

doi: 10.13241/j.cnki.pmb.2018.07.020

麻醉方式对老年髋关节置换术患者的影响*

刘丽^{1,2} 徐冰² 唐鸣² 巩文怡^{2Δ} 顾国清²

(1 同济大学医学院 上海 200092; 2 上海市第一人民医院宝山分院麻醉科 上海 200940)

摘要 目的: 观察和比较腰硬联合麻醉与全麻对择期髋关节置换术老年患者的生命体征、简易智力状况检查量表(Mini-mental State Examination, MMSE)评分、认知功能障碍(postoperative cognitive dysfunction, POCD)发生率的影响。**方法:** 选取 2015 年 1 月-2017 年 6 月于我院行择期髋关节置换术的 80 例老年患者为研究对象, 随机分为腰硬联合麻醉组和全麻组, 每组各 40 例。全麻组患者术前应用全身麻醉, 腰硬联合麻醉组患者术前应用腰硬联合麻醉。观察两组患者麻醉前后的生命体征、MMSE 评分变化及 POCD 的发生情况。**结果:** 腰硬联合麻醉组患者麻醉后收缩压(Systolic pressure, SP)、舒张压(diastolic pressure, DP)、心率(heart rate, HR)、呼吸频率(Respiratory rate, RR)均低于全麻组($P < 0.05$), 两组患者血氧饱和度(Pulse Oxygen Saturation, SpO_2)比较差异无统计学意义($P > 0.05$)。腰硬联合麻醉组患者麻醉起效时间、运动阻滞恢复时间以及麻醉药用量均低于全麻组($P < 0.05$)。术后 6 h、24 h、72 h, 腰硬联合麻醉组的 MMSE 评分均高于全麻组患者($P < 0.05$)。术后 1 d, 全麻组的患者出现 19 例 POCD, 腰硬联合麻醉组出现 4 例, 发生率显著低于全麻组($P < 0.05$); 两组在术后 3 d 的 POCD 发生率比较差异无统计学意义($P > 0.05$)。**结论:** 腰硬联合麻醉用于择期行髋关节置换术的老年患者具有良好的临床效果, 麻醉起效快, 缩短了完全阻滞时间, 明显改善了患者的生命体征, 降低术后认知功能障碍的发生, 麻醉药物用量少。

关键词: 髋关节置换术; 腰硬联合麻醉; 全麻; 术后认知功能障碍

中图分类号: R614; R687 文献标识码: A 文章编号: 1673-6273(2018)07-1297-05

Effect of Different Anesthesia Modes on the Elderly Patients Undergoing Hip Replacement*

LIU Li^{1,2}, XU Bing², TANG Ming², GONG Wen-yi^{2Δ}, GU Guo-qing²

(1 School of Medicine, Tongji University, Shanghai, 200092, China;

2 Department of Anesthesiology, Baoshan Branch, Shanghai First People's Hospital, Shanghai, 200940, China)

ABSTRACT Objective: To observe and compare the effect of combined spinal epidural anesthesia and general anesthesia on the vital signs, simple mental state examination scale (MMSE) score and the incidence of postoperative cognitive dysfunction (PPCD) in elderly patients undergoing elective hip replacement. **Methods:** 80 cases of patients who underwent elective hip arthroplasty in our hospital were selected as the research object from January 2015 to June 2017. According to the random number table method, 80 patients were divided into epidural anesthesia group and general anesthesia group, 40 cases in each group. Patients in general anesthesia group were given general anesthesia before operation. And combined spinal epidural anesthesia was applied to patients under combined spinal epidural anesthesia. The vital signs, MMSE score and POCD were observed and compared between two groups. **Results:** The Systolic pressure (SP), diastolic pressure (DP), heart rate (HR) and respiratory rate (RR) of combined spinal epidural anesthesia group were lower than those in the general anesthesia group ($P < 0.05$). There was no significant difference in the pulse oxygen saturation (SpO_2) between the two groups ($P > 0.05$). The BP, DP, HR and RR in the combined spinal epidural anesthesia group were better than those in the general anesthesia group ($P < 0.05$), and there was no significant difference between the two groups in the SpO_2 ($P > 0.05$). The time of onset of anesthesia, the time of motor block recovery and the amount of anesthetic used in the combined spinal epidural anesthesia group were lower than those in the general anesthesia group ($P < 0.05$). There was no significant difference in the MMSE score between the two groups before anesthesia ($P > 0.05$). The scores of MMSE at 6, 24 and 72 h in combined spinal epidural anesthesia group were higher than those in the general anesthesia group ($P < 0.05$). There were 19 cases of POCD in the general anesthesia group at 1 day after operation, and 4 cases in the lumbar epidural combined anesthesia group ($P < 0.05$). There was no significant difference in the incidence of POCD between the two groups in the three days after operation ($P > 0.05$). **Conclusion:** Combined spinal epidural anesthesia had good clinical effect on the elderly patients undergoing hip arthroplasty, it could shorten the complete block time, significantly improve the patient's vital signs, reduce the incidence of postoperative cognitive dysfunction and the dose of anesthetic drugs.

* 基金项目: 上海市宝山区科技创新专项资金项目(16-E-5)

作者简介: 刘丽(1980-), 硕士, 主治医师, 研究方向: 麻醉学, E-mail: liuli20180@126.com

Δ 通讯作者: 巩文怡(1977-), 主治医师, 研究方向: 临床麻醉, E-mail: gong.wy@hotmail.com, 电话: 021-56162417-8728

(收稿日期: 2017-09-25 接受日期: 2017-10-22)

Key words: Hip replacement; Combined spinal and epidural anesthesia; General anesthesia; Postoperative cognitive dysfunction

ChineseLibraryClassification(CLC): R614; R687 **Document code:** A

Article ID: 1673-6273(2018)07-1297-05

前言

人工髋关节置换术是失去功能的髋关节是最有效的治疗方法^[1,2]。急性疼痛则是该手术最需注意之处,而麻醉则是有效控制术中急性疼痛的方法,麻醉的方式差别、麻醉药物用量等方面均会影响患者的手术治疗效果。再加上老年患者身体素质差,常合并其他系统性疾病,耐受能力低下,其风险性明显低于其他人群,故选择一种适宜的麻醉方法则是临床医生面临的首要问题^[3-5]。

全身麻醉、腰硬联合麻醉在各个医院的应用各有不同,需要在手术前根据患者的具体情况或麻醉习惯进行选择。其中,腰硬联合麻醉起效快、肌肉松弛完全等优点成为下腹部或下肢手术的首选。本研究选取于我院行择期髋关节置换术的80例患者,探讨两种麻醉方式对行择期髋关节置换术老年患者生命体征、MMSE评分及POCD发生率的影响。

1 资料与方法

表1 两组患者一般资料比较($\bar{x} \pm s$)

Table 1 Comparison of the general data between two groups($\bar{x} \pm s$)

Item	Combined spinal epidural anesthesia group(n=40)	General anesthesia group(n=40)	P
Age (year)	72.28± 5.12	71.98± 5.30	0.798
Sex (male / female)	15/25	18/22	0.496
Weight (kg)	57.04± 7.08	58.14± 8.11	0.520
History of hypertension (n)	12(30.00)	14(46.67)	0.633
History of diabetes mellitus (n)	13(32.50)	12(30.00)	0.809
History of coronary heart disease (n)	15(37.50)	13(32.50)	0.639
Operation time (min)	99.46± 7.48	100.21± 9.07	0.688

1.2 方法

1.2.1 药品和仪器 硫酸阿托品注射液,规格:1 mL:0.5 mg,批号:15020,北京双鹤药业股份有限公司生产。咪达唑仑注射液,规格:1 mL:5 mg,批号:16080107,江苏恩华药业股份有限公司生产。丙泊酚中/长链脂肪乳注射液(竞安),规格:20 mL:200 mg,批号:X150523-1,北京费森尤斯卡比医药有限公司分装。枸橼酸芬太尼注射液,规格:2 mL:0.1 mg,批号:012012,宜昌人福药业有限责任公司生产。注射用苯磺顺阿曲库铵,规格:10 mg,批号:15041200,江苏恒瑞医药有限公司生产。

1.2.2 麻醉方法 所有患者术前禁水食,均在术前0.5 h注射0.5 mg的阿托品和2 mg咪达唑仑,建立静脉通路,两组患者均给予面罩吸氧、补液,监测患者生命体征。

全麻组:气管插管,连接麻醉机,先吸1.0%的异氟醚,分别按2.0 mg/kg、0.003 mg/kg、0.3 mg/kg的速度应用丙泊酚、芬太尼、苯磺顺阿曲库铵进行麻醉诱导。术中依据患者实际情况追加0.1 mg/kg的苯磺顺阿曲库铵、0.001 mg/kg的芬太尼以及2.0 mg/kg的丙泊酚进行持续麻醉,呼吸频率保持在10-12次/min。

1.1 一般资料

选取2015年1月-2017年6月在我院行择期髋关节置换术的患者作为研究对象。纳入标准^[6]:①患者均择期行髋关节置换术;②患者年龄≥60岁;③美国麻醉师协会(ASA)分级为I-II级;④患者及其家属均签署知情同意书。排除标准:①精神疾病者或认知功能障碍者;②合并严重心、肺、肝、肾功能不全者;③麻醉禁忌症者;④严重视觉、听觉障碍无法正常交流者;⑤有镇静剂史或酗酒史者;⑥临床资料或随访资料不全者。根据研究经医院伦理委员会批准,共纳入80例择期行髋关节置换术的患者,男33例,女47例。根据随机数表法分为腰硬联合麻醉组和全麻组,每组各40例。腰硬联合麻醉组中,男15例,女25例,平均年龄(72.28±5.12)岁。全麻组中,男18例,女14例,平均年龄(71.98±5.30)岁。两组患者在年龄、性别、体重、高血压史、糖尿病史、冠心病史、手术时间等差异无统计学意义($P > 0.05$),见表1。

腰硬联合麻醉组:患者取左侧卧位,L3-4间隙穿刺区域进行常规消毒,一次性穿刺针从间隙穿刺,向上刺入有落空感并见脑脊液流出为穿刺成功。按0.2 mL/s速度向蛛网膜下间隙注入0.75%的布比卡因1.6 mL,并于腰硬外间隙放置硬膜外导管3-4 cm,术中结合患者具体情况追加硬膜外麻醉药物。

1.3 观察指标

①记录两组患者的临床资料,包括年龄、性别、身高、体重、教育程度、高血压史、糖尿病史、冠心病史、手术时间、失血量、麻醉方式等;②记录两组患者的生命体征:包括SP、DP、HR、RR、SpO₂等;③应用MMSE评分评估患者的认知功能缺损程度。MMSE评分由时间定向力、地点定向力、即刻记忆、注意力及计算力、延迟记忆、语言、视空间共7个方面构成,共有30道题,总分0-30分;④记录两组患者术后出现POCD例数,术后7 d患者MMSE评分下降≥4分为患者发生POCD。

1.4 统计学方法

用SPSS 19.0进行统计学分析,计量资料用 $\bar{x} \pm s$ 表示,两组间比较采用t检验,计数资料用率(%)表示,两组间比较采用

χ^2 检验,以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组患者麻醉后的生命体征比较

腰硬联合麻醉组患者麻醉后 SP、DP、HR、RR 均明显低于全麻组 ($P < 0.05$),而两组患者 SpO_2 比较差异无统计学意义 ($P > 0.05$),见表 2。

表 2 两组患者麻醉后的生命体征比较($\bar{x} \pm s$)

Table 2 Comparison of the vital signs of the patients between two groups after anesthesia($\bar{x} \pm s$)

Item	Combined spinal epidural anesthesia group(n=40)	General anesthesia group(n=40)	P
SP(mmHg)	119.06 $\pm$ 8.35	123.45 $\pm$ 9.87	0.035
DP(mmHg)	69.01 $\pm$ 2.67	72.56 $\pm$ 3.54	0.000
HR(t/min)	66.54 $\pm$ 4.79	90.46 $\pm$ 9.17	0.000
RR(t/min)	11.06 $\pm$ 1.43	14.01 $\pm$ 1.31	0.000
SpO ₂ (%)	99.15 $\pm$ 1.02	99.41 $\pm$ 0.87	0.224

2.2 两组患者的手术情况比较

以及麻醉药用量均低于全麻组($P < 0.05$),见表 3。

腰硬联合麻醉组患者在麻醉起效时间、运动阻滞恢复时间

表 3 两组患者的手术情况比较($\bar{x} \pm s$)

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

Item	Combined spinal epidural anesthesia group(n=40)	General anesthesia group(n=40)	P
Time of onset of anesthesia (min)	3.37 $\pm$ 0.41	8.43 $\pm$ 1.49	0.000
Motor block recovery time (min)	121.64 $\pm$ 9.23	140.27 $\pm$ 1.68	0.000
Anesthetic dosage (mg)	23.61 $\pm$ 5.08	115.65 $\pm$ 20.98	0.000

2.3 两组患者的 MMSE 评分及 POCD 发生情况比较

两组患者在麻醉前 MMSE 评分差异无意义($P > 0.05$)。术后 6 h、24 h、72 h,腰硬联合麻醉组的 MMSE 评分均高于全麻组患者,差异有统计学意义($P < 0.05$)。术后 1 d,全麻组患者出

现 19 例 (37.50%)POCD,腰硬联合麻醉组出现 4 例 (10.00%) POCD,发生率明显低于全麻组,差异有统计学意义($P < 0.05$),两组在术后 3 d 的 POCD 发生率比较差异无统计学意义 ($P > 0.05$),见表 4。

表 4 两组患者的 MMSE 评分及 POCD 发生情况比较(%)

Table 4 Comparison of the MMSE score and occurrence of POCD between the two groups(%)

Item	Combined spinal epidural anesthesia group(n=40)	General anesthesia group(n=40)	P
MMSE(score)			
Before anesthesia	27.81 $\pm$ 0.78	27.64 $\pm$ 0.88	0.363
6 hours after operation	26.48 $\pm$ 1.69	25.11 $\pm$ 2.26	0.003
24 hours after operation	23.37 $\pm$ 2.41	19.72 $\pm$ 2.09	0.000
72 hours after operation	26.08 $\pm$ 1.33	24.85 $\pm$ 2.33	0.005
POCD(n%)			
1day after operation	4(10.00)	15(37.50)	0.004
3days after operation	2(5.00)	4(10.00)	0.396

3 讨论

全球每年约将近两百万人群接受过人工关节置换术,其中髋关节置换术占主要比重,髋关节置换术是涉及多种神经,且随手术入路、切口长度等有所改变的有创性的大型手术^[7-9]。随着老龄化日益加重,髋关节病变患者的年龄也呈现偏大的趋势,通常大部分老年患者同时合并高血压、糖尿病、冠心病等基础疾病,外加老年患者身体素质低、自身调节能力差、耐受性

差,这些因素均会对手术疗效产生一定影响。为了确保手术的顺利进行,在手术实施前,麻醉医师必须为患者选取合理的麻醉方式。

从股骨颈骨折麻醉方式来看,目前主要有全身麻醉和腰硬联合麻醉,两种麻醉方式各有优点。全身麻醉是临床上经典的一种麻醉方法,在全麻髋关节置换术中的应用也较为广泛^[10-12]。腰硬联合麻醉则是基于硬膜外麻醉与腰麻的结合逐渐演变而来的,它结合了硬膜外麻醉与腰麻各自的优点,既能发挥腰麻

作用迅速、肌松完全的特点,也可通过硬膜外导管注药增加麻醉平面和延长麻醉时间^[13,14]。研究显示^[15,16]腰硬联合麻醉在保证呼吸道顺畅、血氧供应上有明显优势。这也解释了腰硬联合麻醉在心率和呼吸频率的改善方面优于全麻组,并可降低呼吸系统并发症的原因。

本研究结果显示腰硬联合麻醉组患者的生命体征改善情况明显优于全麻组,收缩压、舒张压、心率和呼吸频率的改善情况均优于全麻组。同时,腰硬联合麻醉组患者在麻醉起效时间、运动阻滞恢复时间以及麻醉药用量均低于全麻组,也体现了腰硬联合麻醉起效快、阻滞完善、用量少、改善生命体征较为明显的特点。这也与局麻药物则能直接通过脑脊液作用于脊神经根有关,通过保证骶神经的阻滞完善,从而保证麻醉效果的起效快、镇痛效果完善,有利手术操作。

麻醉的目标不只是保证患者术中的安全与质量,还包括追求麻醉后的最佳恢复^[16-18]。术后认知功能障碍是麻醉术后一项常见且重要的并发症。在本研究中,腰硬联合麻醉组术后 6 h、24 h、72 h 的 MMSE 评分降低幅度大于全麻组患者,且全麻组术后 1 d 出现 19 例 POCD,术后 3 d 出现 4 例,而腰硬联合麻醉组术后 1 d 出现 4 例 POCD,术后 3 d 出现 2 例,全麻组的 POCD 发生率为 47.5%,而腰硬联合麻醉组仅为 15.0%,提示腰硬联合麻醉在降低术后认知功能障碍的发生情况较全麻有优势。

综上所述,在择期行髋关节置换术的老年患者中,应用腰硬联合麻醉具有良好的临床效果,麻醉起效快,缩短了完全阻滞时间,明显改善了患者的生命体征,降低术后认知功能障碍的发生,麻醉药物用量少。

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