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输尿管软镜治疗小儿上尿路结石的疗效及对血清炎症因子的影响*

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摘要 目的:探讨输尿管软镜治疗小儿上尿路结石的疗效及对血清炎症因子的影响。**方法:**选择2013年4月至2016年4月我院收治的上尿路结石患儿60例,通过随机数表法分为观察组(n=30)和对照组(n=30),对照组给予经皮肾镜激光碎石,观察组采用输尿管软镜取石术进行治疗。观察记录两组患者术中出血量、手术时间、住院天数及疼痛评分；比较两组患者白细胞介素-10(IL-10)、C反应蛋白(CRP)、白细胞(WBC)水平、并发症发生情况及结石的清除率。**结果:**观察组患者手术时间、术中出血量、住院天数以及疼痛评分均低于对照组,差异均具有统计学意义(P<0.05);两组患儿术前IL-10、CRP及WBC水平无明显差异;术后两组患儿各项炎性因子均明显增加（P<0.05），观察者患儿IL-10、CRP及WBC水平显著低于对照组，差异具有统计学意义(P<0.05);术后,观察组患者并发症总发生率为6.67%,明显低于对照组的33.33%,差异具有统计学意义(P<0.05);两组患者结石清除率无明显差异(P>0.05)。**结论:**输尿管软镜取石术治疗上尿路结石安全有效、创伤小、并发症少,患者产生的应激反应小,值得临床推广和应用。

关键词:输尿管软镜;小儿上尿路结石;疗效;血清炎症因子

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Curative Efficacy of Ureteroscope in Treatment of Urinary Calculus in Children and Its Effects on The Effect of Serum Inflammatory Factors*

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ABSTRACT Objective: To study Curative efficacy of Ureteroscope in treatment of Urinary calculus in children and its effectson The effect of serum inflammatory factors. **Methods:** 60 patients of urinary calculus in children whoreceived therapy from April 2013 to April 2016 wereselected as research objects. The random number table method was divided into observation group (n=30) and control group (n=30), control group was treated with percutaneous nephrolithotripsy, and the observation group was treated with ureterolithotomy. The intraoperative blood loss, operative time, length of stay and pain score were recorded in the two groups; levels of interleukin-10 (il-10), c-reactive protein (CRP), white blood cell (WBC) and postoperative complications, clearance rate of calculuswere compared between the two groups. **Results:** After treatment, in the observation group, the operation time, intraoperative blood loss, length of hospital stay and pain score were all lower than the control group, and the differences were statistically significant (P<0.05); there was no significant difference between il-10, CRP and WBC in the two groups. The inflammatory factors were significantly increased in both groups (P<0.05), and the levels of il-10, CRP and WBC in the children were significantly lower than those in the control group, and the difference was statistically significant (P<0.05); after the operation, the total incidence of complications in the observation group was 6.67%, significantly lower than 33.33% in the control group, and the difference was statistically significant (P<0.05); There was no significant difference in the clearance rate between the two groups (P>0.05). **Conclusion:** Treatment of ureteral nephrolithotomy for the treatment of urinary calculi is safe and effective, small in trauma, high in removal of calculi, fewer complications, and the patient has little stress response, which is worthy of clinical promotion and application.

Key words: Ureteroscope; Urinary calculus in children; The curative effect; Serum inflammatory factor

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前言

尿路结石是泌尿科的常见病，在我国大约有3%~5%的人患有尿路结石,而小儿尿路结石发病率较低,占1%~3%,通常发生在4岁以下的儿童[1,2]。小儿尿路结石主要发生膀胱及尿道结石,其特殊性是不同原因引起的代谢失平衡及先天性解剖畸

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形有关,营养状况、生活方式、地理环境等多种因素也是影响尿路结石的成分及结石部位[3,4]。常伴有解剖、代谢异常及泌尿感染,其中以泌尿感染为最主要的因素。小儿上尿路结石的治疗原则与成人相同，在并发症最少的前提下尽可能取净结石,必须纠正合并存在的解剖和代谢异常，才能根治泌尿系感染[5,6]。对于此病的治疗现在大多数使用经皮肾镜钬激光碎石术治疗,但是此类治疗方法安全系数低,且并发症较多[7,8]。近年来,随着腔镜技术的广泛应用,输尿管软镜凭借其高效、微创、安全等特点,成为小儿尿路结石的重要治疗手段[9,10]。本研究旨在探讨输尿管软镜治疗小儿上尿路结石的疗效及对血清炎症因子的影响,现报道如下。

1 材料与方法

1.1 一般资料

选取 2013 年 4 月至 2016 年 11 月我院收治的 60 例上尿路结石患儿进行研究,研究已获得我院伦理会批准实施。通过随机数表法分为 2 组,观察组 30 例,男 19 例,女 11 例,年龄 2~13 岁,平均年龄(5.36± 1.03)岁,其中肾结石 16 例,输尿管上段结石 14 例,结石位于双侧 7 例,位于左侧 10 例,右侧 13 例;结石直径 0.91~1.98 cm,平均(1.49± 0.28)cm。对照组 30 例,男 21 例,女 9 例,年龄 3~15 岁,平均年龄(5.78± 1.43)岁;其中肾结石 15 例,输尿管上段结石 15 例,其中肾结石位于双侧 9 例,位于左侧 11 例,右侧 10 例;结石直径 0.89~2.00 cm,平均(1.51± 0.29)cm。两组患者性别(x^2=0.300,P=0.584)、年龄(t=1.305,P=0.197)、结石大小(t=0.083,P=0.934)等一般资料无显著性差异,存在可比性。

纳入标准[11]:(1)符合《泌尿系结石诊疗指南解读》2010 版诊断标准;(2)体外冲击波治疗失败的结石;(3)无严重心脏疾病和肺功能不全患者。排除标准:(1)患有出血性疾病者;(2)营养状况差、不能耐受麻醉和气腹手术者;(3)已知输尿管狭窄者。

1.2 方法

对照组采用经皮肾镜手术,患儿全麻成功后,常规患侧输尿管逆行插管留置输尿管导管。采用俯卧位患侧腰腹部垫高。B 超引导下,通过结石的位置来确定目标肾盏。采用 18G 穿刺针经后组肾盏乳头穿刺目标肾盏，见尿液流出视为穿刺成功,取出穿刺针芯后,放入硬金属导丝,退出穿刺针鞘,置入套叠式金属扩张器,依次扩张,建立手术通道。使用钬激光碎石(科医人医疗激光设备贸易(北京)有限公司),结石击碎后可经取石钳夹出或由灌注液直接经工作鞘冲出。术毕检查无可见残石和肾盂穿孔后,在输尿管内留置输尿管导管。观察通道有无动脉性出血,确认无动脉型出血后。拔出工作鞘,手指堵住皮肤切口至出血停止。手术切口不缝合,只需无菌纱布敷盖。

观察者采用输尿管软镜取石术，患儿术前留置输尿管双 J 管,术前 1 天静脉注射抗生素。喉罩全麻后,患儿取截石位,手术过程中用暖风加热保持患儿的体温。经输尿管拔除双 J 管,检查患侧的输尿管,检查出输尿管上段较小的结石,直接镜下钬激光击碎。较大的结石沿边沿击碎,用套石篮取出较大的结石碎片,然后留置导丝,沿着导丝对输尿管进行扩张至 10~12,置入输尿管软镜,找到结石后,用钬激光击碎结石。对于肾下盏无法直接进行碎石的,采用套石篮将其拖至肾盂,激光击碎。常规留置输尿管双 J 管 1 个月。

1.3 观察指标

IL-10 采用双抗体夹心酶联免疫吸附法(ELISA),试剂盒购于深圳晶美生物工程有限公司,所有操作均严格按照仪器及试剂盒说明书进行;CRP 采用免疫比浊法测定;WBC 采用全自动生化分析仪测定;记录比较两组患者的手术时间、术中出血量、住院天数及疼痛评分,术后随访一个月,记录两组患肾功能指标、结石清除率及并发症发生情况。

1.4 统计学分析

以 SPSS18.0 软件包处理，符合正态分布的计量资料用均数± 标准差($\bar{x}$± s)表示,组间两两比较使用独立样本 t 检验;计数资料用[(n,%)]表示,采用 x^2 检验。P 小于 0.05 表示差异具有统计学意义。

2 结果

2.1 两组患者手术一般资料比较

手术时间、术中出血量、住院天数以及疼痛评分均低于对照组,差异均具有统计学意义(P<0.05)详见表 1。

表 1 两组患者手术一般资料比较($\bar{x}$± s)

Table 1 Two groups of patients were compared in general($\bar{x}$± s)

Groups	The number of cases	The operation time (min)	Intraoperative blood loss(mL)	Hospitalization days (d)	Pain score(points)
Observation group	30	72.46± 28.53	76.38± 36.52	8.13± 1.22	3.03± 0.44
The control group	30	126.86± 38.29	131.83± 42.34	12.76± 2.43	5.33± 0.63
t value		6.240	5.432	9.327	16.394
P value		0.000	0.000	0.000	0.000

2.2 两组患者结石清除率比较

两组患者结石清除率无明显差异(P>0.05),详见表 2。

2.3 两组患者炎症因子的比较

两组患儿术前 IL-10、CRP 及 WBC 水平无明显差异;术后两组患儿各项炎性因子均明显增加（P<0.05），观察者患儿 IL-10、CRP 及 WBC 水平显著低于对照组，差异具有统计学意义(P<0.05),见表 3。

2.4 术后两组患者并发症比较

术后,观察组患者并发症总发生率为 6.67%,明显低于对照组的 33.33%,差异具有统计学意义(P<0.05)详见表 4。

表 2 两组患者结石清除率比较[(n)%]

Table 2 The calculi clearance rate was compared between the two groups[(n)%]

Groups	The number of cases	Removal rate of calculi
Observation group	30	24(80.00)
The control group	30	23(76.67)
x^2 value		0.098
P value		0.754

表 3 两组患者炎症因子的比较($\bar{x}\pm s$)

Table 3 Comparison of inflammatory factors between the two groups($\bar{x}\pm s$)

Groups Observation group	The number of cases	Interleukin-10(ng/L)		C-reactive protein(mg/L)		White blood cells((X109/L))	
		preoperative	postoperative	preoperative	postoperative	preoperative	postoperative
The control group	30	4.56± 0.88	15.92± 5.23	5.35± 1.22	20.53± 2.56	5.39± 1.06	11.23± 1.28
Groups	30	4.58± 1.01	25.53± 5.51	5.39± 1.39	29.83± 1.24	5.41± 0.95	16.65± 1.08
t value		0.082	6.929	0.119	17.908	0.077	17.726
P value		0.935	0.000	0.906	0.000	0.939	0.000

表 4 术后两组患者并发症比较[(n)%]

Table 4 Complications were compared between the two groups[(n)%]

Groups	The number of cases	Fever	The local damage	Leakage of urine	Bleeding	The total incidence of
Observation group	30	1(3.33)	1(3.33)	0(0.00)	0(0.00)	2(6.67)
The control group	30	2(6.67)	3(10.00)	4(13.33)	1(3.33)	10(33.33)
x^2 value		0.351	1.071	4.286	1.017	6.667
P value		0.554	0.301	0.038	0.313	0.010

3 讨论

随着工业化带来的环境及生活条件的变化,尿路结石的发病率也在随之升高,临床症状多表现为尿血、腰或腹沟疼痛、排尿困难等症状,严重者还会引发泌尿系统梗阻,严重影响患者的生活质量[12,13]。以往儿童尿毒症是较为少见的,通常伴随着解剖、代谢异常和感染性疾病,其复发率极高[14,15]。儿童上尿结石的治疗原则与成人相似,主要包括解痉、止痛、抗炎等治疗[16,17]。但是儿童处于发育阶段,其泌尿系统尚未发育健全,完全依照成人的治疗方法会对其泌尿系统带来极大的伤害[18,19]。因此,如何有效的治疗小儿尿路结石是目前临床上首要解决的问题。

临床大多数患者使用经皮肾镜钬激光碎石术来治疗此病,但此类治疗在术中出血量较多、手术时间长、且清石率也相对较低,而且小儿体积小、活动度大,进行经皮肾镜钬激光碎石存在一定的难度和手术风险,尤其出血等并发症让家属担忧[20,21]。因此,学者们也进一步研究出更具医学价值的方法,输尿管软镜治疗尿路结石具有切口小、安全,且患儿的疼痛感低、治疗时间短等优点,让患者及患者家属能容易接受[22,23]。

有研究证实,在手术刺激下,机体防御反应激活而产生炎症反应,而炎性因子的过渡释放会导致机体的进一步损伤[24,25]。CBP 是机体受到损伤或产生慢性炎症反应时由肝脏合成的一种急性时反应蛋白,其水平变化与炎症反应、感染有着明显的关系[26]。而 WBC 跟 CBP 均是损伤及炎症反应的敏感指标[27,28]。IL-10 则是一种多功能抑炎性因子, 具有较强的免疫抑制及免疫调节作用,不仅能抑制促炎因子过度表达,还能控制炎症反应引发的机体损伤[29,30]。本研究结果显示,两种方法治疗后患者的 IL-10、CBP、WBC 水平均有所上升,说明,手术治疗会引起慢性炎症反应,而输尿管软镜患者上升幅度显著低于经皮肾镜钬激光碎石的患者,说明输尿管软镜对患者的创伤小,炎症反应轻。研究结果显示,使用输尿管软镜的患者在手术时间、术中出血量、住院天数以及疼痛评分均少于使用经皮肾镜钬激光碎石的患者,说明输尿管软镜治疗小儿上尿路结石可明显缩短手术时间和住院时间,减少患者的痛苦。而结石清除率无明显差异,因为结石位于肾下盏的患者,经输尿管软镜治疗时,结石弯曲的角度会缩小,对于下盏结石取石困难,而此项对照研究中结石清除率无明显统计学差异,可能是因为术者对输尿管软镜技术熟练,术中运用镜体被动弯曲及结合使用套石篮,提高了结石清除率。此外,研究结果还显示,使用输尿管软镜患者的术后并发症的发生率明显低于使用经皮肾镜钬激光碎石的患者,进一步证实,输尿管软镜治疗小儿上尿路结石的效果更加显著。

综上所述,本研究通过对输尿管软镜治疗小儿上尿路结石患者手术时间、术中出血量及住院天数等情况的观察,发现在小儿尿路结石中应用输尿管软镜治疗,疗效较好,患儿并发症发生率较低,且术后患者炎性应激反应低,有助改善患者生活质量,值得推广应用。

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