

doi: 10.13241/j.cnki.pmb.2015.05.034

高龄 ST 段抬高心肌梗死患者经皮冠状动脉介入术后的院内预后及其影响因素分析*

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摘要 目的:探讨高龄 ST 段抬高心肌梗死(STEMI)患者行直接经皮冠状动脉介入(PCI)术后住院期间的预后情况及其影响因素。**方法:**回顾性分析 2009 年 1 月至 2013 年 12 月因 STEMI 入住我院并行直接 PCI 的高龄患者(年龄 ≥ 75 岁)的一般情况、既往史、入院情况、术中及术后情况、并发症等资料,总结分析该类患者住院期间的临床预后,并采用 logistic 回归模型对可能影响住院期间主要不良心脏事件(MACE)的危险因素进行分析。**结果:**研究共纳入 127 例患者,其中男性 84 例(66.14%),女性 43 例(33.86%),年龄 79 ± 3 岁,住院时间 13.07 ± 7.80 天,住院期间 MACE 的发生率为 17.32%,其中死亡 4 例(3.15%)。单因素 logistic 回归分析显示入院时心功能(Killip 分级) ≥ 2 级、完全性房室传导阻滞、窦性停搏与高龄 STEMI 患者直接 PCI 术后住院期间 MACE 的发生相关,具有统计学意义($P < 0.05$)。而多因素 logistic 回归分析显示入院时心功能(Killip 分级)和完全性房室传导阻滞是高龄 STEMI 患者住院期间 MACE 的危险因素。**结论:**高龄 STEMI 患者接受直接 PCI 治疗总体安全,影响其住院期间 MACE 的危险因素包括心功能不全和完全性房室传导阻滞。

关键词:心肌梗死;经皮冠状动脉介入术;老年人;预后;危险因素

中图分类号:R542.22 **文献标识码:**A **文章编号:**1673-6273(2015)05-933-04

Analysis of the In-hospital Prognosis of Very Elderly Patients with STEMI Following Primary PCI and its Influencing Factors*

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ABSTRACT Objective: To explore the in-hospital prognosis of very elderly patients with ST-segment elevation myocardial infarction (STEMI) following primary percutaneous coronary intervention (PCI) and its influencing factors. **Methods:** Elderly patients (≥ 75 years old) with STEMI following primary PCI admitted in our hospital from January 2009 to December 2013 were selected for this study, the general condition, medical history, hospitalized cases, intraoperative and postoperative condition and complications were retrospectively analyzed. The clinical prognosis of these patients during hospitalization was summarized, and a logistic regression model was used to analyze the risk factors of major adverse cardiac events (MACE) during hospitalization. **Results:** 127 patients were enrolled in this study, including 84 (66.14%) males and 43 (33.86%) females, aging 79 ± 3 years old, and the length of hospital stay was 13.07 ± 7.80 days. During hospitalization, the occurrence rate of MACE was 17.32%, including 4 cases (3.15%) of death. Single factor logistic regression analysis showed that Killip class ≥ 2 , complete atrio-ventricular block (CAVB) and sinus arrest were associated with MACE during hospitalization of very elderly STEMI patients after primary PCI ($P < 0.05$). Multi-factor logistic regression analysis showed that heart function (Killip classification) and CAVB were risk factors for in-hospital MACE of very elderly STEMI patients after primary PCI. **Conclusions:** Primary PCI was generally safe for very elderly STEMI patients, heart dysfunction and CAVB were risk factors for the in-hospital MACE of these patients.

Key words: Myocardial Infarction; Percutaneous Coronary Intervention; Elderly; Prognosis; Risk Factors

Chinese Library Classification(CLC): R542.22 **Document code:** A

Article ID: 1673-6273(2015)05-933-04

随着社会经济以及医疗技术的不断发展,人类的寿命不断延长,高龄心肌梗死患者的人数也逐渐增多,急性心肌梗死

* 基金项目:国家自然科学基金项目(81100197);长海医院"1255"转化医学项目(CH125550200)

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(收稿日期:2014-08-11 接受日期:2014-09-07)

已成为威胁老年人生命的重要因素之一。既往调查发现,在 ST 段抬高心肌梗死 (ST segment elevation myocardial infarction, STEMI) 的患者中,75 岁以上老年人达到 30%^[1]。由于老年患者缺血和出血风险高、临床表现滞后以及药物再灌注治疗禁忌症多等因素,直接经皮冠状动脉介入治疗 (percutaneous coronary intervention, PCI) 成为 STEMI 的首选治疗策略^[2-5]。由于老年患者健康状况复杂,高龄、合并症等因素使 STEMI 患者的风险增加^[6],其接受直接 PCI 术后的预后情况也倍受关注。本研究通过回顾性分析单中心 127 例行直接 PCI 的高龄 STEMI 患者的临床资料,旨在探讨其住院期间的预后情况及影响其预后的危险因素。

1 对象和方法

1.1 研究对象

收集 2009 年 1 月至 2013 年 12 月因 STEMI 入住我院并行直接 PCI 的 127 例高龄 (年龄 ≥ 75 岁) 患者的临床资料。STEMI 的诊断标准^[9]: 心脏生物标志物 (肌钙蛋白) 增高或增高后降低,至少有 1 次数值超过参考值上限的 99 百分位 (即正常上限),心电图出现 ST 段抬高。

1.2 治疗方法

所有患者均于症状发病 12 h 内接受直接 PCI。以 Judkins 导管行左、右冠状动脉造影明确梗死相关血管,并以标准方法进行冠状动脉内支架植入术。直接 PCI 成功标准: 支架植入后心肌梗死溶栓治疗 (thrombolysis in myocardial infarction, TIMI) 血流 3 级,管腔狭窄 $< 20\%$ 。辅助治疗主要包括卧床休息、吸氧、心电监护、控制血糖及血压等; 药物治疗包括阿司匹林、ADP 受体拮抗剂、普通肝素、低分子量肝素、他汀类、硝酸酯类、 β 受体阻滞剂、血管紧张素转换酶抑制剂或血管紧张素受体阻滞剂、醛固酮受体拮抗剂、吗啡等。特殊治疗包括主动脉内球囊反搏术、电除颤治疗、临时起搏器植入术、呼吸机辅助呼吸等。

1.3 观察指标

患者的一般情况包括性别、年龄。既往史包括高血压病史、糖尿病史、吸烟史。入院情况包括心率、血压、心肌梗死定位范围、血肌钙蛋白、血肌酐水平、内生肌酐清除率、心功能 (Killip 分级)、二度以上房室传导阻滞、新发左束支传导阻滞、心房颤动、窦性停搏、合并用药情况。术中情况包括冠状动脉病变情况、病变支数、植入支架数目、术后 TIMI 血流分级。主要不良心脏事件 (major adverse cardiovascular events, MACE) 包括全因死亡、心源性休克、恶性心律失常和再次血运重建。

1.4 统计学处理

采用 SPSS 18.0 软件进行统计分析,计量资料以 $\bar{x} \pm s$ 表示,计数资料以率表示,采用 logistic 回归分析影响住院期间 MACE 的相关因素,以 $P < 0.05$ 为差异具有统计学意义。

2 结果

2.1 患者的一般临床特征

本研究共纳入 127 例高龄 STEMI 患者,其中男性 84 例 (66.14%),女性 43 例 (33.86%); 年龄 79.31 ± 3.38 岁,最大年龄 89 岁; 住院时间 13.07 ± 7.80 天; 既往合并高血压病的患者为 50 例 (39.37%), 合并糖尿病者 27 例 (21.26%), 吸烟者 32 例 (25.2%)。入院时内生肌酐清除率 $\leq 30 \text{ ml/min}$ 的患者 5 例

(4.72%), 心功能 (Killip 分级) 3 级的患者 30 例 (23.62%), 8 例 (6.30%) 发生完全性房室传导阻滞, 3 例 (2.36%) 发生窦性停搏。术中造影提示三支病变的患者达 89 例 (70.08%), 术后 TIMI 血流 < 3 级的有 12 例 (9.45%) (表 1)。

2.2 患者住院期间主要不良心血管事件的发生情况

127 例患者中,共 22 例 (17.32%) 发生 MACE (表 2)。其中,全因死亡 4 例 (3.15%), 包括 2 例 (1.57%) 死于心室颤动, 1 例 (0.79%) 死于泵衰竭, 1 例 (0.79%) 死于多器官功能衰竭; 11 例 (8.66%) 患者发生心源性休克, 3 例 (2.36%) 接受 IABP 辅助治疗, 10 例 (7.87%) 患者在住院期间接受再次血运重建。

2.3 影响患者住院期间主要不良心血管事件的危险因素

单因素 logistic 回归分析显示,入院时心功能 (Killip 分级) ≥ 2 级、完全性房室传导阻滞、窦性停搏与高龄 STEMI 患者直接 PCI 术后住院期间 MACE 的发生相关, 差异有统计学意义 ($P < 0.05$, 表 3)。以住院期间是否发生 MACE 为应变量, 按单因素分析中具有统计学意义的因素为协变量, 采用逐步回归分析方法 ($\alpha_{\text{入}} = 0.10, \alpha_{\text{出}} = 0.15$) 进行多因素 logistic 回归分析, 结果显示心功能 (Killip 分级) ≥ 2 级和完全性房室传导阻滞是高龄 STEMI 患者直接 PCI 术后住院期间发生 MACE 的危险因素 (表 4)。

表 1 所有患者的基线临床特征

Variables	N(%)
Male	84(66.14)
Female	43(33.86)
Age	
75-79 years	77(60.63)
≥ 80 years	50(39.37)
Hypertension	50(39.37)
Diabetes mellitus	27(21.26)
Smoking	32(25.20)
Creatinine clearance rate	
31-70 mL/min	76(59.84)
$\leq 30 \text{ mL/min}$	6(4.72)
ST segment elevation in Lead AVR	7(5.51)
Cardiac function(Killip classification)	
Killip class 1	51(40.16)
Killip class 2	46(36.22)
Killip class 3	30(23.62)
Complete atrio-ventricular block	8(6.30)
Sinus arrest	3(2.36)
Atrial fibrillation	16(12.60)
Coronary lesion severity	
Single branch lesion	16(12.60)
Double branch lesion	22(17.32)
Three branch lesions	89(70.08)

3 讨论

本研究分析了高龄 STEMI 患者的临床特征以及接受直接 PCI 术后的住院期间预后情况, 并他那套了影响住院期间发生

表 2 高龄 AMI 患者 PCI 术后住院期间 MACE 的发生情况

Table 2 The incidence of postoperative MACE during hospitalization in elderly AMI patients following PCI

Events	N(%)
MACE	22(17.32)
All cause death	4(3.15)
Malignant arrhythmia	2(1.57)
Cardiogenic shock	11(8.66)
Revascularization	10(7.87)

MACE 的危险因素。不仅仅是对年轻患者,对高龄患者实施直

接 PCI 已成为急性 STEMI 的主要治疗方法之一。本研究发现该类患者住院期间 MACE 的发生率不低(17.32%),但住院期间全因死亡率较低(3.15%),提示该治疗的总体有效性和安全性尚可。单因素回归分析提示高龄患者住院期间 MACE 的主要危险因素包括心功能(Killip 分级) ≥ 2 级、完全性房室传导阻滞和窦性停搏,而多因素回归分析显示心功能(Killip 分级) ≥ 2 级($p=0.0899$, $OR=0.592$)、完全性房室传导阻滞($P=0.0325$, $OR=0.193$)是高龄 STEMI 患者直接 PCI 术后住院期间 MACE 的危险因素,其中影响较大的是心功能情况。窦性停搏在多因素回归分析中并不是 MACE 的危险因素,这可能与本研究中窦性停搏的发生率较低(2.36%),患病人数较少(3 例)有关。

表 3 高龄 AMI 患者 PCI 术后住院期间 MACE 的单因素 Logistic 回归分析

Table 3 Single factor Logistic regression analysis of MACE during hospitalization in elderly AMI patients following PCI

Variables	Parameter Estimate	Standard Error	P	Odds Ratio	95% CI
Male	0.1335	0.4892	0.7849	1.143	0.438 2.981
75-79 years	0.0948	0.3619	0.7934	1.099	0.541 2.235
Killip class ≥ 2	-0.5025	0.3012	0.0952	0.605	0.335 1.092
Hypertension	-0.2914	0.2027	0.1504	0.747	0.502 1.112
Diabetes Mellitus	1.1391	0.7761	0.1422	3.124	0.682 14.300
Smoking	0.4925	0.5952	0.4080	1.636	0.510 5.254
CCR 31-70ml/min	0.4053	0.4285	0.3442	1.500	0.648 3.474
ST segment elevation in AVR	-0.9268	0.7504	0.2168	0.396	0.091 1.723
CAVB	-1.7248	0.7520	0.0218	0.178	0.041 0.778
Sinus arrest	-2.3417	1.2488	0.0608	0.096	0.008 1.112
Atrial Fibrillation	-0.5436	0.6322	0.3898	0.581	0.168 2.005
Double branch lesion	-0.4055	1.2715	0.7498	0.667	0.055 8.057
Three branch lesions	-1.4040	1.0647	0.1873	0.246	0.030 1.979

Note: CCR: Creatinine clearance rate; CAVB: Complete atrio-ventricular block.

STEMI 急性期心功能不全通常由心肌损害、心律失常或机械性并发症引起,并使这些患者的近期和远期预后不佳^[7-9]。Gharacholou 等^[10]对 5745 例患者的对照研究显示与年轻患者相比,高龄患者拥有较高的心功能 Killip 分级,其住院期间临床事件的发生率也较高,这与本研究的结果一致。Shiraishi 等^[11]的研究也发现与 Killip 1 级的患者相比,Killip 2-4 级的患者发生心源性休克、心力衰竭和心室颤动所致死亡的可能性更大,死亡率更高,也提示 Killip 分级较高的患者预后更差。纳入

3202 例患者的 HORIZONS-AMI 研究^[12]也表明 Killip ≥ 2 级是接受直接 PCI 治疗的急性 STEMI 患者再梗塞和死亡的独立预测因子。同样地,不管是对于 NSTEMI 还是 STEMI,Killip 分级也是与急性心肌梗死后的远期预后显著相关的^[13]。本研究的对象均为 75 岁以上的高龄 STEMI 患者,心脏功能对于其预后可能更加重要,因此 Killip 分级作为独立危险因素对其住院期间的预后影响最为显著。

急性 STEMI 时, 完全性房室传导阻滞的发生率约 7%^[14]。完全性房室传导阻滞患者院内和晚期病死率均高于房室传导功能正常患者^[15,16]。Jim 等^[17]对 546 例患者的回顾性分析显示高龄、CAVB 和束支传导阻滞都是下壁心肌梗死患者住院期间预后不良的独立预测因素。对照研究也发现急性下壁心肌梗死的患者中, CAVB 多发生在高龄和梗死面积较大的患者, 伴有 CAVB 的患者院内死亡率显著升高^[18]。Malla 等^[19]发现急性下壁合并右室心肌梗死的患者发生 CAVB 的几率更高, 其死亡

率和住院期间并发症的发生率较不合并右室心肌梗死的下壁心肌梗死患者也显著升高。Hreybe 等^[20]也发现下壁或后壁 AMI 的患者更易发生 CAVB, 也是住院期间死亡的显著预测因子。本研究中, 8 例发生 CAVB 的患者中有 6 例为急性下壁心肌梗死, 1 例为急性后壁心肌梗死, 仅 1 例为急性前壁心肌梗死, 而且所有患者均为高龄患者, 结果与上述研究相符, 提示 CAVB 为高龄患者住院期间预后的独立危险因素。

表 4 高龄 AMI 患者 PCI 术后住院期间 MACE 非条件多因素 Logistic 回归分析

Table 4 Multi-factor logistic regression analysis of MACE during hospitalization in elderly AMI patients following PCI

Label	Parameter Estimate	Standard Error	P ^a	Odds Ratio	95% CI	
Killip class ≥ 2	-0.5249	0.3095	0.0899	0.592	0.323	1.085
CAVB	-1.6467	0.7702	0.0325	0.193	0.043	0.872

Note: The inclusion criteria of the stepwise regression was P=0.10; exclusion criteria was P=0.15. CAVB: Complete atrio-ventricular block.

综上所述, 心功能(Killip 分级) ≥ 2 级和完全性房室传导阻滞可能是影响高龄 STEMI 患者行直接 PCI 术后住院期间主要不良心脏事件的独立危险因素, 对于指导高龄 STEMI 患者的治疗和判断预后具有一定的临床意义。但由于本研究是单中心回顾性研究, 且患者例数不多, 结果可能存在一定偏倚, 尚需更多大样本量的前瞻性随机对照研究以进一步证实。

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