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血管内支架介入成形术对老年缺血性脑血管病患者的神经功能、动脉血流速度及预后的影响*

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摘要 目的：探讨血管内支架介入成形术对老年缺血性脑血管病（ICVD）患者的神经功能、动脉血流速度及预后的影响。**方法**：选取2018年3月~2019年4月期间我院收治的117例老年ICVD患者作为研究对象，根据随机数字表法分为对照组（n=58）和研究组（n=59），其中对照组患者予以保守药物治疗，研究组患者予以血管内支架介入成形术治疗，比较两组患者疗效、神经功能、动脉血流速度、预后及并发症情况。**结果**：研究组治疗6个月后的临床总有效率为91.53%（54/59），高于对照组的72.41%（42/58）（*P*<0.05）。两组患者治疗后1个月、治疗后3个月、治疗后6个月美国国立卫生研究院卒中量表（NIHSS）评分均下降（*P*<0.05），且研究组低于对照组（*P*<0.05）。两组患者治疗后6个月大脑中动脉、基底动脉、颈内动脉血流速度均升高（*P*<0.05），且研究组高于对照组（*P*<0.05）。两组患者治疗后1个月、治疗后3个月、治疗后6个月改良Rankin量表（mRS）评分呈下降趋势（*P*<0.05），且研究组低于对照组（*P*<0.05）。两组患者并发症发生率对比未见统计学差异（χ^2=2.261，*P*=0.133）。**结论**：老年ICVD患者经血管内支架介入成形术治疗后的疗效显著，可有效改善患者神经功能、动脉血流速度及预后，且不增加并发症发生率，具有较高的临床应用价值。

关键词：血管内支架介入成形术；老年；缺血性脑血管病；神经功能；动脉血流速度；预后

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The Effect of Endovascular Stent Angioplasty on Neurological Function, Arterial Blood Flow Velocity and Prognosis in Elderly Patients with Ischemic Cerebrovascular Disease*

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ABSTRACT Objective: To investigate the effect of endovascular stent angioplasty on the neurological function, arterial blood flow velocity and prognosis in elderly patients with ischemic cerebrovascular disease (ICVD). **Methods:** 117 elderly patients with ICVD who were admitted to our hospital from March 2018 to April 2019 were selected as the study objects, they were divided into control group (n=58) and study group (n=59) according to the method of random number table. The patients in the control group were treated with conservative drugs. The patients in the study group were treated with intravascular stent angioplasty. The efficacy, neurological function, arterial blood flow velocity, prognosis and complications of the two groups were compared. **Results:** The total clinical effective rate of the study group at 6 months after treatment was 91.53% (54/59), which was higher than 72.41% (42/58) of the control group (*P*<0.05). The scores of National Institutes of Health Stroke Scale (NIHSS) in the two groups decreased at 1 month after treatment, 3 months after treatment and 6 months after treatment (*P*<0.05), the scores in the study group were lower than those in the control group (*P*<0.05). The blood flow velocity of the middle cerebral artery, the basilar artery and the internal carotid artery in the two groups increased at 6 months after treatment (*P*<0.05), and those in the study group were higher than those in the control group (*P*<0.05). The modified Rankin scale (mRS) scores of the two groups showed a decreasing trend at 1 month after treatment, 3 months after treatment, 6 months after treatment (*P*<0.05), and that in the study group was higher than that in the control group (*P*<0.05). There was no significant difference in the incidence of complications between the two groups (χ^2=2.261, *P*=0.133). **Conclusion:** After the treatment of intravascular stent angioplasty, the curative effect of old patients with ICVD is significant, which can effectively improve the nerve function, arterial blood flow velocity and prognosis of patients, it does not increase the incidence of complications, it has high clinical application value.

Key words: Intravascular stent angioplasty; Elderly; Ischemic cerebrovascular disease; Neurological function; Arterial blood flow velocity; Prognosis

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前言

缺血性脑血管病（Ischemic cerebrovascular disease，ICVD）是指为大脑供应血液的血管出现各种病变，引起管腔狭窄或堵塞，进而引起一系列临床综合征的疾病[1,2]。近年来，随着人们生活节奏的加快、老龄化的加剧及生活习惯的改变，ICVD 的发病率呈逐年上升趋势，已成为我国面临的主要公共卫生问题之一[3,4]。老年患者由于身体各项机能下降，且通常合并多种基础疾病，因此其身体恢复能力远低于年轻群体[5]。目前临床针对该病的治疗有手术和保守药物治疗，其中保守药物治疗主要以降血脂、抗血栓及抗凝治疗为主，可获得一定的治疗效果，但部分患者治疗后易复发，且长期用药不良反应较大[6,7]。血管内支架介入成形术在局部麻醉下即可完成，疗效显著，预后效果佳，优势显著[8]。本研究通过采用血管内支架介入成形术对我院收治的部分老年 ICVD 患者进行治疗，现报道如下。

1 资料与方法

1.1 一般资料

选取 2018 年 3 月 ~2019 年 4 月期间我院收治的 117 例老年 ICVD 患者作为研究对象。纳入标准：(1)符合《中国各类主要脑血管病诊断要点 2019》[9]中的诊断标准，均经 MRI 或颅脑 CT 影像证实为 ICVD；(2)年龄≥ 60 岁；(3)行介入手术者均符合血管内支架介入成形术治疗的入选标准[10]；(4)病变血管均为单支血管；(5)患者均对本研究所用药物无禁忌症；(6)患者家属知情本研究且签署同意书。排除标准：(1)近 3 个月内有颅脑出血；(2)既往有颅脑外科手术者；(3)合并有动脉瘤、动静脉瘘、动静脉畸形者；(4)颅脑肿瘤、卒中后严重致残者；(5)脑疝、脑干功能衰竭者。上述患者根据随机数字表法分为对照组(n=58，保守药物治疗)和研究组(n=59，血管内支架介入成形术治疗)，其中对照组男 32 例，女 26 例，年龄 60~78 岁，平均(69.28±2.51)岁；病变血管：颈内动脉重度狭窄 17 例，大脑中动脉水平段重度狭窄 20 例，基底动脉重度狭窄 21 例；合并高血压 10 例、糖尿病 8 例、高脂血症 6 例。研究组男 30 例，女 29 例，年龄 61~76 岁，平均(70.08±3.27)岁；病变血管：颈内动脉重度狭窄 19 例，大脑中动脉水平段重度狭窄 22 例，基底动脉重度狭窄 18 例；合并糖尿病 9 例、高血压 12 例、高脂血症 8 例。两组一般资料对比无差异(P>0.05)，临床资料均衡可比。此研究已通过我院伦理学委员会批准。

1.2 方法

对照组予以保守药物治疗，具体如下：阿司匹林(Bayer Vital GmbH；批准文号：H20130340；规格：100 mg)，口服，100 mg/ 次，1 次 /d；硫酸氢氯吡格雷(Actavis Group PTC ehf；批准文号：H20140966；规格：75 mg)，口服，75 mg/ 次，1 次 /d；阿托伐他汀钙片(Lek Pharmaceuticals d.d.；批准文号：H20181021；规格：20 mg)，口服，20 mg/ 次，1 次 /d；连续服用 3 个月后，停服氯吡格雷，长期服用阿司匹林和阿托伐他汀。研究组患者予以血管内支架介入成形术治疗，术前均行肝肾功能、心肺功能、凝血功能检查，术前 3d 开始给予阿司匹林，口服，100 mg/ 次，1 次 /d；硫酸氢氯吡格雷，口服，75 mg/ 次，1 次 /d，阿托伐他汀钙片，口服，20 mg/ 次，1 次 /d。血管内支架介入成形术：经皮股动脉穿刺，常规行脑血管造影，明确狭窄程度及部位、侧支循环情况，选取适宜支架，行支架植入术；颅外段支架术后患者继续服用硫酸氢氯吡格雷，1 个月后停药；颅内段支架术后患者继续服用硫酸氢氯吡格雷，3 个月后停药；颅外段、颅内段术后患者均继续服用阿司匹林，100 mg/ 次，1 次 /d，阿托伐他汀，20 mg/ 次，1 次 /d，维持治疗。

1.3 观察指标

(1)术后对两组患者进行为期 6 个月的随访，随访方式为门诊复查。于治疗后 1 个月、治疗后 3 个月、治疗后 6 个月采用改良 Rankin 量表(modified Rankin Scale，mRS)[11]评价患者预后情况。其中 mRS 评分 0~5 分，其中无症状为 0 分，轻度症状为 1 分，轻度残疾为 2 分，中度残疾为 3 分，中重度残疾为 4 分，重度残疾为 5 分。(2)于治疗前、治疗后 6 个月采用经颅多普勒超声及颈部血管超声检查患者病变血管，包括大脑中动脉、基底动脉、颈内动脉的血流速度。(3)记录两组患者治疗后并发症发生情况。(4)于治疗前、治疗后 1 个月、3 个月、6 个月采用美国国立卫生研究院卒中量表(National Institutes of Health Stroke Scale，NIHSS)[12]评价患者神经功能情况。其中 NIHSS 量表包括四肢运动、语言障碍、视野、意识水平提问、意识水平指令、肢体障碍、感觉等项目，总分 42 分，分数越高，神经损伤越严重。(5)评价两组患者治疗 6 个月后的临床疗效[13]。具体如下：基本痊愈：病残程度为 0 级，NIHSS 减少率为 91%~100%；显著进步：病残程度为 1~3 级，NIHSS 减少率为 46%~90%；进步：NIHSS 减少率为 18%~45%；无变化：NIHSS 减少率≦17%。总有效率 = 基本痊愈率 + 显著进步率 + 进步率。

1.4 统计学方法

数据分析软件为 SPSS 23.0，计数资料以例数(%)表示，采用 χ^2 检验；计量资料以均数±标准差表示，采用 t 检验。以 P<0.05 为差异具有统计学意义。

2 结果

2.1 疗效比较

研究组治疗 6 个月后的临床总有效率为 91.53%(54/59)，高于对照组的 72.41%(42/58)(P<0.05)；详见表 1。

表 1 两组患者疗效比较【[例(%)】

Table 1 Comparison of curative effect between the two groups [n(%)]

Groups	Basic recovery	Remarkable improvement	Improved	No change	Total effective rate
Control group(n=58)	9(15.52)	18(31.03)	15(25.86)	16(27.59)	42(72.41)
Study group(n=59)	14(23.73)	23(38.98)	17(28.81)	5(8.47)	54(91.53)
x^2					7.254
P					0.007

2.2 两组神经功能比较

两组治疗前 NIHSS 评分比较无差异(P>0.05)；两组治疗后 1 个月、3 个月、6 个月 NIHSS 评分均下降(P<0.05)，且研究组低于对照组(P<0.05)；详见表 2。

表 2 两组患者神经功能比较($\bar{x}\pm s$，分)

Table 2 Comparsion of neurological function between the two groups($\bar{x}\pm s$, scores)

Groups	Before treatment	1 month after treatment	3 months after treatment	6 months after treatment
Control group(n=58)	17.38±1.17	13.93±1.46[a]	10.26±1.22[ab]	7.42±0.95[abc]
Study group(n=59)	17.26±1.26	10.58±1.34[a]	7.12±1.06[ab]	4.27±0.87[abc]
t	0.534	12.934	14.869	18.710
P	0.595	0.000	0.000	0.000

Notes: compare with before treatment, [a]P<0.05; compare with 1 month after treatment, [b]P<0.05; compare with 3 months after treatment, [c]P<0.05.

2.3 两组患者动脉血流速度比较

两组治疗前大脑中动脉、基底动脉、颈内动脉血流速度比较无差异(P>0.05)；两组患者治疗后 6 个月大脑中动脉、基底动脉、颈内动脉血流速度均升高(P<0.05)，且研究组高于对照组(P<0.05)；详见表 3。

表 3 两组患者动脉血流速度比较($\bar{x}\pm s$)

Table 3 Comparison of arterial blood flow velocity between the two groups($\bar{x}\pm s$)

Groups	Middle cerebral artery(cm/s)		Basilar artery(cm/s)		Internal carotid artery(cm/s)	
	Before treatment	6 months after treatment	Before treatment	6 months after treatment	Before treatment	6 months after treatment
Control group(n=58)	11.58±2.19	22.27±3.43[a]	10.95±2.96	21.36±2.83[a]	11.31±2.72	20.72±2.69[a]
Study group(n=59)	11.73±2.25	24.26±3.52[a]	10.79±2.03	23.16±2.97[a]	11.08±3.60	24.63±3.21[a]
t	0.365	3.096	0.341	3.355	0.389	7.135
P	0.716	0.002	0.733	0.001	0.698	0.000

Note: compare with before treatment, [a]P<0.05.

2.4 两组患者预后比较

两组治疗后 1 个月、治疗后 3 个月、治疗后 6 个月 mRS 评分呈下降趋势(P<0.05)，研究组治疗后 1 个月、治疗后 3 个月、治疗后 6 个月 mRS 评分低于对照组(P<0.05)；详见表 4。

表 4 两组患者预后比较($\bar{x}\pm s$，分)

Table 4 Comparison of prognosis between the two groups($\bar{x}\pm s$, scores)

Groups	1 month after treatment	3 months after treatment	6 months after treatment
Control group(n=58)	3.87±0.36	3.51±0.39[a]	3.12±0.48[ab]
Study group(n=59)	3.79±0.33	3.07±0.35[a]	2.16±0.52[ab]
t	1.253	5.257	8.657
P	0.213	0.000	0.000

Note: compare with 1 month after treatment, [a]P<0.05; compare with 3 months after treatment, [b]P<0.05.

2.5 两组患者并发症发生情况比较

对照组出现血管再闭塞 2 例，消化道出血 4 例，恶心呕吐 3 例，并发症发生率为 15.52%(9/58)；研究组出现血管再闭塞 1 例，脑血管痉挛 1 例，缺血再灌注损伤 2 例，并发症发生率为 6.78%(4/59)；两组并发症发生率对比未见统计学差异(χ^2=2.261，P=0.133)。

3 讨论

ICVD 是指在脑动脉硬化的基础上出现血液黏稠度增加、血液凝集、血小板聚集等，最终引起动脉管腔闭塞、狭窄的一类疾病[14]。ICVD 早期症状主要表现为视物模糊、半身麻木等，症状较轻者持续数小时即可自行缓解，症状严重者可反复发病，局部脑组织因长期的血液供应障碍而出现缺氧缺血性坏死，进而引起神经功能减弱等，随着病情进展，还可进一步引起患者偏瘫甚至死亡，预后较差[15,16]。老年患者由于身体各项机能逐渐下降，极易发生血管壁病变、血管损伤、血液流变学异常等，引起动脉血流速度下降，进而引起 ICVD[17,18]。目前多以抗血小板治疗和抗凝治疗最为常见。但既往研究结果显示[19]，抗血栓药物在 ICVD 的长期治疗中仅发挥了降低脑卒中发生率的作用。提示采用保守药物治疗具有一定的局限性。而手术治疗一般采用血管内支架介入成形术，具有良好的治疗效果，通过植入支架后动脉狭窄部位粗糙内膜得以修复，可直接改变病变动脉血管狭窄状况，恢复正常血供[20-22]。

本次研究结果显示，研究组治疗 6 个月后的临床总有效率、治疗后 6 个月的 NIHSS 及 mRS 评分改善情况均优于对照组，提示老年 ICVD 患者经血管内支架介入成形术治疗后，疗效显著，且其可有效改善患者神经功能及预后。阿司匹林、硫酸氢氯吡格雷是临床常见的抗血栓药物，阿司匹林可通过抑制血小板环氧化酶间接抑制血小板内血栓素 A2 的释放发挥抗血栓的作用，硫酸氢氯吡格雷则可通过抑制血小板 ADP 受体与 ADP 结合发挥一定的抗血栓作用；阿托伐他汀钙片则是临床常见的降血脂药物，可通过抑制胆固醇在肝脏的合成及增加低密度脂蛋白的分解代谢降低血浆胆固醇和脂蛋白水平；另外三者均可发挥抗血管氧化效用，减少血管病变[23,24]。血管内支架介入成形术可重建狭窄部位血管和改善脑血流灌注，使大脑血液供应得以恢复正常，为损伤的颅脑组织和神经重塑提供良好条件，可显著减少神经元继发性损伤，进一步改善患者预后[25-27]。既往研究结果显示 [28]，ICVD 可导致机体局部脑血流速度下降及组织灌流不足。本研究中两组患者动脉血流速度均有所改善，且研究组改善效果更佳。这可能是因为血管内支架介入成形术可直接改变病变动脉血管狭窄状况且有效保护大脑，有效改善血流速度，帮助病变血管恢复正常血供[29,30]。另外通过对比两组并发症发生率，未见明显差异，可见血管内支架介入成形术安全有效。由于血管内支架介入成形术属于有创操作，手术操作较为复杂，对术者要求较高，故在手术期间需注意：严格遵守手术指征；应根据患者的发病特点为其选择合适的支架，支架直径应比患者病变血管的邻近正常血管直径大 10%～15%；置入支架时，应确保支架准确到达病变血管的狭窄段。本研究尚存在样本量较小及远期疗效的不足，在今后的研究中将通过扩大样本量及延长随访时间的措施进行完善。

综上所述，老年 ICVD 患者经血管内支架介入成形术治疗后，疗效显著，可有效改善患者神经功能、动脉血流速度及预后，且不增加并发症发生率，具有较高的临床应用价值。

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