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临床研究

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二尖瓣球囊扩张术治疗二尖瓣狭窄伴轻度、重度肺动脉高压的近期疗效

舒茂琴,何国祥,宋治远,司良毅,王敏中 (第三军医大学附属西南医院心血管内科,重庆 400038)

提 要:目的 比较经皮二尖瓣球囊扩张术(PBMV)治疗二尖瓣狭窄伴严重肺动脉高压(肺动脉收缩压≥80 mmHg,Ⅰ组)和对照组(二尖瓣狭窄伴肺动脉收缩压<50 mmHg,Ⅱ组)的近期效果。方法 PBMV均采用改良Inoue单球囊技术。结果 两组PBMV手术成功率和严重并发症相似,术后Ⅰ组MVA≥1.5 cm^2者为55.6%,和Ⅱ组(67.8%)相似。两组术后肺动脉压力明显下降,24 h和48 h肺动脉压力进一步下降,但Ⅰ组仍未降至正常。术后两组的纽约心脏协会(NYHA)心功能相似,但从改善心功能讲,Ⅰ组心功能明显改善者高于Ⅱ组(86.1%和42.4%),术后两组心功能恶化者均较少。结论 PBMV治疗二尖瓣狭窄伴严重肺动脉高压是安全有效的,可明显改善心功能,减轻肺动脉压力。

关键词:二尖瓣狭窄;二尖瓣球囊成形术;肺动脉高压
中图法分类号:R542.51;R544;R654.2 文献标识码:A

The short-term therapeutic effects of percutaneous balloon mitral valvoplasty on patients with mitral stenosis complicated with severe or mild pulmonary arterial hypertension

SHU Mao-qin, HE Guo-xiang, SONG Zhi-yuan, SI Liang-yi, WANG Min-zhong (Department of Cardiology, Southwest Hospital, Third Military Medical University, Chongqing 400038, China)

Abstract: Objective To study the near-term therapeutic effects of percutaneous balloon mitral valvotomy (PBMV) on patients with mitral stenosis complicated with pulmonary arterial hypertension. Methods Inoue single balloon technique of PBMV was used to treat patients with mitral stenosis complicated with severe pulmonary arterial hypertension (systolic pressure of the pulmonary artery was higher than 80 mmHg, group Ⅰ) and control group with mild pulmonary arterial hypertension (systolic pressure of the pulmonary artery was lower than 50 mmHg, group Ⅱ). Results The successful rate of PBMV and the incidence of severe complications were similar in the 2 groups. After PBMV, MVA in 55.6% of cases in group Ⅰ and 67.8% in group Ⅱ was larger than MVA> 1.5 cm^2. After PBMV, the systolic pressure of the pulmonary artery was significantly reduced in the 2 groups and further reduced 24 to 48 hours after PBMV but pulmonary arterial pressure remained higher than the normal in group Ⅰ. NYHA was similar in the 2 groups. Cardiac functions were improved in 86.1% in group Ⅰ and 42.4% in group Ⅱ. Worsening of cardiac functions was rarely encounted. Conclusion PBMV is a safe and efficient technique to treat patients with mitral stenosis complicated with pulmonary arterial hypertension in that it can improve cardiac functions and reduce pulmonary hypertension.

Key words: mitral stenosis; pulmonary hypertension; percutaneous ballon mitral valvotomy

经皮二尖瓣球囊扩张术(Percutaneous balloon mitral valvotomy, PBMV)已广泛用于治疗有症状的二尖瓣狭窄(Mitral stenosis, MS)患者,对外科高危患者,PBMV的手术安全性远胜于外科手术,并可使大多数病人的临

作者简介:舒茂琴(1965—),女,四川省仁寿县人,博士研究生,主治医师,讲师,主要从事冠心病(血脂紊乱与动脉硬化)方面的研究,发表论文20篇。电话:(023)68754480

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床症状获得长期缓解[1,2], 然而关于 PBMV 对 MS 合并重度肺动脉高压患者的疗效, 目前国内外报道较少。本研究分析了 PBMV 治疗 MS 合并重度肺动脉高压的血液动力学及临床效果。

1　材料与方法

1.1　对象

1991 年 9 月至 1996 年 12 月在我院行 PBMV 的患者, 并有完整的手术前后的血液动力学参数和临床及超声资料。将肺动脉收缩压≥80 mmHg 认为是严重肺动脉高压组(Ⅰ组), 选择肺动脉收缩压< 50 mmHg 为对照组(Ⅱ组)。Ⅰ组 36 例, 男 12 例, 女 24 例, 平均年龄(36.6±8.4)岁。Ⅱ组 59 例, 男 14 例, 女 45 例, 平均年龄(39.9±8.8)岁。

1.2　手术操作及血液动力学测定

手术采用改良的 Inoue 单球囊技术。后前位透视下采用 Ross 法行房间隔穿刺, 注造影剂或测压证实针尖入左房后, 立即注肝素 4 000～5 000 U 入左房, 扩张皮肤、皮下及房间隔后, 球囊从右房到左房入左室, 将球囊充盈扩张二尖瓣, 球囊直径以身高为参照标准, 手术前后常规测压, 有 30 例(Ⅰ组 12 例, Ⅱ组 18 例)留置血管鞘及右心导管, 术后 24、48 h 复测肺动脉压力。

1.3　超声心动图检查

所有病人手术前后 2 周行完整的超声检查, 采用美国超声协会推荐的方法[3] 评价二尖瓣形态, 按 Seller′s 法将二尖瓣返流分为Ⅰ～Ⅳ级, 用压力减半时间测定二尖瓣口面积。

1.4　手术成功及并发症的标准

手术成功定义为二尖瓣口面积(Mitral valve area, MVA)增加≥50%而无严重并发症。若术后 MVA≥1.5 cm^2 认为手术效果良好。严重手术并发症: 大量心包积液、二尖瓣返流增加≥Ⅱ级、动脉栓塞。纽约心脏协会(New York Heart Association, NYHA)心功能比术前减少Ⅰ级或以上者为心功能明显改善。

1.5　统计学处理

数据用 $\bar{x}\pm s$ 表示, 采用配对资料 t 检验。

2　结果

2.1　两组术前的临床特征及超声情况

Ⅰ组症状重, 并有较小的二尖瓣口面积和较大的左房内径及较高的超声评分, 见表 1。

表 1　手术前两组的基本特征[例数(%)]

Tab 1　Basic characteristic of 2 groups before operation[n(%)]

	Group Ⅰ(n=36)	Group Ⅱ(n=59)	P
NYHA≥Ⅲ	33(91.7)	24(40.7)	<0.05
Atrial flutter	13(36.1)	21(35.6)	>0.05
Pulmonary edema	8(22.2)	4(6.8)	<0.05
Massive hemoptysis	6(16.7)	2(3.4)	<0.05
Right heart failure	8(22.2)	5(8.5)	<0.05
Ultrasound score≥8	9(25.0)	5(8.5)	<0.05
Diameter of left atrium(mm)	52.6±6.7	46.5±5.9	<0.05

2.2　手术成功率及并发症

PBMV 成功率Ⅰ组(91.7%)与Ⅱ组(91.5%)相似, 手术效果良好者Ⅰ组(55.6%)与Ⅱ组(67.8%)相似。严重手术并发症Ⅰ组和Ⅱ组相似, 包括心包填塞(2.8%和 3.4%), 严重二尖瓣返流(2.8%和 3.4%), 无动脉栓塞并发症。

2.3　PBMV 手术前后血液动力学变化

PBMV 术后两组所获得的平均左房压力及 MVA 相似。Ⅰ组术后肺动脉压降低幅度大于Ⅱ组, 术后 24 及 48 h 两组的肺动脉压进一步下降, Ⅰ组的肺动脉压高于Ⅱ组, Ⅱ组的肺动脉压降至正常范围, 见表 2、3。

表 2　手术前后血液动力学及心功能变化

Tab 2　Hemodynamics and heart function before and after PBMV operation

	Before operation		Just after operation	
	Group Ⅰ(n=36)	Group Ⅱ(n=59)	Group Ⅰ(n=36)	Group Ⅱ(n=59)
MVA(cm^2)	0.74±0.23	1.19±0.24△	1.52±0.30	1.66±0.20
Mean left atrial pressure (mmHg)	32.2 ±6.7	15.8 ±4.5△	12.1 ±5.7	8.87±3.88
Pulmonary arterial systolic pressure (mmHg)	103.8 ±21.2	39.6 ±4.6△	55.2 ±6.1	29.3 ±3.8△
Mean pulmonary arterial pressure (mmHg)	64.8 ±12.0	25.0 ±4.6△	36.3 ±10.6	20.4 ±4.0△
NYHA	3.33±0.53	2.42±0.69△	2.30±0.58	1.98±0.43

△: P< 0.05 *vs* group Ⅰ

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表3 部分病例术后及24、48 h肺动脉收缩压力变化(mmHg)

Tab 3 Systolic pressure of pulmonary artery in some cases just after operation and 24, 48 h later(mmHg)

	Group Ⅰ($n=12$)	Group Ⅱ($n=18$)	P
Just after operation	56.9±7.8	31.8±5.7	<0.05
24 h	53.4±12.5	25.0±4.0	<0.05
48 h	45.9±13.4*	22.1±3.2*	<0.05

*: $P<0.05$ *vs* just after operation. 1 mmHg=0.133 kPa

2.4 术后心功能变化

术后两组心功能明显改善,Ⅰ组降低幅度更显著,术后心功能明显改善者,Ⅰ组(86.1%)多于Ⅱ组(42.4%),但术后心功能≤Ⅱ级者Ⅰ组(69.4%)低于Ⅱ组(91.5%)。心功能恶化者Ⅰ组(5.6%)和Ⅱ组(5.1%)相似。

3 讨论

PBMV治疗MS伴严重肺动脉高压的血液动力学及临床效果报道甚少。Fawzy等[4]报道了PBMV治疗21例MS患者伴肺动脉收缩压≥50 mmHg的效果,肺动脉收缩压从(65±13)mmHg降至(50±13)mmHg,术后MVA≥1.5 cm^2占61.9%,虽肺动脉压力未降至正常,并非所有病人MVA达理想标准,但术后所有患者的心功能均明显改善,随访7~14月,肺动脉压力进一步下降,心功能稳定,但此文肺动脉收缩压≥80 mmHg者仅3例,肺动脉收缩压>50 mmHg的外科高危病人不多。Alfonso等[5]比较了PBMV治疗两组MS患者不同肺动脉压力的效果,64例肺动脉收缩压≥60 mmHg(Ⅰ组)和194例肺动脉收缩压<60 mmHg(Ⅱ组),两组术后肺动脉压力明显下降,Ⅰ组下降幅度更大,但最终的肺动脉压力仍高于Ⅱ组,术后Ⅰ组和Ⅱ组无症状患者(63%和75%)和症状恶化者(1.4%和6%)相似。Ⅰ组35例随访(14±7)月,肺动脉收缩压从术后的(57±15)mmHg降至(45±14)mmHg,此研究对照组和观察组肺动脉压力界线太小,临床情况有许多交叉。

本研究将肺动脉收缩压≥80 mmHg作为观察组,设肺动脉收缩压<50 mmHg为对照组,以便更好地比较PBMV对不同亚组肺动脉压力的疗效,其结果表明,两组的手术成功率和严重并发症相似,尽管观察组有更重的二尖瓣狭窄程度和瓣膜畸形,有趣的是PBMV手术并未增加二尖瓣严重返流的机会,Feldman等[6]认为据二尖瓣畸形程度无法预测二尖瓣返流的并发症,球囊技术对二尖瓣返流并发症的影响更重要,Inoue技术比双球囊技术发生严重二闭的并发症少见。本文均采用改良的Inoue球囊技术,两组二尖瓣严重返流并发症均较低(2.8%和3.4%)。本研究还表明术后两组肺动脉压力均显著下降,观察组下降幅度更大,两组部分病例有术后24 h和48 h的肺动脉压力记录,其肺动脉压力进一步下降,对照组动脉压力降至正常,观察组仍高于正常。但就改善心功能而言,PBWV治疗观察组的效果优于对照组,但出院时两组的心功能无差异,NYHA≤Ⅱ级相似。其合理的解释可能是,对照组术前心功能良好(NYHA≥Ⅱ组者仅占40.7%)。术后心功能恶化者两组相似(5.6%和5.1%),本研究结果与Alfonso等[5]相似。影响术后肺动脉压力下降的因素不清楚,Dev等[2]报道术后MVA≥1.5 cm^2伴中~重度二尖瓣返流者,肺动脉压力下降不理想。某些病例肺动脉已存在不可逆的病理改变,即使扩张效果较好,肺动脉压力仍难降至正常。

参考文献:

[1] Lefevre T, Bonan R, Serra A, *et al*. Percutaneous mitral valvuloplasty in surgical high risk patients[J]. Am J Cardiol, 1991, 67(2): 348-354.

[2] Dev V, Shrivastava S. Time course of changes in pulmonary vascular resistance and the mechanism of regression of pulmonary arterial hypertension after ballon mitral valvuloplasty[J]. Am J Cardiol, 1991, 67(2): 439-442.

[3] Henry W L, Demaria A, Gramiak R, *et al*. Report of the American society of echocardiography committe on nomenclature and standards in two-dimensional echocadiography[J]. Circulation, 1980, 62(1): 212-217.

[4] Fawzy M E, Mimish L, Sivanandam V, *et al*. Immediate and long-term effect of mitral ballon valvotomy on severe pulmonary hypertention in patients with mitral stenosis[J]. Am Heart J, 1996, 131(1): 89-93.

[5] Alfonso F, Macaya c, Hernandez R, *et al*. Percutaneous mitral valvuloplasty with severe pulmonary arterial hypertention[J]. Am J Cardiol, 1993, 73(2): 325-330.

[6] Feldman T, Carroll J D, Isner J M, *et al*. Effects of valve deformity on results and mitral regurgitation after Inoue balloon commissurotomy[J]. Circulation, 1992, 85(1): 180-185.

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