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栓塞和夹闭治疗对颅内动脉瘤患者认知功能的影响

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摘要 目的:评估血管内栓塞治疗和显微手术夹闭两种治疗方法对颅内动脉瘤患者认知功能的影响。**方法:**选取 2014 年 3 月至 2015 年 9 月重庆市中医院神经外科收治的颅内动脉瘤患者 80 例,按随机数字表法分为对照组和实验组各 40 例,对照组采用显微手术夹闭治疗,实验组采用血管内栓塞治疗。应用简易精神状态检查量表(MMSE)评估术后认知功能,并对比两组住院时间、院内死亡率和 1 年死亡率以及术后不良反应发生率。**结果:**实验组 MMSE 总分为 (26.78 ± 0.85) 分,高于对照组的 (22.25 ± 0.63) 分($P < 0.05$);实验组认知功能障碍率为 37.50%,低于对照组的 55.00%($P < 0.05$);实验组住院时间为 (6.7 ± 3.9) 天,低于对照组的 (9.6 ± 4.5) 天($P < 0.05$),两组院内死亡率和 1 年死亡率比较无统计学差异($P > 0.05$);两组术后不良反应发生率比较无统计学差异($P > 0.05$)。**结论:**血管内介入治疗可改善颅内动脉瘤患者治疗后的认知功能,缩短住院时间。

关键词:颅内动脉瘤;血管内介入;栓塞;认知功能

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Effects of Embolization and Clipping Therapy on Cognitive Function in Patients with Intracranial Aneurysms

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ABSTRACT Objective: To evaluate the effects of endovascular embolization and microsurgical clipping on cognitive function in patients with intracranial aneurysm. **Methods:** A total of 80 patients with intracranial aneurysms, who were treated in Chongqing Hospital of Traditional Chinese Medicine from March 2014 to September 2015, were selected and randomly divided into control group($n=40$) and experimental group ($n=40$). The control group was treated with microsurgical clipping, and the experimental group, with endovascular embolization. The postoperative cognitive function was assessed by the mini mental state examination scale (MMSE), and length of stay, in-hospital mortality rate, mortality rate in 1 year and the incidence of postoperative adverse reactions were compared between the two groups. **Results:** The total score (26.78 ± 0.85) of MMSE in the experimental group was higher than that (22.25 ± 0.63) of the control group ($P < 0.05$). The cognitive dysfunction rate (37.50%) of the experimental group was lower than that (55.00%) of the control group ($P < 0.05$). The length of stay [(6.7 ± 3.9) days] of the experimental group was lower than that [(9.6 ± 4.5) days] of the control group($P < 0.05$). There were no significant differences in in-hospital mortality rate and mortality rate in 1 year, and the incidence of adverse reactions between the two groups ($P > 0.05$). **Conclusion:** Endovascular interventional therapy can improve the cognitive function of the patients with intracranial aneurysms and shorten the length of hospital stay.

Key words: Intracranial aneurysm; Endovascular intervention; Embolism; Cognitive function

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前言

颅内动脉瘤是神经外科常见病,其破裂是自发性蛛网膜下腔出血(aneurysmal subarachnoid hemorrhage, aSAH)最主要的原因,并且具有很高的致死、致残率^[1,2]。目前显微瘤颈夹闭及介入栓塞治疗是颅内动脉瘤最为经典的两种治疗方法^[3]。颅内动脉瘤的夹闭及栓塞治疗,术后患者的复发及再出血风险发生率并无统计学差异,但是由于二者的操作方法及对患者的损伤有着截然不同的区别,导致术后患者认知功能损害率存在差异。

大多颅内动脉破裂出血的术后存活者,并没有神经功能缺损,但发生认知功能损害几率却高达 60%,严重影响患者的功能预后及生存质量^[4,5],从而增加患者家庭及社会的负担。本研究通过评价血管内介入栓塞和显微瘤颈夹闭术后患者的认知功能状态,探讨两种方法治疗颅内动脉瘤的合理性和可行性,为临床选择合适的治疗方案提供依据。

1 资料和方法

1.1 一般资料

选取 2014 年 3 月至 2015 年 9 月重庆市中医院神经外科收治的颅内动脉瘤患者 80 例,纳入标准:①头颈部 CTA、MRA 或 DSA 血管造影检查确诊为颅内动脉瘤,伴有动脉瘤破裂出

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血;① 伴有颅内动脉瘤临床症状,具备干预指征;② 患者本人或家属充分了解本次研究及可能的预后,积极配合本次研究。排除标准:① 在颅内动脉瘤之外,患者还合并心肌梗死、脑梗塞等其它器质性疾病,有手术禁忌者;② 存在心、肺、肾等重要器官功能不全者,不能耐受介入或手术治疗者;③ 六个月之内有心

肌梗死等手术史者;④ 凝血功能异常者;⑤ 患者和/或家属不接受介入或手术治疗;⑥ 患者有听力、视力、语言功能障碍者。按随机数字表法分为实验组和对照组各 40 例,两组一般资料经比较后,结果显示无统计学差异($P>0.05$),见表 1。本研究获得重庆市中医院伦理委员会批准。

表 1 两组一般资料比较

Table 1 Comparison of the general data between the two groups

General data	Control group (n=40)	Experimental group (n=40)	χ^2/t	P
Gender (male / female)	22/18	20/20	2.564	0.065
Age (years)	47.8± 14.9	48.9± 11.1	2.312	0.070
Tumor size (mm)	6.8± 3.3	7.1± 3.1	2.105	0.080
Multiple aneurysms	4(10.00)	6(15.00)	1.652	0.137
Ruptured aneurysm	12(30.00)	10(25.00)	2.745	0.061
CT Fisher grade			1.521	0.346
I grade	5(12.50)	5(12.50)		
II grade	12(30.00)	14(35.00)		
III grade	11(27.50)	10(25.00)		
IV grade	12(30.00)	11(27.50)		
Hypertensive disease	6(15.00)	8(20.00)	0.258	0.856
Diabetes disease	11(27.50)	10(25.00)	0.542	0.699
Atherosclerosis	8(20.00)	7(17.50)	0.621	0.475

1.2 治疗方法

实验组及对照组均给予术前常规检查,患者卧床、保持安静,对于无颅内动脉瘤破裂出血的患者,行头颅 CT 检查,进一步明确瘤体的大小、个数及位置。对于颅内动脉瘤破裂出血的患者,行 CT 检查明确诊断后,快速入组之后即给予紧急处理,积极控制颅内压。对于有并存症的患者,两组均在术前予以积极处理。对伴有高血压病的患者,积极控制血压;对伴有糖尿病的患者,应用普通胰岛素积极控制血糖在 8~10 mmol/L;对于动脉粥样硬化患者,术前予以持续口服降脂药物。

对照组采取显微手术夹闭手术,患者于手术室内常规气管插管,全身麻醉,在显微镜下打开侧裂池和交叉池,暴露病变动脉,应用动脉瘤夹夹闭动脉瘤的瘤颈部,确定无出血后,关闭颅腔。对于动脉瘤破裂的患者,同时尽可能清除颅内血肿,降低颅内压。实验组采取血管内介入治疗,患者平卧于血管造影床上,镇静镇痛,右下肢展开,右股动脉内置入动脉鞘和导引管,先行脑血管造影,确定动脉瘤及瘤颈部的位置及走行,随后依据导引钢丝的引导,在透视下将微导管推送至动脉瘤的瘤腔内,随后根据动脉瘤的大小,选择合适型号的微弹簧圈进行填塞。对于瘤颈较宽的动脉瘤,采用支架置入+弹簧圈结合的方式。填塞结束后拔出导引管,固定导管鞘,6-8 小时后拔除。两组患者

均根据病情需要,必要时放置引流管,术后均给予常规预防感染,抗凝及抗血管痉挛等处理,并严密监测生命体征。

1.3 观察指标

对患者使用简易精神状态检查量表(Mini-Mental State Examination, MMSE)^[6]评价两组患者的认知功能,分别测试定向能力、记忆力、注意力和计算能力、回忆能力、语言能力,共计 30 分。得分区间 30-28 分为正常,27-21 分为轻度障碍,10-20 分为中度障碍,小于或等于 9 分为重度障碍。统计并对比两组住院时间、院内死亡率,术后随访 1 年,计算两组 1 年死亡率,并比较两组术后常见并发症发生情况。

1.4 统计学方法

数据采用 SPSS 20.0 进行分析,MMSE 评分、住院时间等计量资料以均数±标准差表示,符合正态分布的数据应用独立样本 t 检验,认知功能障碍率、死亡率等计数资料以率的形式表示,应用卡方检验,检验水准为 $\alpha=0.05$ 。

2 结果

2.1 两组 MMSE 评分比较

实验组 MMSE 总分为 (26.78± 0.85) 分,高于对照组的 (22.25± 0.63) 分,差异有统计学意义($t=2.894, P=0.035$),见表 2。

表 2 两组 MMSE 评分比较($\bar{x} \pm s$, 分)Table 2 Comparison of MMSE score between the two groups ($\bar{x} \pm s$, scores)

Groups	n	Orientation ability	Memory	Attention and computing power	Recall ability	Language ability	Total scores
Control group	40	7.10± 0.21	1.75± 0.35	3.54± 0.15	2.15± 0.32	7.05± 0.12	22.25± 0.63
Experience group	40	8.84± 0.42	2.05± 0.51	3.64± 0.23	2.20± 0.43	7.83± 0.45	26.78± 0.85

2.2 两组认知障碍率比较

差异有统计学意义($\chi^2=4.510, P=0.000$), 见表 3。

实验组认知功能障碍率为 37.50%, 低于对照组的 55.00%,

表 3 两组认知功能比较

Table 3 Comparison of cognitive function between the two groups

Groups	n	Normal	Mild disorder	Moderate disorder	Severe disorder	Cognitive dysfunction
Control group	40	18(45.00)	10(25.00)	8(20.00)	4(10.00)	22(55.00)
Experience group	40	25(62.50)	8(20.00)	6(15.00)	1(2.50)	15(37.50)

2.3 两组住院时间、死亡率比较

实验组住院时间为(6.7 ± 3.9)天, 低于对照组的(9.6 ± 4.5)天($P<0.05$), 实验组在住院期间无患者死亡, 对照组在住院期间有 2 例患者死亡, 两组院内死亡率比较无统计学差异($P>0.05$)。

随访两组患者治疗后 1 年死亡情况, 实验组 1 例患者死亡, 对照组 4 例患者死亡, 两组 1 年死亡率比较无统计学差异($P>0.05$), 如表 4 所示。

表 4 两组住院时间、院内死亡率和 1 年死亡率对比

Table 4 Comparison of length of stay, in-hospital mortality rate and mortality rate in 1 year between the two groups

Groups	n	Length of stay(d)	In-hospital mortality rate	Mortality rate in 1 year
Control group	40	9.6 ± 4.5	2(5.00)	4(10.00)
Experience group	40	6.7 ± 3.9	0(0.00)	1(2.50)
χ^2/t	-	3.962	1.908	2.354
P	-	0.007	0.064	0.046

2.4 两组并发症比较

实验组患者治疗后, 有 1 例出现脑缺血, 1 例出现颅内血管痉挛, 1 例出现肢体瘫痪症状。对照组患者治疗后, 1 例出现脑缺血, 2 例出现颅内血管痉挛, 1 例再次出现颅内动脉瘤破裂, 1 例出现精神异常。实验组治疗后的常见并发症的发生率为 7.50%, 与对照组的 12.5% 相比无统计学差异($\chi^2=2.541, P=0.084$)。

3 讨论

颅内动脉瘤破裂出血是一种常见急性的可导致当人类致死、致残的病理过程^[6]。颅内动脉瘤破裂自发性患者可出现多个认知领域的功能障碍, 严重影响患者术后生存质量^[8,9]。目前对动脉瘤破裂所致自发性蛛网膜下腔出血相关的认知障碍研究较少, 因此评估术后患者的认知功能具有重要的临床意义。随着介入治疗在球囊及支架辅助技术等方面取得重大的进展, 以及血管内介入栓塞具有的创伤小、低风险、后遗症小等特点, 已成为神经外科医师及患者治疗颅内动脉瘤的首选。目前治疗颅内动脉瘤主要方法仍是开颅动脉瘤夹闭术及介入栓塞术, 术后患者发生认知功能障碍已成为影响前交通动脉瘤患者日常生活的重要原因, 而认知障碍的发生通常认为与患者额叶损伤、前交通复合体损伤及穿支血管损伤导致局部缺血有关^[10-12]。

颅内动脉瘤是神经外科常见的颅内血管性疾病, 是颅内动脉血管壁局部由于先天缺陷或动脉腔内压力过高引起的囊性膨出, 因其有随时破裂的可能, 因而有极高的致残和致死率^[13,14]。研究表明颅内动脉瘤一般发生于大血管交叉的位置, 以颈内静脉后交通支和前交通支较为常见, 临床较典型的症状如剧烈头痛、乏力、恶心、精神异常、嗜睡等^[15-17]。若颅内动脉瘤发生破裂出血, 患者会出现严重头痛、呕吐、视乳头水肿等颅内压增

高症状, 严重时会昏迷, 甚至死亡^[18-20]。传统的治疗方式为在降低颅内压的基础上实施开颅手术, 夹闭动脉瘤。此种方法可以相对彻底清除血肿, 改善颅神经功能及预后^[21]。然而开颅手术创伤较大, 而且对于动脉瘤位置较深如基底动脉瘤和颅底处的动脉瘤, 因操作的空间狭小, 手术的风险大大增加。近年来, 随着医疗水平的日益发展, 特别是医学影像学技术的不断进步, 血管内介入逐渐成为颅内动脉瘤主要的治疗方式。本研究结果显示实验组 MMSE 总分较对照组升高, 而认知功能障碍率、住院时间较对照组降低($P<0.05$), 说明血管内介入治疗可明显改善颅内动脉瘤患者认知功能, 缩短住院时间。

目前血管内介入治疗颅内动脉瘤的首选方式为应用弹簧圈致密填塞动脉瘤的瘤腔, 因此, 若弹簧圈被压缩, 瘤腔不能得到完整填塞, 这被认为是介入治疗颅内动脉瘤复发率高的一个重要因素之一^[21-23]。目前的影像学技术无法做到在介入治疗后探测出弹簧圈的细微结构, 从而无法更精确的进行血流动力学分析, 再加上弹簧圈本身质地柔软, 盘绕随意, 实施介入操作时置入弹簧圈的个数和方式不同, 亦会影响血流动力学分析, 因此现在多以忽略弹簧圈内血流法、介质等效法, 以及弹簧圈结构释放法等模拟动脉瘤的血流动力学, 为后期预防复发奠定基础^[24,25]。本研究在为实验组患者实施血管内介入治疗时, 应用弹簧圈尽可能完整填塞动脉瘤腔, 避免弹簧圈压缩, 降低治疗后动脉瘤复发的几率。影响颅内动脉瘤介入治疗预后的主要因素包括 Hunt-Hess 分级(III 级、IV 级)、高血压、动脉瘤多次破裂及多发性动脉瘤等^[26,27]。在本研究中实验组与对照组的术后并发症发生率无统计学差异, 可能是两组院内死亡率和 1 年死亡率无差异的原因。同时也提示, 实施颅内动脉瘤的介入治疗前, 应充分做好术前准备, 积极控制高血压等并存症, 尽可能预防动脉瘤破裂^[28,29]。对于颅内动脉瘤行血管内介入治疗后复发,

Fischer S 等研究发现,对复发性颅内动脉瘤再次行血管内介入治疗,效果良好,安全性高,不增加死亡率^[30]。

本研究的不足之处在于:第一,对于血管内介入治疗组(实验组),未再按照具体介入方法的不同而细化分组,忽略了不同的介入方法对死亡率的潜在影响。第二,对于出院后出现动脉瘤复发及动脉瘤破裂患者的再出理,未做进一步的统计研究。第三,由于病例数较少,未观察到血管内介入治疗对颅内动脉瘤远期预后的优势,需要后期多中心的临床研究进一步证实。

综上所述,血管内介入治疗可减少颅内动脉瘤患者认知功能障碍发生率,缩短住院时间,值得临床推广。

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