,当出现有害刺激时,中枢神经系统会兴奋过度导致躁动的发生^[11]。七氟醚引起术后患儿躁动的机制尚不明确,但有研究表明七氟醚在低浓度时会抑制酪氨酸受体介导的突触后抑制性电流,推测躁动机制可能与此有关^[12]。酪氨酸受体在刚出生的时候兴奋作用占优势,随着成长则为抑制作用占优势,因此对于5岁以下的儿童使用七氟醚全身麻醉后更易出现躁动^[13]。术后躁动的表现包括兴奋或烦躁,患儿通常会出现肢体无意识动作,特别明显的是不能控制的哭泣、语无伦次和烦躁不安等^[14]。小儿术后躁动发生率较高,处理不当时会危及患儿生命,因此在使用七氟醚进行全麻的诱导及维持过程中,应使苏醒期患儿尽量避免嗜睡及呼吸抑制等不良反应^[15]。此外手术部位疼痛刺激、心理应激、不良制动及气管导管刺激等因素均可引起患儿出现术后躁动。

瑞芬太尼属于新型阿片受体激动药物起效快消除快,药物代谢遵循三室模型,不被患者的肝肾功能及年龄体重等影响^[16]。瑞芬太尼在体内经血浆及组织中非特异性酯酶水解而代谢,半衰期短,长时间给药或多次注射不会造成体内药物的蓄积,因此无需担忧瑞芬太尼对术后恢复的影响^[17]。瑞芬太尼具有镇痛作用,与七氟醚联合使用后有协同作用,能够达到有效的镇痛及镇静作用^[18]。在手术结束停药后药物代谢消除快,利于苏醒及呼吸功能的恢复,并能保留部分的镇痛作用^[19]。约有90%的患儿发生术后躁动是因切口疼痛而引起,那么瑞芬太尼的镇痛作用可以明显降低患儿苏醒期躁动的发生率。

两组患儿的手术成功率为100.0%,而且均没有出现麻醉意外或手术意外。实验组总有效率90.5%高于对照组66.7%,差异存在统计学意义(P<0.05);与对照组相比,实验组患儿的苏醒期躁动评分较低、发生率较低,镇静指数评分较高,能够较早

拔管、患儿呼吸功能恢复快,差异有统计学意义(P<0.05);实验组患儿血压及心率较稳定波动性小,差异有统计学意义(P<0.05)。说明瑞芬太尼的应用能够有效减轻患儿苏醒期躁动发生,镇痛作用较强,很少对患儿心血管以及呼吸系统造成抑制作用,利于患儿苏醒及呼吸肌功能的恢复。联合七氟醚,能够使麻醉诱导过程相对平稳,易于掌握麻醉深度,维持手术期间生命体征的稳定及术后血压相对平稳,平稳的血流动力学状态利于患儿术后的恢复^[20]。单独使用七氟醚诱导并维持的患儿苏醒期躁动发生率达38.9%远高于复合使用瑞芬太尼的患儿9.5%,说明复合使用瑞芬太尼维持麻醉后能够有效降低躁动发生,减轻患儿苏醒期的烦躁不安。

综上所述,七氟醚复合瑞芬太尼用于小儿麻醉时,能够达到令人满意的效果,而且苏醒过程平稳迅速,对维持患儿的血液动力学稳定具有重要意义,对呼吸系统的抑制程度轻,不良反应少,适宜推广应用。

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