

颈动脉支架置入术对无症状性颈动脉高度狭窄患者认知功能的影响*

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摘要:目的 探讨颈动脉支架置入术对无症状性颈动脉高度狭窄患者认知功能的影响。方法 选择 2009 年 9 月至 2012 年 12 月期间在该科住院患者 156 例(狭窄程度大于或等于 70%),行颈动脉支架置入术。在支架置入术前 1 周内及置入术后 3 个月采用阿尔茨海默病评估量表认知部分(ADAS-Cog)、简易智能量表(MMSE)、连线测验(TMTa、TMTb)对患者的认知功能进行评估。结果 所有患者均安全、成功的置入颈动脉支架,其中 1 例患者术后失访。与术前相比,术后 3 个月患者的认知功能均有所改善,术前术后比较:ADAS-Cog[(6.60±2.04)分 vs. (5.16±1.63)分, $P<0.01$],MMSE[(26.32±1.06)分 vs. (27.05±1.46)分, $P<0.01$],TMTa[(108.94±17.42)分 vs. (94.70±20.27)分, $P<0.01$],TMTb[(178.65±21.77)分 vs. (148.92±23.65)分, $P<0.01$],术后 3 个月内无新发脑梗死。结论 颈动脉狭窄可能为认知功能减退的原因之一,颈动脉支架置入术可以改善无症状性颈动脉狭窄患者认知功能。

关键词:颈动脉狭窄;支架;认知;颈动脉支架置入术

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Effects of carotid artery stenting on cognitive function in patients with critical internal carotid artery stenosis*

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Abstract: Objective To investigate the influence of carotid artery stenting (CS) of asymptomatic critical internal carotid artery (ICA) stenosis patients on cognitive function. **Methods** One hundred and fifty-six asymptomatic patients with internal carotid artery stenosis(carotid stenosis severity $\geq 70\%$) were enrolled, in whom CS was attempted. Functional assessments including alzheimer disease assessment scale-cognitive subtest (ADAS-Cog), mini-mental state examination (MMSE), and trail making test A (TMTa) and B (TMTb) were done prior to 1 weeks and 3 months after the procedure. **Results** Successful CS was achieved in all of patients (100%), only 1 patient was lost to follow-up. There were significant improvement in ADAS-Cog score (pre 6.60±2.04 vs. post 5.16±1.63, $P<0.01$), MMSE score (pre 26.32±1.06 vs. post 27.05±1.46, $P<0.01$), TMTa (pre 108.94±17.42 vs. post 94.70±20.27, $P<0.01$), TMTb (pre 178.65±21.77 vs. post 148.92±23.65, $P<0.01$). There was new cerebral infarction during 3 months after surgery. **Conclusion** Asymptomatic critical internal carotid artery (ICA) stenosis may be one reason of cognitive impairment, and successful CS could improve cognitive function in asymptomatic ICA stenosis.

Key words: carotid stenosis; stents; cognitive; carotid artery stenting

颈动脉粥样硬化和血栓形成使颈动脉狭窄、闭塞,导致局灶性脑供血不足而发生脑梗死。脑梗死的危险因素分为不可干预性和可干预性两类。不可干预性危险因素主要包括性别、年龄、遗传基因、种族等。可干预性危险因素包括高血压、糖尿病、血脂异常、心脏病、高同型半胱氨酸血症、无症状性颈动脉狭窄、吸烟、饮酒、肥胖等。颈动脉支架置入术治疗无症状性颈动脉高度狭窄的患者已被证实可以预防脑梗死发生^[1-2]。无卒中或短暂性脑缺血发作症状,则被称为“无症状性颈动脉狭窄”。Landgraff 等^[3]研究报道,无症状性颈动脉高度狭窄有可能导致脑组织缺血和认知功能损害。随着脑血管进入技术的不断发展,越来越多的学者开始关心颈动脉支架置入术对认知功能的影响。由于复杂的临床干扰因素及试验设计的差异,先前有关颈动脉支架置入术对认知功能的作用具有一定争议性^[4-5]。为了进一步探讨颈动脉支架置入对无症状性颈动脉狭窄患者的认知功能的作用,本研究对 2009~2012 年接受颈动脉支架置入术的无症状性颈动脉高度狭窄患者进行术前认知

功能评估,并在术后 3 个月随访。

1 资料与方法

1.1 一般资料 选择 2009 年 9 月至 2012 年 12 月在本科住院患者 156 例,其中男 122 例,女 34 例,平均年龄为(64.74±8.94)岁。纳入标准:经 CT 血管成像(CTA)或脑血管造影(DSA)检查证实存在颈动脉狭窄(狭窄程度均大于或等于 70%),半年内无脑梗死,短暂性脑缺血、单眼黑蒙发作。排除标准:存在颈动脉支架置入术禁忌证、颅内动脉瘤、颅内动静脉畸形;初中以下文化程度;有患抑郁症、神经梅毒、阿尔茨海默病。

1.2 方法

1.2.1 颈动脉支架置入治疗 术前 5~7 d 常规口服拜阿司匹林肠溶片 300 mg/d 和硫酸氢氯吡格雷片 75 mg/d 抗血小板聚集治疗。完善输血前全套等各项术前常规检查。采用 PROCISE 自膨式支架(Cordis 公司)。常规消毒,局部麻醉下采用 Seldinger 法右侧股动脉穿刺,置入 8 F 动脉鞘,静脉推注

3 000 U 肝素全身肝素化,造影确定颈动脉狭窄部位、狭窄程度、病变长度及相应供血区域的侧支循环代偿情况。在路图和导丝的引导下缓慢将 8 F 导管置于颈总动脉,所有患者均在狭窄远端放置保护伞。如患者血管狭窄严重,保护伞不能通过,则先用球囊进行预扩张。用保护伞将支架导入,使支架覆盖颈动脉狭窄段,缓慢释放支架,再次造影确保支架释放满意,残余狭窄(13.49±6.07)%。术后 6 h 拔出动脉鞘,动脉压迫止血器压迫止血。术后皮下注射低分子肝素钙(0.4 mL, Q12H),同时口服拜阿司匹林肠溶片(300 mg/d)和硫酸氢氯吡格雷片(75 mg/d),5~7 d 后停用低分子肝素钙,继续口服拜阿司匹林肠溶片(300 mg/d)和硫酸氢氯吡格雷片(75 mg/d)3 个月,之后调整为拜阿司匹林肠溶片(100 mg/d)或硫酸氢氯吡格雷片(75 mg/d),长期服用。

1.2.2 认知功能评估及病例随访 所有患者均在术前 1 周内、术后 3 个月行阿尔茨海默病评估量表认知部分(ADAS-Cog)、简易智能量表(MMSE)、连线测验(TMTa、TMTb)评估。并了解患者有无短暂性脑缺血发作、脑卒中等情况。

1.3 统计学处理 采用 SPSS17 统计软件进行统计分析,计量资料以 $\bar{x} \pm s$ 表示,采用配对样本均数的 t 检验,以 $P < 0.05$ 为差异有统计学意义。

2 结 果

2.1 颈动脉支架置入术的安全性 本组患者手术成功率 100%,术后 3 个月内无脑出血、脑梗死、短暂性脑缺血发作等并发症,术前狭窄(79.54±6.01)%,术后造影显示残余狭窄(13.49±6.07)%。术后 3 个月随访时,1 例外阜患者失访。

2.2 手术前后患者的认知功能变化 与术前比较,术后 3 个月患者的 MMSE 评分明显增加,差异有统计学意义($P < 0.01$),ADAS-Cog、TMTa、TMTb 评分均明显降低,差异有统计学意义($P < 0.01$),见表 1。

表 1 患者支架置入术前后认知功能评分的比较($\bar{x} \pm s$)

项目	术前	术后 3 个月	P
狭窄程度(%)	79.54±6.01	13.49±6.07	<0.01
ADAS-Cog(分)	6.60±2.04	5.16±1.63	<0.01
MMSE(分)	26.32±1.06	27.05±1.46	<0.01
TMTa(分)	108.94±17.42	94.70±20.27	<0.01
TMTb(分)	178.65±21.77	148.92±23.65	<0.01

3 讨 论

Mathiesen 等^[6]报道,无症状性颈动脉高度狭窄患者在神经心理学测试中的成绩低于无颈动脉狭窄的对照组,因此,颈动脉高度狭窄可能与认知功能受损相关。无症状性颈动脉狭窄导致认知功能受损的机制可能与以下因素相关:无症状性脑梗死、脑灌注不足、脑白质病变^[7]。Fearn 等^[8]报道,颈动脉内膜剥脱术治疗的患者,其认知功能在术后 2 个月得以改善。随着脑血管介入技术及保护装置的发展,颈动脉支架置入术越来越多的用于治疗颈动脉高度狭窄患者,预防短暂性脑缺血发作、脑梗死^[9]。虽然口服药物行卒中一级预防或二级预防同样可以显著降低卒中发生率,但动物实验发现,脑灌注不足可以在无脑梗死的情况下导致认知功能受损^[10-11]。因此,颈动脉支架置入术能否预防认知障碍、提高认知功能越来越受到关注。

本研究发现,颈动脉支架置入术患者的颈动脉狭窄程度明显减轻,术后 3 个月随访结果显示,MMSE 评分明显增加,ADAS-Cog、TMTa、TMTb 评分均明显降低,差异有统计学意义($P < 0.01$),说明颈动脉支架置入可以提高患者的认知功能,与前期颈动脉支架置入治疗轻度认知功能障碍研究的结论一致^[12]。其可能的机制为:颈动脉支架置入术后,患者颈动脉狭窄解除,脑血流量增加,脑灌注不足情况改善。同颈动脉内膜剥脱术相比,支架置入术中颈动脉血流被阻断的时间明显缩短,但也增加了微栓子栓塞的风险^[13-14]。颈动脉支架置入术后由于颈动脉窦部压力感受器受压迫,引起反射性低血压,有可能导致颅内大动脉狭窄患者脑灌注不足^[15]。由于上述因素,颈动脉支架置入术后增加脑血流量、改善认知功能的作用有可能被抵消,导致颈动脉支架置入术是否能够改善认知功能无统一论^[16]。

本研究使用 MMSE、ADAS-Cog 进行认知程度及认知内容受损评估。虽然 MMSE 和 ADAS-Cog 目前已被广泛应用于认知功能评估,它们只能用于中、重度痴呆人群,对于轻度认知功能障碍的敏感性较差。根据 Lunn 等^[17]有关颈动脉内膜剥脱术对认知功能作用的研究,采用 TMT 对无症状性颈动脉狭窄患者的认知功能进行评估。TMT 是检测两侧大脑半球机能的一种测验^[18]。TMTa 主要用于评估右侧大脑半球的功能,反映较为原始的知觉运动速率。TMTb 主要用于评估左侧大脑半球的功能,除知觉运动速率外,还包括概念和注意转移等能力。该测验对弥漫性和局限性脑损伤极为敏感,对筛选额叶机能障碍也较敏感。

综上所述,颈动脉支架置入可以改善无症状性颈动脉高度狭窄患者的认知功能及脑灌注,其认知功能改善与脑灌注增加相关。但其详细病理生理机制尚未阐明,需进行大样本、随机对照研究,并综合应用特异性、敏感性好的认知功能评估量、功能影像学检查进行动态随访研究,以进一步探讨颈动脉支架置入对认知功能的影响。

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