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右美托咪啶对经尿道前列腺电切阴茎勃起的影响*

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摘要 目的:探究右美托咪啶(DEX)对经尿道前列腺电切术(TURP)后阴茎勃起的影响。**方法:**选取 2017 年 1 月至 2018 年 3 月于我院确诊为良性前列腺增生并行经 TURP 的 86 例患者,按照随机数字表法均分为实验组和对照组,每组 43 例。其中,实验组于手术初始即使用输液泵持续输注右美托咪啶(输注剂量 $0.5 \mu\text{g/kg}$)直至手术结束,对照组患者于手术开始时即开始使用输液泵持续输注等量的生理盐水直至手术结束。于麻醉前(T1)、麻醉插管后导尿前(T2)、DEX 或生理盐水泵入 10 min 时(T3)、手术开始后导尿时(T4)四个时间点比较两组患者的平均脉压差(MAP)、心率(HR)、阴茎勃起发生率及术后膀胱刺激征的发生率。**结果:**T1、T2、T3 时刻,两组间 HR 和 MAP 水平比较差异无统计学意义($P>0.05$),T4 时,对照组 HR 和 MAP 均选择低于实验组,差异具有统计学意义($P<0.05$);两组患者 T1 及 T2 时阴茎勃起率比较差异无统计学意义($P>0.05$),对照组 T3、T4 阴茎勃起率分别为 27.91%、74.42%,实验组患者 T3、T4 阴茎勃起率分别为 6.98%、11.63%,差异具有统计学意义($P<0.05$)。实验组术后膀胱刺激征出现率为 9.30%,低于对照组的 32.56%,差异具有统计学意义($P<0.05$)。**结论:**右美托咪啶用于 TURP 术中可以有效稳定患者术中血流动力学,并降低患者术后阴茎异常勃起率,且术后患者膀胱刺激征发生率显著降低。

关键词:右美托咪啶;经尿道前列腺电切术;前列腺增生

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Effect of Dexmedetomidine on the Penile Erection of Transurethral Prostate*

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ABSTRACT Objective: To investigate the effect of dexmedetomidine (DEX) on the penile erection after transurethral resection of the prostate (TURP). **Methods:** From January 2017 to March 2018, 86 cases of patients with benign prostatic hyperplasia treated by TURP in our hospital were selected and divided into the experimental group and the control group according to the random number table, with 43 cases in each group. At the beginning of the operation, the patients in the control group was given continuous infusion with dexmedetomidine by infusion (infusion dose $0.5 \mu\text{g} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$) until the end of operation. While the same amount of saline was given to the control group. Then the mean pulse pressure (MAP), heart rate (HR) and penile erection rate were compared between two groups before anesthesia (T1), anesthesia after catheterization (T2), DEX or saline pump 10 min (T3), after the start of surgery catheterization. Meanwhile, the incidence of postoperative bladder irritation was compared between two groups. **Results:** The HR and MAP at T1, T2 and T3 showed no significantly difference between the two groups ($P>0.05$). The HR and MAP of control group at T4 were lower than those of the experimental group ($P<0.05$). There was no significant difference in the penile erection rate between the two groups at T1 and T2 ($P>0.05$). The penile erection rates at T3 and T4 in control group were 27.91% and 74.42% (6.98%, 11.63%), the difference was statistically significant ($P<0.05$). The incidence of postoperative bladder irritation in the experimental group was 9.30%, which was lower than that in the control group (32.56%) ($P<0.05$). **Conclusions:** Dexmedetomidine could significantly stabilize the intraoperative hemodynamics and reduce the incidence of postoperative priapism and bladder irritation in the treatment of patients with TURP.

Key words: Dexmedetomidine; Transurethral resection of the prostate; Benign prostatic hyperplasia

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前言

经尿道前列腺电切术(transurethral resection of the prostate, TURP)是指将外科医学和电子成像技术相结合,通过尿道对前列腺出现的增生、肿瘤等切除的手段。相比于传统的开放式手

术,TURP 具有创伤小、术中出血少、术后感染率低等优点,已成为泌尿外科中最常用技术之一,是治疗良性前列腺炎的“金标准”^[1,2]。然而,由于该技术采取全麻方式,术中及术后需要对患者进行导尿^[3],患者发生阴茎勃起的概率约为 3.5%,年轻患者出现率则更高。阴茎勃起不仅影响 TURP 术的正常进行,而且

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会压迫导尿管、挤压内镜、干扰导尿过程,术后患者也常出现膀胱刺激征,影响其预后^[4,5]。

传统应对术中阴茎勃起的方式主要有冷敷、阴茎背神经阻滞以及注射镇静药物等,效果并不理想^[6]。右美托咪定(Dexmedetomidin, DEX)是一类 α_2 -肾上腺素受体激动剂,具有镇静、镇痛、阻滞神经传递的效果^[7,8],常用于全麻患者中。本研究将 DEX 应用于行 TURP 患者术中,能够显著稳定患者术中血流动力学,并降低患者术后阴茎异常勃起率和术后患者膀胱刺激征出现率,现详述如下:

1 对象与方法

1.1 一般对象

选取 2017 年 1 月至 2018 年 3 月于我院确诊为良性前列腺增生并行经尿道前列腺电切术(TURP)的 86 例患者为研究对象,按照随机数字表法均分为实验组和对照组,每组各 43 例患者。其中,实验组患者年龄 48-77 岁,平均年龄(60.8 ± 6.2)岁,病程 2-7 年,平均病程(3.2 ± 1.2)年,麻醉分级(ASA)II 级;对照组中患者年龄 49-80 岁,平均年龄(61.1 ± 6.5)岁,病程 3-8 年,平均病程(3.1 ± 1.1)年,ASA 分级 II 级。两组患者一般资料如年龄、病程等对比差异无统计学意义($P > 0.05$),具有可比性。

纳入标准:①符合 2011 年《良性前列腺增生诊断治疗指南》中良性前列腺增生的诊断标准^[9];②美国麻醉医师协会(ASA)分级位于 II 级^[10];③年龄 48-80 岁;④对本次调研过程、原理、方法清楚明白并签署知情同意书。排除标准:①合并精神疾患者;②合并器质性疾病如冠心病、肾衰竭等;③存在阴茎外伤史或阴茎勃起障碍者;④存在阴茎用药史;⑤存在阴茎外科手术史。

1.2 研究方法

患者不使用术前药物,进入手术室后平卧 15 min,建立静脉通路,监测患者呼吸、心跳、血氧浓度等指标,而后进行麻醉诱导,待患者意识消失后,进行插管,对照组在术中按照 $0.5 \mu\text{g}/(\text{kg} \cdot \text{h})$ 的速度使用输液泵持续输注生理盐水,实验组在诱导麻醉期静注 $0.5 \mu\text{g}/\text{kg}$ 的右美托咪定,而后术中使用输液泵按照 $0.5 \mu\text{g}/(\text{kg} \cdot \text{h})$ 的速率持续输注右美托咪定,分别于麻醉前(T1)、麻醉

插管后导尿前(T2)、DEX 或生理盐水泵入 10 min 时(T3)、手术开始后导尿时(T4)四个时间点对两组患者的平均脉压差(Mean pulse pressure, MAP)、心率(heart rate, HR)、阴茎勃起发生率进行测量对比,并对术后膀胱刺激征的发生率进行对比,注意术中避免使用血管活性药物,以减少药物对患者阴茎勃起的影响。

1.3 观察指标及评测标准

1.3.1 HR 及 MAP 平稳程度 记录对比两组患者在 T1-T4 这四个时间点的 HR 及 MAP,分析其变化趋势,对比不同时间点两组 HR 及 MAP 水平。

1.3.2 阴茎勃起率 阴茎勃起率的计算按照 Porst 分级法进行测定,该测量方法将阴茎勃起程度分为 0-3 级,其中 0 代表完全无反应,1 级代表轻微勃起,2 代表不完全勃起,3 代表完全勃起,本文取 1-3 级为阳性,只要有勃起就记为阳性^[11,12]。

1.3.3 两组患者术后膀胱刺激征出现率 记录并比较两组患者术后旁观刺激征的出现率,其中膀胱刺激征主要包括尿频、尿急等现象^[13]。

1.4 统计学方法

应用 SPSS13.0 统计软件进行数据分析,计量资料以均值 $\pm$ 标准差($\bar{x} \pm s$)表示,组间比较采用独立样本 t 检验;计数资料用百分比(%)表示,组间比较采用卡方检验(χ^2)。以 $P < 0.05$ 时为差异具有统计学意义。

2 结果

2.1 两组患者不同时点 HR 及 MAP 的比较

T1、T2、T3 时,两组患者 HR 和 MAP 水平比较差异无统计学意义($P > 0.05$)。T4 时,对照组 HR 和 MAP 均显著低于实验组,差异具有统计学意义($P < 0.05$),见表 1。

2.2 两组患者不同时间点阴茎勃起率的对比

两组患者 T1 及 T2 时阴茎勃起率比较差异无统计学意义($P > 0.05$),对照组 T3、T4 阴茎勃起率分别为 27.91%、74.42%,实验组患者 T3、T4 阴茎勃起率分别为 6.98%、11.63%,差异具有统计学意义($P < 0.05$),见表 2。

表 1 两组患者不同时点 HR 及 MAP 变化的对比($\bar{x} \pm s$)

Table 1 Comparison of the change of HR and MAP between the two groups of patients at different time points($\bar{x} \pm s$)

Observation index	Groups	Cases	T1	T2	T3	T4
HR(once/min)	Experimental group	43	71.3 $\pm$ 10.2	72.3 $\pm$ 11.2	71.6 $\pm$ 10.9	71.5 $\pm$ 11.5
	Control group	43	70.3 $\pm$ 11.6	71.9 $\pm$ 12.2	71.2 $\pm$ 10.8	60.3 $\pm$ 5.6*
MAP(mmHg)	Experimental group	43	75.6 $\pm$ 8.6	74.9 $\pm$ 9.2	75.1 $\pm$ 10.2	76.5 $\pm$ 11.2
	Control group	43	74.9 $\pm$ 11.3	75.8 $\pm$ 9.6	76.2 $\pm$ 10.6	62.3 $\pm$ 8.9*

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

表 2 两组患者不同时间点阴茎勃起率的对比[例(%)]

Table 2 Comparison of the penile erection rate between two groups at different time points[n(%)]

Groups	Cases	T1	T2	T3	T4
Experimental group	43	0(0.00)	1(2.33)	3(6.98)	5(11.63)
Control group	43	0(0.00)	2(4.65)	12(27.91)	32(74.42)
P	-	1.000	>0.05	<0.05	<0.05

2.3 两组术后膀胱刺激征出现率比较

32.56%,差异具有统计学意义($P<0.05$),见表3。

实验组术后膀胱刺激征出现率为9.30%,低于对照组的

表3 两组患者术后膀胱刺激征出现率对比[例(%)]

Table 3 Comparison of postoperative bladder irritation signs between two groups [n (%)]

Groups	Cases	Dysuria	Urgency	Frequent urination	Occurrence rate
Experimental group	43	0(0.00)	1(2.33)	3(6.98)	4(9.30)
Control group	43	0(0.00)	2(4.65)	12(27.91)	14(32.56)
P	-	-	-	-	<0.05

3 讨论

TURP 是现阶段泌尿外科常用的手术之一。1931 年,学者 McCarthy 使用复合振荡器在直视条件下进行了前列腺组织电切除,开创了 TURP 的先河^[14,15]。此后,TURP 在临床上的应用率越来越高。相比于传统的开放式前列腺切除术^[16],TURP 具有创伤小、出血量低、术后恢复快等优点^[17],目前 TURP 的治愈率已高达 85%-90%,甚至更高,已经成为一种较为成熟的手术方式^[18]。学者 Chong H S 的研究指出现阶段美国 TURP 占据前列腺手术的 97%,英国 TURP 占据 92%^[19]。然而,近些年的研究显示^[20,21]仍有部分因素影响着该术的成功率,如术中阴茎异常勃起。阴茎异常勃起是指在无特殊刺激下阴茎出现的持续勃起状态,虽然麻醉后阴茎勃起发生率并不高,然而一旦发生就会引起尿道变长、膀胱颈痉挛等^[22,23],对 TURP 术造成较大影响,干扰导尿、内镜观察等手术过程,如施术者强行操作还会引起尿道出血、肌肉损伤等现象^[24]。

对于全麻后出现阴茎勃起的机制目前多数学者认为是由于外界刺激引起的,如术前清理外阴、导尿管的置入等,刺激到了副交感神经从而引发了阴茎勃起^[25]。学者 Kaplan S A 的研究认为该现象的出现是因为全麻后患者出现性幻觉或中枢神经受到抑制,改变了阴茎的血供,从而引发了阴茎异常勃起^[26]。学者 Griebing T L 和 Gratzke C^[27,28]则认为人体阴茎部位胆碱能受体数量较多,而外界刺激会诱发机体内部乙酰胆碱的释放,作用于胆碱能受体,进而引发会阴部平滑肌收缩,造成阴茎勃起,因而他们推测通过兴奋会阴部 α - 肾上腺素受体,可以达到抑制阴茎勃起的效果^[29]。目前,处理术中阴茎异常勃起的方式主要包括冷敷、神经阻滞、镇静治疗、抗胆碱治疗等,然而临床效果不是很显著,部分手段甚至会对手术造成干扰,增加危险事件发生率^[30]。

右美托咪定(DEX)是 α_2 - 肾上腺素受体激动剂中的一种,具有较高的选择性,是一种新型的麻醉辅助药,现阶段常被用于全麻、椎管麻醉及 ICU 患者治疗中。学者 Marien T^[31]研究发现采用静脉注射 DEX 的方式可以显著缩短患者全麻后阴茎勃起时间、改善阴茎异常勃起状态。学者 Wang C^[32]也通过对 1000 例行全麻术患者的研究发现使用 DEX 的患者组术中阴茎勃起率为 5.6%,显著低于未使用 DEX 患者组的 77.8%,提示 DEX 应用于降低全麻术患者阴茎异常勃起方面具有肯定意义。本研究通过设立实验组和对照组,就 DEX 对行 TURP 术患者阴茎异常勃起的影响进行了探究,结果显示使用 DEX 的实验组患者术中血流动力学更为稳定、阴茎异常勃起率较低,且术后膀

胱刺激征出现率显著低于未使用 DEX 的对照组患者,分析其机理为 DEX 为特异性 α_2 - 肾上腺素受体激动剂,患者在进行全麻后,其副交感神经易在外界刺激下出现兴奋,进而引发阴茎勃起,而 DEX 的使用有效抑制了副交感神经的兴奋性,通过增加交感- 肾上腺素神经的兴奋性,从而收缩阴茎海绵体血管和海绵体平滑肌,起到降低阴茎血流供应,疲软阴茎的效果。同时,由于人体阴茎海绵体中含有大量的 α - 肾上腺素受体,而 DEX 可以通过直接刺激这些受体起到疲软阴茎的效果。

总而言之,右美托咪定用于 TURP 术中可以有效稳定患者术中血流动力学,并降低患者术后阴茎异常勃起率,且术后患者膀胱刺激征发生率显著降低,对提高手术成功率和改善患者预后具有积极意义。

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