

· 心脏介入 Cardiac intervention ·

药物洗脱支架联合药物涂层球囊在冠状动脉
左主干分叉病变中的应用

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【摘要】目的 评价药物洗脱支架(DES)联合药物涂层球囊(DCB)治疗冠状动脉左主干(LM)分叉病变的临床效果。**方法** 回顾性分析 2016 年 7 月至 2017 年 7 月采用 DES 联合 DCB 治疗的 8 例 LM 分叉病变患者临床资料。8 例患者均接受 LM 和左前降支病变处 DES 治疗,左回旋支开口处 DCB 治疗,其中 6 例手术在血管内超声引导下进行。术后即刻造影评价病变血管通畅情况,术后 6 个月随访再狭窄率及 6 个月内严重临床事件发生率。**结果** DES 联合 DCB 治疗 LM 分叉病变再狭窄率低[LM (8.4 ± 5.3)%, 左前降支 (18.2 ± 5.0)%, 左回旋支 (30.5 ± 16.5)%]。术后所有患者未发生严重临床事件。**结论** DES 联合 DCB 介入治疗 LM 分叉病变安全有效。

【关键词】 左主干分叉病变; 药物涂层球囊; 药物洗脱支架

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【Abstract】Objective To evaluate the clinical efficacy of drug-eluting stent(DES) combined with drug-coated balloon(DCB) in the treatment of coronary lesions located at the left main(LM) bifurcation site. **Methods** The clinical data of 8 patients with LM bifurcation lesions, who were treated with DES combined with DCB during the period from July 2016 to July 2017, were retrospectively analyzed. In all 8 patients, both coronary LM and left anterior descending(LAD) branch lesions were treated with DES, and the lesions located at the ostium of left circumflex(LCX) branch were treated with DCB, among whom the operation was performed under the guidance of intravascular ultrasound(IVUS) in 6 patients. Immediate postoperative angiography was adopted to evaluate the patency of the diseased vessels. The follow-up restenosis rate at 6 months after operation and the serious clinical events occurred within 6 months after operation were recorded. **Results** The restenosis rate of DES combined with DCB for the treatment of coronary lesions located at LM bifurcation site was low. The restenosis rates of LM bifurcation, LAD and LCX lesions were (8.4 ± 5.3)%, (18.2 ± 5.0)% and (30.5 ± 16.5)% respectively. No serious procedure-related complications occurred in all patients. **Conclusion** DES combined with DCB is a safe and effective interventional treatment for coronary lesions located at LM bifurcation site. (J Intervent Radiol, 2020, 29: 350-354)

【Key words】 left main bifurcation lesion; drug-coated balloon; drug-eluting stent

无保护性冠状动脉左主干(left main, LM) 在严重狭窄,冠状动脉造影示狭窄程度 $\geq 50\%$,
分叉病变指 LM 血管、分支血管同时或分别存 同时不存在通畅的血管桥或自身右向左良好侧

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支循环的病变。严重 LM 分叉病变会减少心肌大部分血流,导致严重心脏不良事件^[1]。冠状动脉旁路移植术(coronary artery bypass grafting, CABG)一直作为 LM 病变首选治疗方法^[2]。随着介入技术水平提高和支架改良,有相关研究证实经皮冠状动脉介入治疗(percutaneous coronary intervention, PCI)应用于无保护性 LM 分叉病变可行,且 PCI 和 CABG 术后患者死亡、卒中和心肌梗死发生率复合终点差异无统计学意义^[3-4]。因此,PCI 可作为一种有效且创伤较小的方案替代 CABG。临床上主要通过单支架或双支架治疗无保护性 LM 分叉病变,研究证实单支架治疗临床效果优于双支架,但约 1/3 患者在许多情况下仍需在侧支植入第 2 枚支架^[5-6]。LM 分叉病变双支架治疗手术时间长,会导致住院率升高和心血管不良事件发生,不利于患者远期预后^[7]。近年药物涂层球囊(drug coated balloon, DCB)治疗在支架内再狭窄(in-stent restenosis, ISR)得到广泛认可^[8],2014 年欧洲心脏病学会指南推荐其作为 ISR 治疗首选策略^[9]。研究证实 DCB 联合药物洗脱支架(drug-eluting stent, DES)能安全有效地应用于小血管分叉病变介入治疗^[10-11]。目前也有针对 LM 分叉病变的个案病例研究报道,结果表明 DES 联合 DCB 可有效降低介入治疗再狭窄率^[12]。本研究对 8 例 LM 真性分叉病变患者进行 DES 联合 DCB 治疗,并予以 6 个月血管造影随访。

1 材料与方法

1.1 患者一般情况

回顾性分析 2016 年 7 月至 2017 年 7 月上海市普陀区中心医院采用 DES 联合 DCB 治疗的 8 例 LM 分叉病变患者临床资料。其中男 3 例,女 5 例,平均年龄 71.3 岁;不稳定型心绞痛 4 例,稳定型心绞痛 4 例,伴高血压 6 例,伴糖尿病 3 例(表 1)。

表 1 8 例 LM 分叉病变患者一般情况

参数	数据
年龄 / 岁	71.3±7.1
女性 / n	5
吸烟史 / n	0
伴不稳定型心绞痛 / n	4
伴高血压 / n	6
伴糖尿病 / n	3
肌酐 / (μmol/L)	102.8±49.9
血糖 / (mmol/L)	5.9±2.3
糖化血红蛋白 / %	6.4±1.1
左心室射血分数 / %	58.3±6.5

1.2 手术方法和随访

对 8 例患者 LM 和左前降支(left anterior descending coronary artery, LAD)病变行 DES 治疗,左回旋支(left circumflex artery, LCX)开口处行 DCB 治疗。具体手术操作:LCX 和 LAD 分别置入工作导丝,用普通球囊对狭窄血管作预扩张,狭窄血管充分扩张(狭窄<50%)后于 LCX 送入 DCB 作扩张,平均扩张 60 s;于 LAD 植入 DES,平均扩张 10 s;撤出 LCX 导丝,重新穿网眼送入另一根导丝,采用双球囊对吻技术同时扩张分叉病变。

通过定量冠状动脉造影(quantitative coronary angiography, QCA)技术对 8 例患者术前、术后、随访时造影结果作定量分析,其中 6 例手术在血管内超声(IVUS)导引下进行,并通过 iReview 软件对病变参数进行分析。术后即刻造影评价病变血管通畅情况,术后 6 个月随访再狭窄率及 6 个月内严重临床事件发生率。

2 结果

患者 LM、LAD、LCX 术前、术后、随访时造影影像见图 1。QCA 分析结果显示,DES 联合 DCB 治疗 LM 分叉病变再狭窄率低[LM (8.4±5.3)%,左前降支(18.2±5.0)%,左回旋支(30.5±16.5)%],见表 2。iReview 软件对病变参数分析结果见表 3。所有患者未发生相关严重临床事件。

表 2 术前、术后和随访时 QCA 分析比较 n=8, $\bar{x} \pm s$

参数	术前	术后	随访
LM			
SRD/%	35.9±25.1	6.2±4.2 [#]	8.4±5.3 ^{*※}
SRA/%	52.6±31.9	11.9±7.8 [#]	15.8±9.5 ^{*※}
MLD/mm	2.4±1.1	3.8±0.4 [#]	3.5±0.3 ^{*※}
LL/mm	5.8±2.0	—	—
LAD			
SRD/%	79.7±6.2	14.7±3.0 [#]	18.2±5.0 ^{*※}
SRA/%	95.5±2.4	27.2±5.0 [#]	32.3±8.5 ^{*※}
MLD/mm	0.5±0.2	2.8±0.3 [#]	2.7±0.4 ^{*※}
LL/mm	19.6±11.2	—	—
DESS/mm	3.3±0.2	—	—
EP/atm	11.1±1.3	—	—
LCX			
SRD/%	87.1±9.0	19.8±10.6 [#]	30.5±16.5 ^{*※}
SRA/%	97.2±2.6	34.6±16.6 [#]	49.0±19.5 ^{*※}
MLD/mm	0.3±0.2	1.8±0.4 [#]	1.5±0.4 ^{*※}
LL/mm	8.5±4.0	—	—
DCBS/mm	2.6±0.3	—	—
EP/atm	9.9±2.4	—	—

SRD: 直径狭窄率; SRA: 面积狭窄率; MLD: 最小管腔直径; LL: 病变长度; DESS: DES 尺寸; EP: 扩张压力; DCBS: DCB 尺寸; [#] 术前与术后比较, $P<0.05$; ^{*} 术前与随访比较, $P<0.05$; [※] 术后与随访比较, $P<0.05$

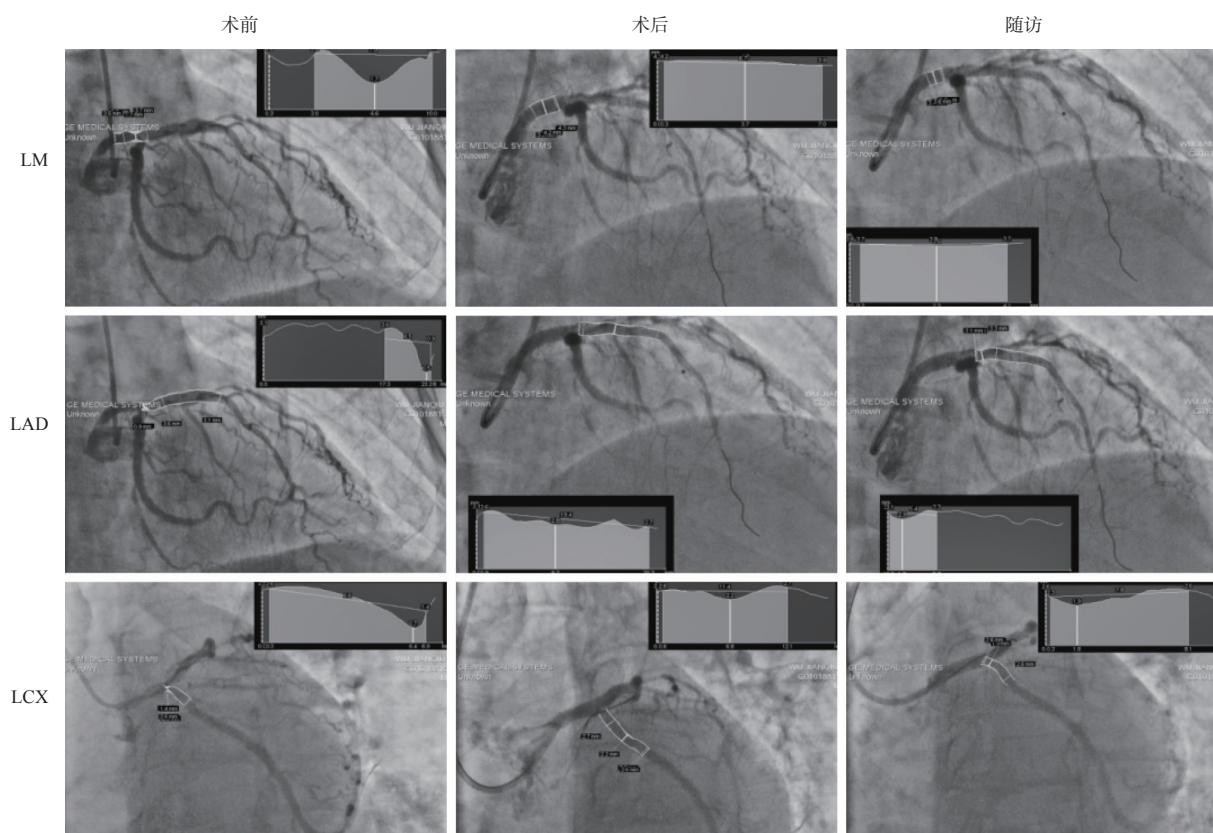


图 1 LM 分叉病变患者 LM、LAD、LCX 术前、术后、随访时造影影像

表 3 IVUS 术前术后病变参数比较

参数	术前	术后	<i>n</i> =6 <i>P</i> 值
LM			<0.05
MLA/mm ²	6.6±1.6	10.0±0.7	
MLD/mm	2.6±0.3	3.3±0.1	
LAD			<0.05
MLA/mm ²	2.7±0.8	8.0±1.0	
MLD/mm	1.6±0.2	3.0±0.2	
LCX			<0.05
MLA/mm ²	2.6±0.3	4.2±1.1	
MLD/mm	1.6±0.1	2.1±0.3	

MLA: 最小管腔面积; MLD: 最小管腔直径

3 讨论

LM 分叉病变属于高危复杂 PCI 手术病变之一, 其治疗最初首选 CABG。近年 CABG 与 PCI 治疗 LM 分叉病变比较研究发现, 两者术后远期随访临床预后无明显差异^[3-4]; PCI 手术风险较低, 但血管造影远期随访再狭窄率高, 再次血运重建率高, 心源性死亡发生率较高^[13]。DES 发展是 PCI 治疗 LM 分叉病变的重大突破之一, 与最初裸金属支架相比, 可显著降低 ISR 和靶病变再次血运重建发生^[14-15]。第一代 DES 介入治疗虽能极大程度降低 ISR 发生, 但晚期和极晚期支架内血栓形成累积发生率业已披露^[16], 这也是早期 LM 分叉病变介入治疗后远期预

后不良的一重要因素。第二代 DES 与第一代 DES 相比, 减少支架内血栓形成更具优势^[17-18]。近期有 LM 分叉病变临床试验研究采用新一代 DES 治疗, 其具有更低的支架内血栓发生率及快速内皮化特点, 远期疗效已与 CABG 无显著差异。目前临床上 PCI 治疗 LM 真性分叉病变方法仍以单支架或双支架介入为主, 但这两种方法并未降低 ISR 发生率, 可能是血管解剖学因素(近端病变血管长度更长, 分裂角度更广)、血流动力学(局部血流量大)因素、支架变形和药物覆盖受破坏等因素所造成^[19-22]。其中单侧支架术后血栓形成可能是由分叉病变中残留的支架支柱突出所致^[23], 且单支架术仅对 LM-LAD 植入支架, LCX 会不同程度受术后斑块挤压, 造成狭窄程度加重, 最终可能导致完全闭塞。而双侧支架介入则对 LAD、LCX 均植入支架, 使血管再通, 但两侧血管均植入支架的操作复杂, 加上 LM 分叉角度大, 可能导致 LM 分叉口堆积支架钢丝, 对血流量影响和血管损伤较大, 且会影响支架内皮化。与常规血管造影导引介入治疗相比, IVUS 导引 PCI 能降低无保护 LM 冠状动脉狭窄患者远期死亡率^[24-25]。IVUS 可识别近端和远端参考点并测量两位置间距离, 以

更好地确定病变复杂性,选择合适的支架直径和长度,从而避免将支架边缘植入斑块,还可评估支架术后支架贴壁情况,进一步改善支架植入术疗效,优化最终结果^[26]。

本研究对 8 例 LM 真性分叉病变患者进行 DES 联合 DCB 治疗,术后 6 个月血管造影结果显示病变再狭窄率更低,原因可能与采取新型 DES 并在 IVUS 导引下对 LAD 病变行 PCI 术有关。联合 DCB 治疗 LCX 病变既可有效降低 LCX 再狭窄发生,也能减轻双支架植入术不良后果;同时也表明 DCB 治疗不仅对小血管疾病占有优势^[27-28],也可应用于 LM 分叉病变等大血管病变。DES 联合 DCB 术对介入医师的最大挑战,可能在于 DCB 治疗后出现严重冠状动脉夹层事件,但相关研究发现该并发症发生率仅为 5.9%,且远期随访预后良好^[29-30]。因此,DES 联合 DCB 治疗 LM 分叉病变可能是一种安全有效的新型介入治疗方法。

本研究病例总数少,后期还需大规模随机对照试验研究及更长期随访验证该治疗策略的安全性和有效性。

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• 病例报告 Case report •

PICC 导管继发性异位并打结 1 例的护理体会

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【关键词】 PICC 导管; 继发性异位; 打结; 护理体会

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Secondary dislodgment complicated by knotting formation of peripherally inserted central catheter: nursing experience in one case MA Junxia, LU Xiaoyi, ZHOU Shuping. Department of Oncology, East Branch of Shanghai Sixth People's Hospital, Shanghai 201306, China

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【Key words】 peripherally inserted central catheter; secondary dislodgment; knotting formation; nursing experience

经外周置入的中心静脉导管(peripherally inserted central catheter, PICC)具有留置时间长、安全可靠、成功率高等优点,在临床上被广泛用于长期连续输液治疗、肠外营养及恶性肿瘤的静脉化疗给药。静脉化疗对血管损伤及局部刺激

很大, PICC 导管可以减少患者反复穿刺的痛苦及对血管的伤害,恶性肿瘤患者尤为适用^[1]。但在 PICC 导管的留置以及维护期间也会有相关并发症的出现,其中就包括导管继发性异位。导管继发性异位是指 PICC 导管置入时末端位

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