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脑出血后白质微观结构损伤与血管性认知功能障碍的相关性研究*

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摘要 目的:探讨脑出血后白质微观结构损伤情况和血管性认知功能障碍(VCI)的相关性。**方法:**选择 2012 年 1 月至 2017 年 12 月我院收治的脑出血患者 50 例作为研究对象,所有患者按照神经心理学评估结果分为认知功能障碍组(A 组)29 例和认知正常组(B 组)21 例,观察和比较两组患者病灶情况和白质微观结构的改变情况。**结果:**A 组患者额区、基底核区病灶数量,病灶直径、白质病变、美国国立卫生院卒中量表(NIHSS)评分等指标均明显高于 B 组,改良巴氏指数(MBI)评分低于 B 组($P<0.05$);将蒙特利尔认知评估(MoCA)量表评分作为因变量,MBI 评分和 NIHSS 量表评分、病灶直径、病灶数量、白质病变程度等作为自变量进行多元 Logistic 回归分析,结果显示白质病变程度是脑出血患者 VCI 独立危险因素($P<0.05$)。**结论:**脑出血患者白质缺血性病变程度可能用于评估其发生 VCI 的风险。

关键词:脑出血;脑白质;微观结构;认知功能障碍;相关性

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Correlation of White Matter Microstructure Damage with the Vascular Cognitive Dysfunction after Intracerebral Hemorrhage*

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ABSTRACT Objective: To investigate the correlation of white matter microstructure damage with the vascular cognitive dysfunction in patients with intracerebral hemorrhage. **Methods:** 50 cases of patients with cerebral hemorrhage admitted in our hospital from January 2012 to December 2017 were studied. All patients were divided into 29 cases of cognitive dysfunction group (group A) and 21 cases of normal cognitive group (group B) according to the neuropsychology results. The lesions and the changes of white matter gastric tube structure were observed and compared between two groups. **Results:** The number of lesions in the frontal area and basilar nucleus, the lesion diameter and white matter lesions, national institutes of health stroke scale (NIHSS) of group A were significantly higher than those of the group B. The score of modified barthrel index (MBI) was lower than that of the group B ($P<0.05$). The montreal cognitive assessment (MoCA) scale score was used as the dependent variable, the MBI score and the NIHSS scale score, the lesion diameter, and the degree of white matter lesions were analyzed by multiple Logistic regression as independent variables. The results showed that the degree of white matter was an independent risk factor for VCI in patients with cerebral hemorrhage ($P<0.05$). **Conclusion:** The degree of white matter ischemic lesions may be used to evaluate the risk of VCI in patients with cerebral hemorrhage.

Key words: Intracerebral hemorrhage; White matter; Microstructure; Cognitive impairment; Correlation

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前言

全球每年 200-300 万人发生脑出血,脑出血死亡率为 40%,幸存者中只有 12%-39%不会出现遗留残疾^[1-3]。引起脑出

血的因素较多,包括高血压、药物使用、血管结构破坏、脑淀粉样血管病变等^[4-7]。血管性认知功能障碍(VCI)是由脑血管病或该病相关危险引起的对患者的认知功能产生不同程度损伤的一组临床综合征,多数脑出血患者出现以上后遗症^[8-10]。

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近年来,随着我国老龄化进程加快,脑出血的发病率逐渐上升造成 VCI 发病率呈升高趋势,严重影响患者的生存质量和生活质量^[11,12],早期进行准确的、有针对性的诊断对患者的治疗具有积极意义^[13,14]。本研究将我院近 5 年来收治的脑出血患者 50 例作为研究对象,分析白质微观结构损伤对认知功能障碍的影响。

1 资料与方法

1.1 一般资料

表 1 两组患者的一般资料比较

Table 1 Comparison of the general data between the two groups

Group	Cases	Education time (year)	LDL(mmol/L)	TC(mmol/L)	FBG(mmol/L)	Diastolic pressure (mmHg)	Systolic pressure (mmHg)
Group A	29	12.38± 4.53	3.22± 0.51	4.25± 1.10	6.82± 1.24	94.23± 6.41	159.28± 8.79
Group B	21	12.29± 4.62	3.26± 0.49	4.49± 1.28	7.01± 1.46	94.62± 6.39	160.22± 9.21
P	-	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05

1.2 纳入和排除标准

纳入标准:经头颅 CT 或 MRI 检查确诊,符合《中华医学会第二次全国脑血管病学术会议》中脑出血诊断标准:① 体力活动,情绪激动时易发病;② 发病时头痛、反复呕吐、血压升高;③ 病情迅速发展,常出现意识障碍、偏瘫、其他神经系统症状;④ 存在高血压病史;⑤ 腰穿脑脊液多含血和压力增高;⑥ 脑超声诊断有中线波移位。

排除标准:合并有精神性疾病、意识障碍、听力和语言障碍,心、肝、肾功能性病变、头颅外伤引起的痴呆患者。

1.3 脑缺血病灶的检测方法

所有患者使用西门子 1.5T 型 MRI 开展皮质下缺血病灶情况检查,记录不同位置的病灶直径和数量。

1.4 观察指标

神经功能缺损程度:使用 NIHSS 和改良 Barthrel 指数评定量表(MBI)对患者认知功能进行评分,NIHSS 总得分越高表明患者神经功能缺损程度越严重;Barthrel 总分 100 分,大于 60 分表明生活基本自理,40~60 分为认知功能中度障碍,20~40 分表明重度功能障碍,小于 20 分表明完全残疾。

选择 2012 年 1 月至 2017 年 12 月在我院就诊的脑出血患者 50 例作为研究对象,所有患者按照神经心理学评估结果分为认知功能障碍组(A 组)29 例和认知正常组(B 组)21 例。A 组中,男 16 例,女 13 例,年龄 52~77 岁,平均 62.62± 4.19 岁;病程 2~15d,平均 5.62± 3.19 d;对照组中,男 12 例,女 9 例,年龄 54~78 岁,平均 66.21± 3.98 岁;病程 3~14d,平均 5.48± 3.22 d;两组患者受教育时间、低密度脂蛋白、总胆固醇、空腹血糖、血压等其他一般资料比较差异均无统计学意义($P>0.05$),具有可比性,详见表 1。

按照 MRI 影像学检查存在的差异评估两组患者白质微观结构改变情况,标准为:不存在任何病变判为 0 级,白质有轻度病变判为 I 级,白质中度病变判为 II 级,重度病变判为 III 级,对额、颞、顶、枕等区域按照上述四个级别进行评分,10 个区域共 30 分。

VCI 程度测定:使用蒙特利尔认知评估量表(MoCA)进行评估,总分 30 分, ≥ 26 分表示正常标准,分为 8 个认知领域和 11 个检查项目。

1.5 统计学方法

用 SPSS19.0 对数据进行统计学分析处理,计数资料和计量资料分别以百分率(%)和均数± 标准差($\bar{x} \pm s$)表示,组间比较使用 χ^2 或 t 检验, $P<0.05$ 为差异具有统计学意义。

2 结果

2.1 两组患者影像学检查结果、NIHSS 评分和 Barthrel 指数比较

A 组患者额区、基底核区病灶数量,病灶直径、白质病变、NIHSS 评分等指标均明显高于 B 组,Barthrel 指数评分低于 B 组,组间比较差异具有统计学意义($P<0.05$),详见表 2。

表 2 两组患者影像学检查结果、NIHSS 评分和 Barthrel 指数比较

Table 2 Comparison of the results of imaging examination, NIHSS score and Barthrel index between the two groups

Indexs	Group A(29 cases)	Group B(21cases)	P
Lesions in the frontal area	3.72± 1.29	2.04± 0.85	<0.05
Lesions in the temporal region	3.38± 1.14	3.13± 1.21	>0.05
Lesions in the occipital region	2.56± 1.09	2.43± 1.16	>0.05
Basal nuclear lesions	4.67± 1.73	2.48± 1.29	<0.05
Submucosal lesions	4.52± 1.24	4.50± 1.22	>0.05
Lesions in diameter(mm)	5.67± 1.84	2.52± 1.37	<0.05
White matter lesions	24.72± 3.14	19.12± 2.42	<0.05
NIHSS scores	29.18± 3.24	18.26± 3.42	<0.05
Barthrel index	43.19± 8.74	69.19± 10.42	<0.05

2.2 脑出血患者发生 VCI 的危险因素分析

将 MoCA 量表评分作为因变量,MBI 评分和 NIHSS 量表评分、病灶直径、病灶数量、白质病变程度等作为自变量进行多

元 Logistic 回归分析,结果显示白质病变评分是脑出血患者发生 VCI 的独立危险因素($P<0.05$),详见表 3。

表 3 脑出血患者发生 VCI 的危险因素分析

Table 3 Analysis of the risk factors of cerebral hemorrhage patients with VCI

Variate	β	SE	Wald	P	OR	95%CI
MBI scores	0.126	0.089	2.083	>0.05	1.129	0.965~1.324
NIHSS scores	0.043	0.034	1.389	>0.05	1.045	0.973~1.129
The number of lesions	0.045	0.039	1.671	>0.05	1.053	0.975~1.329
Lesions in diameter	0.145	0.211	0.543	>0.05	1.153	0.778~1.724
Degree of white matter lesions	0.012	0.005	4.782	<0.05	1.011	1.001~1.024

3 讨论

VCI 是脑出血患者的一种常见临床后遗症,已经有许多专家和学者对 VCI 和多种指标的相关性展开了大量的研究^[15-17],如头颅不同区域的病灶数量和直径等。临床研究表明脑出血患者 VCI 及病变程度和皮下缺血性病变存在很大的相关性^[18,19],主要依据是患者的临床表现,某个或数个认知功能区域损伤,而且受损伤的认知能力是反应敏捷性、抽象思维、信息理解和实践动手等方面,这些认知功能区域集中分布在大脑皮质和皮质下^[20,21]。解剖学研究结果显示发生脑出血的患者会因病灶处小血管发生一定病变和对脑白质的深穿支小动脉产生一定的影响,血管的供血能力降低,造成不完全性缺血,甚至引发梗死。因此,将出血脑白质的病变作为脑部小血管的一种病变,尤其是在出血病灶周边,会因小动脉低灌注造成皮质下缺血性脑血管病^[22,23]。

研究表明脑出血患者的血压、血脂、血糖等基础性生化指标和患者是否发生 VCI 无明显的相关性^[24,25],本研究结果显示出现认知功能障碍和认知功能正常的脑出血患者受教育时间、低密度脂蛋白、总胆固醇、空腹血糖、血压等其他一般资料比较差异无统计学意义,而出现认知功能障碍的患者额区、基底核区病灶数量,病灶直径、白质病变、NIHSS 评分等指标均明显高于认知功能正常的脑出血患者,Barthrel 指数评分低于认知功能正常的脑出血患者,可见脑出血区域的差异会造成脑白质不同程度的病变,认知功能受损程度和神经功能缺损程度存在一定的相关性。Logistic 回归法分析结果进一步提示脑出血患者脑白质病变程度是 VCI 的独立危险因素,而且病变越严重患者的认知功能损伤越严重,提示脑白质病变对患者认知功能相关的胆碱通路和某些重要位置带来的损伤^[26,27]。此外,脑出血患者皮质下白质的缺血性病变严重程度可能作为脑出血患者出现 VCI 的预测指标^[28]。

综上所述,相较于认知功能正常的脑出血患者来说,认知功能障碍患者的病变区域、数量、直径和白质病变、NIHSS 评分和 Barthrel 指数评分都存在明显差异,而白质病变程度为脑出血患者发生 VCI 的独立危险因素。

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(上接第 4505 页)

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