

## 经皮冠状动脉介入术对急性心肌梗死患者合并二尖瓣反流的影响

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**[摘要]** **目的:**通过6个月以上随访观察,探讨经皮冠状动脉介入术(PCI)对急性心肌梗死(AMI)合并二尖瓣反流(MR)的影响。**方法:**213例AMI患者按治疗方法不同分为常规药物组(126例,服用常规药物)和PCI组(87例,PCI+常规药物),所有患者在住院期间及随访时行超声心动图检查,检测MR程度、左室舒张末期内径(LVEDd)、左室收缩末期内径(LVEDs)、左室舒张末期容量(LVEDV)、左室收缩末期容量(LVESV)、左室射血分数(LVEF),将所得结果进行对比分析。**结果:**AMI患者住院期间MR的发生率为28.6%,下壁心梗MR发生率明显高于其他部位(34.5% vs 22.3%,  $P < 0.01$ )。平均随访8.8个月后MR的总发生率为35.4%,PCI组MR发生率较住院期间无显著变化(26.4% vs 27.6%,  $P > 0.05$ ),而常规药物组MR发生率较心梗急性期有明显增加(43.7% vs 30.2%,  $P < 0.01$ ),且明显高于PCI组( $P < 0.01$ )。PCI组LVEDd、LVEDV、LVESV低于常规药物组( $P < 0.05$ ),而LVEF高于常规药物组( $P < 0.05$ )。**结论:**急性下壁心肌梗死患者较其他部位心梗患者易出现MR;随着心肌梗死时间延长,MR发生率有增加趋势。PCI通过改善血流及左室重构,可降低或至少不增加MR的发生。

**[关键词]** 急性心肌梗死;二尖瓣反流;经皮冠状动脉介入术**[中图分类号]** R 541.4 **[文献标识码]** A **[文章编号]** 0258-879X(2006)06-0638-03**Effect of percutaneous coronary intervention on mitral regurgitation in patients with acute myocardial infarction: a 6 months follow-up**

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**[ABSTRACT]** **Objective:** To evaluate the effect of percutaneous coronary intervention (PCI) on mitral regurgitation (MR) in patients with acute myocardial infarction (AMI). **Methods:** A total of 213 AMI patients were divided into PCI group ( $n = 87$ , PCI + medication) and medication group ( $n = 126$ , medication) according to the treatments they received. Echocardiographic examination was conducted in patients during admission and 6 months follow-up. Color Doppler was used to determine the degree of MR. Echocardiogram indices included MR degree, left ventricular end-diastolic diameter (LVEDd), left ventricular end-systolic diameter (LVEDs), left ventricular end-diastolic volume (LVEDV), left ventricular end-systolic volume (LVESV), and left ventricular ejection fraction (LVEF). **Results:** The overall incidence of MR was 28.6% in 213 patients during admission. The MR incidence in patients with acute inferior myocardial infarction was higher than that in patients with other parts of infarction (34.5% vs 22.3%,  $P < 0.01$ ). MR was found in 35.4% patients during an average follow-up of 8.8 months. The MR incidence of PCI group was similar to that during admission (26.4% vs 27.6%,  $P > 0.05$ ), while the incidence in medication group increased significantly than that during admission (43.7% vs 30.2%,  $P < 0.01$ ). Although the MR incidences were not significantly different between the 2 groups during admission, the incidence of medication group was significantly higher than that of PCI group during 8.8 months follow-up ( $P < 0.01$ ). LVEDd, LVEDV and LVESV in PCI group were smaller than those in medication group ( $P < 0.05$ ), while LVEF in PCI group was higher than that in medication group ( $P < 0.05$ ). **Conclusion:** The MR incidence in patients with acute inferior myocardial infarction is higher than that in other patients. MR has an increasing trend as the time of myocardial infarction lasts. PCI can prevent MR through improving blood flow and left ventricular remodeling.

**[KEY WORDS]** acute myocardial infarction; mitral regurgitation; percutaneous coronary intervention

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急性心肌梗死(AMI)后由于左室重构及(或)乳头肌功能不全、断裂容易引起二尖瓣反流(MR)<sup>[1,2]</sup>,但经皮冠状动脉介入术(PCI)治疗后,MR改善与否及与心脏结构、功能的关系,较少见于报道。本研究对AMI患者在住院及6个月以上随访期间,进行彩色多普勒超声心动图检查并对结果比较分析,初步探讨PCI术对MR的影响。

**1 对象和方法**

1.1 研究对象 经临床症状、心电图和血清酶证实为AMI的患者计213例(男178例,女35例),均为

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我院心内科2001年7月至2004年10月期间收治的住院患者,平均年龄(57.6±7.9)岁,其中下壁心梗98例,其他部位心梗115例。但除外下列患者:(1)心源性休克;(2)完全性束支传导阻滞;(3)瓣膜性心脏病史及超声心动图检查发现有二尖瓣瓣叶异常,如脱垂、赘生物和纤维化等;(4)慢性阻塞性肺疾患及图像质量欠佳者。分为PCI组(PCI+常规药物治疗,87例)和常规药物组(常规药物治疗,126例)。

1.2 检查方法 所有患者均在住院期间及随后6~12个月随访时重复超声心动图检查。使用美国ACUSON公司生产的Aspen彩色多普勒显像仪,探头频率为谐波3.25 MHz。患者取左侧卧位30°~45°,按标准方法取心尖四腔切面,探查有无MR及程度。以反流束面积和左房面积百分比分为:轻度,<10%;中度,10%~30%;重度,>30%。在胸骨旁左室长轴切面测量左室舒张末期内径(LVEDd)、左室收缩末期内径(LVEDs)。采用改良Simpson法测定左室舒张末期容量(LVEDV)、收缩末期容量(LVESV),计算左室射血分数(LVEF)。

1.3 统计学处理 使用Stata 7.0软件进行统计。计量资料均进行正态性及方差齐性检验,符合正态分布的数据以 $\bar{x} \pm s$ 表示,组内比较采用配对 $t$ 检验,组间比较采用成组 $t$ 检验。计数资料采用 $\chi^2$ 检验。

## 2 结果

2.1 入选时基线特征及超声心动图特征 两组患者入选时基线特征比较无明显差异,住院期间共有28.6%(61/213)合并有不同程度MR,其中:轻度反流占18.3%(39/213),中度反流占8.9%(19/213),重度反流占1.9%(4/213)。下壁心梗患者合并二尖瓣反流为34.7%(34/98),明显高于其他部位心梗(22.6%,26/115,  $P < 0.01$ ),详见表1。

表1 两组患者入选时一般情况比较

Tab 1 Clinical and echocardiographic characteristics of patients

Index	PCI group (N=87)	Medication group (N=126)
Gender (male : female)	72 : 15	106 : 20
Age (years)	56.8±5.6	58.3±9.5
Smoking[n(%)]	(51)58.6	66(52.4)
Time from onset of chest pain to hospitalization(t/h)	16.8±4.5	17.4±5.1
MI location[n(%)]		
Inferior	42(48.3)	56(44.4)
Others	45(51.7)	70(55.6)
Coronary risk factors[n(%)]		
Hypertension	51(58.6)	75(59.5)
Diabetes mellitus	43(49.4)	62(49.2)
Hypercholesterolaemia	35(40.2)	45(35.7)
Medication[n(%)]		
$\beta$ -blocker	26(29.9)	39(31.0)
ACE inhibitor	35(40.2)	46(36.5)
Calcium antagonist	38(43.7)	53(42.1)
Nitrate	46(52.9)	65(51.6)
Statins	16(18.4)	28(22.2)
Echocardiographic data		
LVEDd(d/mm)	49.9±2.4	50.3±2.5
LVEDs(d/mm)	35.2±1.9	35.7±2.1
LVEDV(V/ml)	123.1±5.8	125.3±6.8
LVESV(V/ml)	59.1±4.0	62.0±4.5
LVEF(%)	52.0±3.6	50.6±4.5
Incidence of MR[n(%)]	24(27.6)	38(30.2)

2.2 随访时超声心动图特征 两组平均随访时间为8.8个月,MR总的发生率为35.2%(75/213),较前无明显差异。其中PCI组MR发生率较术前无明显差异(26.4% vs 27.6%);而常规药物组MR发生率较心梗急性期有明显增加(43.7% vs 30.2%,  $P < 0.01$ ),且明显高于PCI组( $P < 0.01$ ),常规药物组8.8个月后轻度MR及中、重度MR与入选时相比均不同程度增加( $P < 0.05$ ),详见表2。LVEDd、LVEDV、LVESV、LVEF两组之间也存在明显差异,详见表3。

表2 入选及随访时MR发生率的比较

Tab 2 Comparison of MR incidence in baseline and follow-up

Group	N	Baseline			8.8 months follow-up		
		Mild	Moderate	Severe	Mild	Moderate	Severe
PCI	87	15(17.2)	7(8)	2(2.3)	12(13.8)	8(9.2)	3(3.4)
Medication	126	24(19.0)	12(9.5)	2(1.6)	34(27.0)*	17(13.5)	4(3.2)

\*  $P < 0.05$  vs PCI group

表3 8.8个月随访时两组 LVEDd、LVEDV、LVESV、LVEF 的比较

Tab 3 Comparison of LVEDd, LVEDV, LVESV and LVEF in PCI group and medication group after 8.8 months follow-up

Group	N	LVEDd(d/mm)	LVEDV(V/ml)	LVESV(V/ml)	LVEF (%)
PCI	87	49.6±2.3	121.3±5.6	59.5±4.2	51.1±3.4
Medication	126	53.6±3.1*	136.7±7.5**	70.8±4.8*	47.9±3.2*

\* P<0.05 vs PCI group

### 3 讨论

MR 是 AMI 后常见的合并症之一,可导致左室扩大,左室收缩功能减低,心功能不全<sup>[3,4]</sup>,与患者的预后有明显的关系<sup>[3,5]</sup>。有报道<sup>[1,2]</sup> AMI 后早期,高达 40%~50% 的患者有 MR,且前壁心肌梗死 MR 发生率高于下壁心肌梗死患者。本研究中 AMI 患者合并不同程度 MR 的发生率为 29.3%,低于上述文献报道;且急性下壁心肌梗死患者 MR 发生率高于其他部位心梗者,也与上述研究有所不同,而与国内报道相近<sup>[6]</sup>。下壁梗死患者 MR 与下壁异常运动相关,且后内乳头肌供血途径较远,常为单支血管供血,易受缺血影响而出现乳头肌功能不全致 MR,而前外乳头肌则为双重供血,同时动脉之间有较多侧支吻合,前壁心肌梗死时较少引起其损伤<sup>[7]</sup>。二尖瓣装置由二尖瓣叶、瓣环、腱索、乳头肌、左房和左室游离壁组成,其中任何一部分功能失调或其空间位置改变,都可引起 MR。前壁心肌梗死因为左室球形度增大,使乳头肌向两侧移位,导致二尖瓣环平面与瓣叶尖部对合处距离增加。Watanabe 等<sup>[8]</sup>用实时三维超声心动图检查发现缺血性 MR 患者二尖瓣环扩大、变平,且前壁心梗时变形程度较下壁心梗更明显。而下壁心梗合并 MR 乃下后壁心肌功能不全引起的乳头肌对合欠佳所致<sup>[9]</sup>。Uemura 等<sup>[10]</sup>用组织多普勒应变率成像技术进一步分析发现乳头肌功能不全时心肌沿长轴方向收缩减弱,导致瓣叶松弛,二尖瓣关闭不全。

本研究发现平均 8.8 个月随访后,常规药物组 MR 发生率较前增加,但 PCI 组 MR 发生率较住院期间无显著差异。考虑其原因是 AMI 及陈旧性心梗并发 MR 的机制不同所致<sup>[4,6]</sup>。AMI 并发 MR 的主要原因为左心室室壁运动异常,乳头肌功能不全、心肌缺血;而左心室腔、房室环的扩大则是陈旧性心梗并发 MR 的重要因素。同时随陈旧性心梗病史延长,坏死心肌硬化、纤维化、室壁瘤等的形成更易出现左心室、房室环的扩大。PCI 术特别是 AMI 早期

行 PCI,可以明显减少梗死面积、挽救濒临死亡的心肌,从而改善心功能与左心室重构,减轻心肌梗死导致的二尖瓣装置功能的失调及空间位置的改变。故 PCI 术可作为开通阻塞血管、改善左室重构的有效手段降低或至少不增加 MR 的发生,从而提高患者长期生存率。

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