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经血栓抽吸导管应用替罗非班及硝普钠对急性前壁 ST 段抬高型心肌梗死患者急诊 PCI 治疗效果的影响 *

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摘要 目的:探讨经血栓抽吸导管应用替罗非班及硝普钠对急性前壁 ST 段抬高型心肌梗死患者急诊经皮冠状动脉介入(PCI)治疗效果的影响。**方法:**选取 2013 年 5 月~2018 年 5 月期间我院收治的急性前壁 ST 段抬高型心肌梗死患者 80 例,根据随机数字表法分为对照组($n=40$,血栓抽吸术后行 PCI 治疗)和研究组($n=40$,血栓抽吸术后,经导管注入替罗非班及硝普钠后再行 PCI 治疗),比较两组患者心电图 ST 段回落变化、心肌梗死溶栓治疗(TIMI)血流分级情况、心功能指标及不良心血管事件发生率。**结果:**研究组完全回落发生率高于对照组($P<0.05$);两组部分回落、无回落发生率比较差异无统计学意义($P>0.05$)。对照组 PCI 术后 TIMI 血流分级为 3 级的例数少于研究组($P<0.05$)。两组患者术后 7 d 左室收缩末期内径(LVESD)、左室舒张末期内径(LVEDD)降低,且研究组低于对照组($P<0.05$);左室射血分数(LVEF)升高,且研究组高于对照组($P<0.05$)。术后 6 个月内研究组不良心血管事件总发生率为 7.50%(3/40),低于对照组的 25.00%(10/40)($P<0.05$)。**结论:**急性前壁 ST 段抬高型心肌梗死患者经血栓抽吸导管应用替罗非班及硝普钠后行 PCI,可提高心功能、心肌灌注状态及心电图 ST 段完全回落率,并减少不良心血管事件的发生率。

关键词:血栓抽吸;替罗非班;硝普钠;急性前壁 ST 段抬高型心肌梗死;经皮冠状动脉介入;疗效

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Effects of Tirofiban and Sodium Nitroprusside on the Effect of Emergency PCI in Patients with Acute Anterior ST Segment Elevation Myocardial Infarction Treated with Thrombus Aspiration Catheter*

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ABSTRACT Objective: To investigate the effect of tirofiban and sodium nitroprusside on the emergency percutaneous coronary intervention (PCI) in patients with acute anterior ST segment elevation myocardial infarction treated with thrombus aspiration catheter. **Methods:** From May 2013 to May 2018, 80 patients with acute anterior wall ST segment elevation myocardial infarction in our hospital were selected, they were divided into control group ($n=40$, PCI after thrombus aspiration) and study group ($n=40$, PCI after combining tirofiban and sodium nitroprusside after thrombus aspiration) according to the method of random number table. The changes of ST segment depression of electrocardiogram thrombolytic therapy for myocardial infarction (TIMI) blood flow classification, cardiac function index and incidence of adverse cardiovascular events in the two groups were compared. **Results:** The incidence of complete regression in the study group was higher than that in the control group ($P<0.05$). There was no significant difference in the incidence of partial regression and no regression between the two groups ($P>0.05$). The number of patients with TIMI blood flow grade 3 after PCI in the control group was less than that in the study group($P<0.05$). The left ventricular end systolic diameter (LVESD) and left ventricular end diastolic diameter (LVEDD) in the two groups at 7d after operation decreased, and those in the study group were lower than those in the control group ($P<0.05$). The left ventricular ejection fraction (LVEF) increased, and that in the study group was higher than that in the control group ($P<0.05$). The total incidence of adverse cardiovascular events in the study group at 6 months after operation was 7.50%(3/40), which was lower than 25.00%(10/40) in the control group ($P<0.05$). **Conclusion:** PCI with tirofiban and sodium nitroprusside in patients with acute anterior ST segment elevation myocardial infarction can improve the cardiac function, myocardial perfusion status and ST segment complete fall rate of electrocardiogram, and it can reduce adverse cardiac events.

Key words: Thrombus aspiration catheter; Tirofiban; Sodium nitroprusside; Acute anterior ST segment elevation myocardial infarction; Percutaneous coronary intervention; Efficacy

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前言

急性心肌梗死是临床上常见的心血管疾病,临床根据急性心肌梗死的病理特点将其分为急性非 ST 段抬高型心肌梗死和急性 ST 段抬高型心肌梗死^[1,2]。其中急性前壁 ST 段抬高型心肌梗死主要是由于冠状动脉出现硬化病变导致心肌出现严重缺血所致^[3]。经皮冠状动脉介入治疗(Percutaneous coronary intervention, PCI) 是治疗急性前壁 ST 段抬高型心肌梗死最有效的治疗方法,可快速恢复心肌供血,从而改善患者心功能^[4,5]。现临床为保证手术效果,多于 PCI 前给予血栓抽吸术,以保证急诊 PCI 手术的顺利进行。然而有不少患者,尤其是血栓负荷病变较高者,因其存在微血管痉挛、冠状动脉远端微循环栓塞及内皮功能障碍等,往往会导致无复流现象,影响 PCI 术后效果^[6,7]。替罗非班具有抗血小板作用,可减少血栓负荷以及继发性远端微循环栓塞^[8]。硝普钠则具有改善机体微循环和内皮功能等作用^[9]。现临床有关经血栓抽吸导管应用替罗非班及硝普钠治疗急性前壁 ST 段抬高型心肌梗死患者的相关报道尚不多见,本研究就此展开分析,以期对临床治疗急性前壁 ST 段抬高型心肌梗死提供参考。

1 资料与方法

1.1 基线资料

选取我院于 2013 年 5 月~2018 年 5 月期间收治的急性前壁 ST 段抬高型心肌梗死患者 80 例,纳入标准:(1)符合《急性 ST 段抬高型心肌梗死诊断和治疗指南》^[10]中的相关标准;至少存在一支梗死相关血管完全闭塞病变,且直径 ≥ 3.0 mm,重度血栓负荷病变,造影存在明显血栓影;(2)经影像学、心电图、心动图检查确诊;(3)均接受 PCI 治疗;(4)均为首次发病;(5)患者及其家属知情本研究且签署了同意书。排除标准:(1)合并严重肝肾功能不全者;(2)存在严重贫血及血小板减少症;(3)既往有出血倾向及出血史者;(4)近 3 个月内有严重创伤及手术史;(5)无法控制的血压、血糖水平异常;(6)精神异常无法配合研究者。上述患者根据随机数字表法分为对照组($n=40$)和研究组($n=40$),其中对照组男 21 例,女 19 例,年龄 42~69 岁,平均(51.26 ± 4.38)岁;梗死相关冠脉:左前降支 24 例,右冠状动脉 5 例,左回旋支 10 例,左主干 1 例;体质量指数 $21.6 \sim 27.3$ kg/m²,平均(24.09 ± 1.06)kg/m²。研究组男 23 例,女 17 例,年龄 40~68 岁,平均(51.60 ± 5.37)岁;梗死相关冠脉:左前降支 25 例,右冠状动脉 3 例,左回旋支 10 例,左主干 2 例;体质量指数 $22.1 \sim 26.8$ kg/m²,平均(24.34 ± 1.13)kg/m²。两组一般资料对比无差异($P>0.05$)。

1.2 方法

两组于造影前给予阿司匹林咀嚼片(Bayer Bitterfeld GmbH,注册证号 H20181144,规格:0.5 g)300 mg,氯吡格雷(赛诺菲(杭州)制药有限公司,国药准字 H20056410,规格:75 mg)600 mg 口服。经股动脉或桡动脉穿刺将动脉鞘管置入,冠脉造影后插入指引导管,采用日本瑞翁医疗株式会社 ZEEK 血栓抽吸导管在球囊预扩张之前进行血栓抽吸。ZEEK 导管头端跨过闭塞段,负压抽吸,抽吸结束后,导管采用肝素盐水冲洗,反复抽吸 2 次。对照组进行血栓抽吸术后行 PCI。研究组则在第 2 次抽吸完毕后,冲洗导管,随后向冠脉内病变处经抽吸导管注入替罗非班(Iroko Cardio Australia Pty Ltd, 国药准字 H20090786)25 μ g/kg,2 min 内推注;硝普钠(悦康药业集团股份有限公司,国药准字 H20058959,规格:50 mg(相当于无水物 43.96 mg))200 μ g,1 min 内推注。推注药物完毕后行 PCI。术后采用门诊复查的形式随访 6 个月。

1.3 观察指标

(1)于术前、术后 7 d 采用 PHILIPS 公司生产的 EnVisor 心脏彩超检测患者心功能指标,包括左室收缩末期内径(left ventricular end systolic diameter, LVESD)、左室舒张末期内径(left ventricular end diastolic diameter, LVEDD)、左室射血分数(left ventricular ejection fraction, LVEF)。(2)观察患者 PCI 后心肌梗死溶栓治疗(Thrombolytic therapy for myocardial infarction, TIMI)血流分级,TIMI 血流分级按经典标准分为 0~3 级^[11],具体如下:0 级:无造影剂通过;1 级:少量造影剂穿过,但不能使远端血管床充分造影;2 级:造影剂可使远端血管显影,但狭窄远端造影剂排空延缓,且流经狭窄段的速度较近端缓慢;3 级:造影剂排空正常,迅速充盈远端血管床,到远端血管床速度与近端的血流速度一致。(3)统计两组患者术后 6 个月内主要不良心血管事件的发生率。(4)比较两组 PCI 后 2 h 的心电图 ST 段回落变化:根据 Schroder's 分级,回落 $<30\%$ 则为无回落,回落在 $30\% \sim 70\%$ 则为部分回落,回落 $>70\%$ 则为完全回落。

1.4 统计学方法

研究数据采用 SPSS25.0 软件进行统计分析,计量资料用均数 $\pm$ 标准差($\bar{x} \pm s$)表示,组间比较采用独立样本 t 检验,组内比较采用配对 t 检验;计数资料用%表示,组间比较 χ^2 检验。以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 心电图 ST 段回落变化比较

研究组完全回落发生率高于对照组($P<0.05$);两组部分回落、无回落发生率比较差异无统计学意义($P>0.05$);详见表 1。

表 1 心电图 ST 段回落变化比较 n(%)
Table 1 Comparison of ST segment fall of electrocardiogram n(%)

Groups	Complete regression	Partial regression	No regression
Control group($n=40$)	18(45.00)	12(30.00)	10(25.00)
Study group($n=40$)	29(72.50)	7(17.50)	4(10.00)
χ^2	6.249	1.732	3.127
P	0.013	0.189	0.078

2.2 TIMI 血流分级情况比较

对照组有 28 例(70.00%)患者 PCI 术后 TIMI 血流分级为 3 级,研究组有 37 例(92.50%)患者 PCI 术后 TIMI 血流分级为 3 级,差异具有统计学意义($\chi^2=6.646, P=0.010$)。

2.3 心功能指标比较

两组患者术前 LVESD、LVEDD、LVEF 比较差异无统计学意义($P>0.05$);两组患者术后 7 d 的 LVESD、LVEDD 降低,且研究组低于对照组($P<0.05$);LVEF 升高,且研究组高于对照组($P<0.05$);详见表 2。

表 2 心功能指标比较($\bar{x} \pm s$)

Table 2 Comparison of cardiac function indexes ($\bar{x} \pm s$)

Groups	LVESD(mm)		LVEDD(mm)		LVEF(%)	
	Preoperative	7 d after operation	Preoperative	7 d after operation	Preoperative	7 d after operation
Control group(n=40)	58.21± 5.29	49.05± 5.23*	62.27± 4.25	55.16± 5.23*	36.90± 3.25	42.19± 4.33*
Study group(n=40)	57.87± 5.22	43.52± 4.22*	61.93± 4.19	49.65± 5.21*	37.51± 4.29	47.06± 4.21*
t	0.289	19.362	0.360	23.561	0.717	9.358
P	0.773	0.000	0.720	0.000	0.476	0.000

Note: compared with that preoperative, * $P<0.05$.

2.4 不良心血管事件发生情况比较

低于对照组的 25.00%($P<0.05$);详见表 3。

术后 6 个月内研究组不良心血管事件总发生率为 7.50%,

表 3 不良心血管事件发生情况比较 n(%)

Table 3 Comparison of adverse cardiovascular events n(%)

Groups	Persistent angina	Recurrence of myocardial infarction	Sudden cardiac death	Revascularization again	Total incidence rate
Control group(n=40)	4(10.00)	2(5.00)	1(2.50)	3(7.50)	10(25.00)
Study group(n=40)	1(2.50)	0(0.00)	1(2.50)	1(2.50)	3(7.50)
χ^2					4.502
P					0.034

3 讨论

急性前壁 ST 段抬高型心肌梗死临床较为常见,而急诊 PCI 可有效开通阻塞血管,挽救坏死心肌^[12],但不少研究指出有部分患者在 PCI 术后会出现无复流现象,无复流是指靶血管开通后,冠状动脉向前血流明显减慢或 TIMI 血流分级 0~2 级^[13,14]。PCI 发生无复流的机制主要在于 PCI 术中球囊扩张,将血栓挤压至远端血管或微小血管,从而造成无复流现象^[15,16]。无复流可导致患者心肌组织得不到有效灌注,产生心功能损害,导致患者远期心脏不良事件发生率增高^[17]。2013 美国心脏病学院/美国心脏协会(ACC/AHA)的急性 ST 段抬高型心肌梗死诊治指南首次将血栓抽吸术纳入到 PCI 术治疗过程中^[18],但仍有研究人员指出单纯的血栓抽吸术无法有效清除血栓,仍有部分微小血栓残留在远端血管^[19]。由于血小板在微循环血栓的早期形成过程中起关键作用,理论上抗血小板药物可减轻微血栓的形成,从而改善心肌组织水平再灌注^[20]。故临床逐渐考虑将一些抗血小板药物应用于 PCI 术中以改善患者预后。替罗非班是目前临床较为常用的一种抗血小板凝集药物,硝普钠则是一种血管扩张剂,两种药物均可促进血液微循环的改善。

本次研究结果显示,研究组的 TIMI 血流分级为 3 级的例数、ST 段完全回落发生率、心功能改善情况均优于对照组,提示急性前壁 ST 段抬高型心肌梗死患者经血栓抽吸导管应用替罗非班及硝普钠后行 PCI,可有效改善患者心肌灌注状态及心电图 ST 段完全回落率,究其原因,由于心肌梗死患者的病变血

管往往有较多的动脉粥样硬化斑块碎片及较高的血栓负荷,而血栓抽吸可直接抽吸悬浮血栓和致栓物质如炎症介质和血管活性物质等,对于罪犯血管血栓负荷重、直径较大的患者效果确切^[21,22]。而针对微小的远端血管血栓,单纯的血栓抽吸无法彻底清除干净,替罗非班的药物实质为 GP II b/IIIa 受体抑制剂,可阻止血小板凝集的共同通路,进而抑制血小板聚集^[23,24]。而硝普钠可抑制血管痉挛,同时还具有极强的动静脉血管扩张作用,其进入血浆后可释放一氧化氮,在血管内形成缓激肽,上调胞浆环磷鸟苷,激活鸟苷酸环化酶,发挥血管扩张作用,进而舒张血管平滑肌,改善冠状动脉血流^[25,26]。此外,血栓抽吸导管在 PCI 中可短时间内明显减少血栓负荷,并提高替罗非班及硝普钠的局部药物浓度,发挥更好的抗血小板作用,进一步减轻病变处的血栓负荷,改善患者心功能^[27,28]。此外,术后 6 个月内研究组不良心血管事件总发生率 7.50%低于对照组 25.00%,提示经血栓抽吸导管应用替罗非班及硝普钠后行 PCI,安全有效,可减少不良心血管事件发生率,这可能与与抗血小板药物可达到血管远端,溶解微小血栓有关,最大限度挽救梗死心肌,降低不良心血管事件发生率^[29,30]。

综上所述,急性前壁 ST 段抬高型心肌梗死患者经血栓抽吸导管应用替罗非班及硝普钠后行 PCI,在改善患者心功能、心肌灌注状态及心电图 ST 段完全回落率方面效果显著,还可减少不良心血管事件发生率,具有较高的临床应用价值。

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