

高龄急性前循环脑梗死患者支架取栓术预后分析

胡玉奇 贾琦 代林志 许晖 李阳 陈富雷 赵冬

石河子大学医学院第一附属医院,新疆 石河子 832000

通信作者:赵冬

【摘要】 目的 探讨80岁及以上急性前循环脑梗死患者行支架取栓术预后的影响因素。方法 回顾性研究石河子大学医学院第一附属医院2018-01—2021-07收治的27例80岁及以上前循环大动脉闭塞型脑梗死急诊支架取栓患者的临床资料,对比患者术后改良Rankin量表评分(mRS)对可能影响预后因素进行统计学分析。结果 27例急性前循环脑梗死患者中,中位年龄82岁;其中14例(51.9%)为大脑中动脉闭塞,13例(48.1%)为颈内动脉闭塞;基线NIHSS评分中位数为20分;术后NIHSS评分中位数为15分;术后即刻造影显示25例(92.6%)再通成功;8例(29.7%)发生出血性转化;90 d良好结局(mRS 0~3)11例(40.7%),90 d不良结局(mRS 4~6)16例(59.3%),死亡10例(37%);术后并发肺部感染者17例(63.0%)。预后良好组与预后不良组基线NIHSS评分(15分 vs 20分, $P<0.05$)、术后NIHSS评分(6分 vs 18分, $P<0.001$)、卒中后肺部感染率(2% vs 15%, $P<0.001$)比较差异均有统计学意义。结论 对于80岁及以上前循环大动脉闭塞型脑梗死患者,支架取栓是可行的治疗方法,但应严格评估患者NIHSS评分及加强术后呼吸道管理。

【关键词】 脑梗死;前循环;支架取栓;高龄;影响因素

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Analysis of prognosis after stent thrombectomy in elderly patients with acute anterior circulation stroke

HU Yuqi, JIA Qi, DAI Linzhi, XU Hui, LI Yang, CHEN Fulei, ZHAO Dong

Department of Neurosurgery, First affiliated Hospital of Shihezi University, Shihezi, 832000

Corresponding author: ZHAO Dong

【Abstract】 Objective To investigate the factors of prognosis in patients with acute anterior circulation stroke aged 80 years and above. **Methods** We retrospectively studied the clinical data of 27 patients with acute anterior circulation cerebral infarction aged 80 years and above in our department from January of 2018 to July of 2021, the postoperative modified Rankin scale score (modified Rankin scale, mRS) was compared to analyze the possible prognostic factors. **Results** Among the 27 patients with acute anterior circulation cerebral infarction, the median age was 82 years old, including 14 cases (51.9%) with middle cerebral artery occlusion and 13 cases (48.1%) with internal carotid artery occlusion. The median baseline NIHSS score was 20; the median postoperative NIHSS score was 15; immediate postoperative angiography showed successful recanalization in 25 cases (92.6%) and hemorrhagic transformation in 8 cases (29.7%). 11 patients (40.7%) had a 90-day good outcome (mRS 0~3), 16 patients (59.3%) had a 90-day adverse outcome (mRS 4~6), of which 10 patients (37%) died, and 17 patients (63.0%) were complicated with pulmonary infection after operation. There were significant differences in baseline NIHSS score (15 vs 20, $P<0.05$), postoperative NIHSS score (6 vs 18, $P<0.001$) and pulmonary infection after stroke (2% vs 15%, $P<0.001$) between good prognosis group and poor prognosis group.

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Conclusion Stent thrombectomy is an effective treatment of patients with acute anterior circulation stroke aged 80 years and above, but the NIHSS score of the patients should be strictly evaluated and postoperative respiratory tract management should be strengthened.

【Key words】 Stroke; Anterior circulation; Stent thrombectomy; Elderly; Influence factor

研究显示脑卒中的发病率随着年龄的增长而增加^[1-2],其中又以缺血性脑卒中即脑梗死所占比例较高。机械取栓术是治疗大血管闭塞所致急性缺血性脑卒中的有效方法^[3-4],随着社会老龄化的加剧,前循环脑梗死接受支架取栓治疗的患者中,80岁及以上高龄患者的比例正在逐步上升,约30%的缺血性脑卒中患者年龄在80岁及以上,17%甚至超过85岁^[5-7],因此,高龄脑梗死患者成为不容忽视的人群。随着技术的进步,早期血管内治疗时间窗进一步延长,更多的高龄患者有机会接受早期血管内治疗。但高龄患者早期血管内治疗效果如何,目前在国内外仍然存在争议。与年轻的急性脑梗死患者相比,高龄患者的血栓清除效果仍然不令人满意,既往西方的多项大型临床试验表明,高龄患者有较差的90d预后,较多并发症,甚至较高的病死率。本研究旨在探讨影响高龄急性前循环脑梗死患者支架取栓术预后的相关因素。

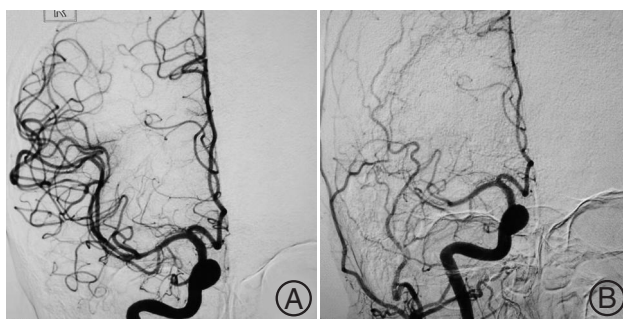
1 资料与方法

1.1 一般资料 选取2018-01—2021-07于石河子大学医学院第一附属医院急诊行支架取栓的27例前循环脑梗死患者为研究对象。男16例,女11例;年龄80~88岁,中位年龄82岁;大脑中动脉闭塞14例,颈内动脉闭塞13例;基线美国国立卫生研究院卒中量表(National Institutes of Health stroke scale, NIHSS)评分中位数为20分,25例(92.6%)再通成功,8例(29.7%)发生出血性转化。根据患者90d既往改良Rankin量表(modified Rankin scale, mRS)评分将27例患者分成预后良好组(mRS 0~3分)11例(40.7%),预后不良组(mRS 4~6分)16例(59.3%);90d病死率37.0%(10/27)。

纳入标准:(1)年龄 ≥ 80 岁;(2)DSA证实为急性前循环大血管闭塞型脑梗死;(3)入院时基线美国国立卫生研究院卒中量表(NIHSS)评分 ≥ 6 分;(4)发病至股动脉穿刺时间 ≤ 24 h;(5)急诊行血管内治疗,以支架取栓为主要治疗手段;(6)临床资料完整;(7)患者或家属知情同意。**排除标准:**(1)有出血性脑血管病史或出血倾向;(2)既往改良Rankin量表(modified Rankin scale, mRS)评分 > 2 分;(3)拒绝行血

管内治疗及临床资料不完整者。

1.2 治疗方法 所选取患者符合《中国急性缺血性卒中早期血管内介入诊疗指南》^[3]适应证,术中发现前循环大血管有严重的动脉粥样硬化或狭窄时行相应的补救措施,行球囊扩张成形,支架植入或不植入支架。术后即刻造影显示颈内动脉、大脑中动脉等大血管,了解血管再通情况。见图1。



注:A治疗前;B治疗后

图1 1例82岁老年患者右侧大脑中动脉闭塞支架取栓再通前后DSA影像对比

Figure 1 Comparison of DSA images of an 82-year-old patient with right middle cerebral artery occlusion before and after stent removal and recanalization

1.3 研究方法 比较2组临床资料、手术疗效及并发症等。90d mRS评分作为患者预后的评估指标,分0~6级,分级越高,代表其功能独立性越差,6级表示死亡。NIHSS评分作为评估患者神经功能缺损程度指标,评分越高表示神经功能受损程度越严重。应用DSA影像的美国介入与治疗神经放射学学会(american society of intervention and therapeutic neuroradiology/Society of interventional radiology, ASITN/SIR)分级系统评估侧支循环情况,SIR 2~4级为侧支循环良好。采用改良脑梗死溶栓(modified thrombolysis in cerebral infarction, mTICI)血管再通等级评价血管再通程度,mTICI分级2b级和3级定义为血管再通成功。

1.4 统计学处理 采用SPSS 25.0软件进行数据分析。计量资料如符合正态分布以均数 \pm 标准差($\bar{x}\pm s$)表示,组间比较采用独立样本 t 检验;不符合正态分布以中位数和四分位数间距描述,组间比较采用Wileoxon秩和检验。计数资料以率(%)表示,组间比较采用

Fisher's 精确检验。P<0.05 为差异有统计意义。

(P>0.05); NIHSS 评分差异有统计学意义 (P<0.05)。见表 1。

2 结果

2.1 2 组患者临床特征比较

2 组患者年龄、高血压、糖尿病、房颤、吸烟史、饮酒史、既往脑卒中、侧支循环、取栓次数、闭塞血管部位、术前收缩压、DPT、DRT、OPT、穿刺至开通时间等差异无统计学意义

2.2 2 组在手术疗效及并发症等方面比较

2 组不良再通及发生出血性转化方面差异无统计学意义 (P>0.05)。术后 NIHSS 评分、卒中后肺部感染方面差异有统计学意义 (P<0.001)。见表 2。

表 1 2 组患者临床资料比较

Table 1 Comparison of clinical data of the two groups of patients

临床资料	全部患者(n=27)	mRS 0~3 组(n=11)	mRS 4~6 组(n=16)	t/Z 值	P 值
男/女	16/11	8/3	8/8	-	0.427
年龄/[M(P25,P75),岁]	82(81,86.5)	81(80.5,84)	83.5(81,87)	-	0.212
既往史及个人史[n(%)]					
高血压	17(63.0)	8(72.7)	9(56.3)	-	0.448
糖尿病	3(11.1)	2(18.2)	1(6.3)	-	0.549
房颤	18(66.7)	5(45.5)	13(81.3)	-	0.097
吸烟史	5(18.5)	2(18.2)	3(18.8)	-	1.000
饮酒史	2(7.4)	0	2(12.5)	-	0.499
既往脑卒中	2(7.4)	0	2(12.5)	-	0.499
侧支循环良好/%	18(66.7)	6(54.5)	12(75)	-	0.411
拉栓次数≥3 次/%	1(3.7)	0	1(6.3)	-	1.000
闭塞血管部位/%				-	0.704
大脑中动脉	14(51.9)	5(45.5)	9(56.3)		
颈内动脉	13(48.1)	6(54.5)	7(43.7)		
术前收缩压/(mmHg, $\bar{x}\pm s$)	144.78±20.72	139.18±15.21	148.63±23.48	-1.172	0.252
基线 NIHSS 评分/[M(P25,P75),分]	20(15,20.5)	15(12,20)	20(20,24.5)	129.000	0.044
DPT/[M(P25,P75),min]	135(75,162.5)	140(112.5,145)	77.5(69,180)	67.500	0.318
DRT/[M(P25,P75),min]	250(186,315)	255(207.5,262.5)	220(135,381.5)	83.000	0.827
OPT/[M(P25,P75),min]	290(202.5,345)	290(267.5,312.5)	268.5(157.5,385)	76.000	0.577
穿刺到开通时间/①[M(P25,P75),min]	70(54.5,87.5)	80(67.5,85)	62.5(32.5,109)	72.500	0.451

注:mRS 评分为脑卒中改良 Rankin 量表;NIHSS 评分为美国国立卫生研究院卒中量表;DPT 为到院至穿刺时间;DRT 为到院至开通时间;OPT 为发病至穿刺完成时间

表 2 2 组患者手术效果及并发症比较

Table 2 Comparison of surgical outcomes and complications between the two groups of patients

预后	全部患者	mRS 0~3 分组	mRS 4~6 分组	t/Z 值	P 值
术后 NIHSS/[M(P25,P75),分]	15(7,19)	6(3,11)	18(14.5,23)	160.450	<0.001
再通不良/%	2(7.4)	0	2(12.5)	-	0.499
卒中后肺部感染/%	17(63.0)	2(18.2)	15(93.8)	-	<0.001
出血性转化/%	8(29.7)	3(27.3)	5(31.3)	-	1.000

3 讨论

在急性前循环脑梗死行血管内治疗的研究中,尤其在 80 岁及以上的患者中,只有 5% 的人接受了机械取栓治疗^[9]。高龄患者的症状往往更严重,临

床预后比年轻患者更差^[10-12]。过去的几项大型临床试验^[13-19]把急诊支架取栓的年龄限定在 18~80 岁,而当前有指南建议^[20-22],年龄>80 岁的患者不应作为前循环大血管闭塞支架取栓的禁忌。因此,确

定支架取栓在这一老年人群中的安全性和有效性是很有意义的。

由于本文仅对 80 岁及以上脑梗死患者展开研究,与 IMOORI 等^[23-24]关于 80 岁以上和 80 岁以下分组的研究不同,因此在预后分组中,90 d mRS 评分 3 分可被视为预后良好。一般情况下,90 d mRS 评分 0~2 分代表预后良好,mRS 评分 3~6 分代表预后不良。研究^[25]认为 80 岁及以上的急性脑梗死体质较差,恢复能力及神经可塑性较差,因此避免灾难性的结局可能是一个比实现功能独立更现实的目标。考虑到 80 岁及以上患者对功能独立性的期望值较低,以及与 80 岁以下患者相比,其本身可能有更多的合并疾病及术后并发症,研究^[26-27]显示在 80 岁以上的患者中,mRS 评分 3 分可能意味着良好的生活质量,且这些患者能够在没有协助的情况下独立行走,因此 mRS 评分 3 分可认为是 80 岁及以上患者的有利结果。

有研究^[28-29]认为房颤是老年脑梗死患者预后不良的影响因素,本研究虽然未能得出一致的结论,但预后不良组较之预后良好组仍发现有较高的房颤患病率(81.3% vs 45.5%),房颤栓子脱落导致血管再闭塞风险增高以及最初栓塞部位的动脉血管内膜已经损伤,血管再通后再灌注可能导致血管壁破裂出血,从而影响患者预后。

AHN 及 KOIZUMI 等^[25,30]研究认为血管成功再通是高龄脑梗死患者预后良好的预测因素。IMOORI^[23]研究中显示成功的血管再通率达 89%,而在 80 岁及以上高龄患者中仍有 83% 的再通率。我们的研究显示高龄患者同样获得了较高的血管再通率(92.6%),这表明即使对于 80 岁及以上的患者,支架取栓对大血管的获益率仍然是令人满意的。

本研究显示,较高的基线 NIHSS 评分、取栓术后 NIHSS 评分是影响高龄患者不良结局的预测因素。NIHSS 评分与血管狭窄程度相关,基线 NIHSS 评分越高,则责任血管闭塞严重程度越大,预示急性脑梗死患者的病情越严重^[31],而大血管闭塞常造成大面积脑梗死,导致临床预后极差,甚至危及生命。术后 NIHSS 评分不理想仍然是导致不良结局的因素,说明虽然经过积极的取栓治疗,但高龄患者本身血管条件差,代偿能力有限,即使闭塞血管再通仍无法有效挽回神经功能损失。因此 NIHSS 评分对急性脑梗死患者预后具有重要的预测价值,进一步的研究表明病程 15 天的 NIHSS 评分下降率对老年前循环脑梗

死预后的预测价值更高^[32]。本研究显示预后良好组术后 NIHSS 评分较入院时明显减少,因此对于高龄前循环急性大血管闭塞患者支架取栓是行之有效的方法,对于 NIHSS 评分较低患者,综合评估患者情况以制定个体化治疗方案,不应因年龄因素而放弃该治疗。

卒中及取栓术后并发症导致患者入住重症监护室和卒中病房的住院时间延长,进而增加了患者的经济负担,并推迟了开始康复的时间^[33]。而卒中后肺部感染是最常见的并发症^[34-35]。卒中后肺部感染包括卒中相关性肺炎(stroke associated pneumonia, SAP)、吸入性肺炎(aspiration pneumonia, AP)和机械通气并发呼吸机相关性肺炎(ventilator associated pneumonia, VAP)等^[36]。KATZAN 等^[37]认为肺部感染将导致大量能量与蛋白质消耗,而这也加重了神经功能损伤,从而导致患者预后不良。本研究显示,80 岁及以上急性前循环脑梗死预后不良的患者基线 NIHSS 评分和术后 NIHSS 评分更高,说明神经功能受损更严重。因此,此类患者常出现吞咽困难、精神错乱甚至意识障碍,导致误吸风险增加,容易发生吸入性肺炎。此外长时间卧床,活动能力受限,导致高龄患者呼吸肌乏力,咳嗽反射减弱导致痰液淤积在肺底,气道分泌物潴留,更易引起坠积性肺炎,与相关报道基本一致^[38-39]。因此,对于高龄前循环脑梗死行支架取栓的患者,应给予针对性抗感染,应加强呼吸道的管理,给予雾化以及勤翻身拍背,保持气道通畅,足量营养支持,同时应严格限制各项侵入性操作,对预防肺部感染有一定帮助。而对于卒中后合并肺部感染的高龄患者,已有研究证实加温加湿经鼻高流量氧疗是一种安全有效的呼吸支持方式。

出血性转化是支架取栓治疗后严重的并发症之一^[41-42]。一般认为年龄越大的缺血性脑卒中患者的症状往往更严重,临床预后和手术效果较年轻患者更差,发生出血性转化的风险更高^[43]。研究^[44-46]发现,与接受血管内治疗的年轻患者相比,老年患者的功能独立率较低,病死率较高,而出血性转化的发生率相似。本研究也发现发生出血性转化和高龄患者功能预后在统计学上没有相关性,这可能与本研究样本量较小有关。本研究 10 例病死患者中 4 例死亡原因为发生出血性转化,因此在实际临床工作中,仍然要尽量避免出血性转化的风险发生。

本研究属于回顾性研究,且纳入样本量较小,尚需大量前瞻性研究进一步验证。对于高龄脑梗死患

者而言,支架取栓术预后除与卒中后肺部感染相关外,还可能与心血管系统、肝肾功能、泌尿系统并发症等有关,在今后的研究中需进一步完善,纳入更多符合条件的病例,对高龄患者行支架取栓术的预后进行更全面的分析,为此类患者进行合理治疗措施及术后管理提供参考依据。

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