

颈动脉多普勒超声对慢性肾病患者动脉粥样硬化程度及血流动力学的诊断价值

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【摘要】目的:研究颈动脉多普勒超声对慢性肾病患者动脉粥样硬化程度及血流动力学的诊断价值。**方法:**随机选取长沙市第一医院收治的慢性肾病患者80例为研究对象,其中包括40例血液透析患者,40例腹膜透析患者,并同期选取健康体检者40例作为对照组,对比分析各组颈动脉多普勒超声检查结果。**结果:**血液透析组和腹膜透析组患者的内中膜厚度、颈总及颈内动脉峰值血流速度、颈总及颈内动脉舒张末血流速度均明显高于对照组($P<0.05$),且血液透析组内中膜厚度与腹膜透析组比较差异并不显著($P>0.05$);但是血液透析组颈总及颈内动脉峰值血流速度及动脉舒张末血流速度均明显低于腹膜透析组($P<0.05$)。**结论:**颈动脉多普勒超声能够有效测量慢性肾病患者颈总及颈内动脉峰值血流速度、舒张末血流速度及内中膜厚度,对防治患者出现心脑血管事件具有积极作用。

【关键词】多普勒超声;慢性肾病;颈动脉;动脉粥样硬化;血流动力学

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Diagnostic value of carotid Doppler ultrasound for atherosclerosis and hemodynamic status in patients with chronic renal diseases

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Abstract: Objective To explore the value of carotid Doppler ultrasound in the diagnosis of atherosclerosis and hemodynamic status in patients with chronic renal diseases. **Methods** Eighty patients with chronic kidney diseases in the First Hospital of Changsha, including 40 patients receiving hemodialysis and 40 patients receiving peritoneal dialysis, were enrolled in this study. Meanwhile, 40 healthy subjects were selected as control group. The results obtained with carotid Doppler ultrasound in different groups were compared. **Results** The intima-media thickness, the peak blood flow velocities in common carotid artery and internal carotid artery, the end-diastolic blood flow velocities in common carotid artery and internal carotid artery in hemodialysis group and peritoneal dialysis group were higher than those in control group ($P<0.05$), and no significant differences were found in intima-media thickness between hemodialysis group and peritoneal dialysis group ($P>0.05$). However, the blood velocities in common carotid artery and internal carotid artery in hemodialysis group were significantly lower than those in peritoneal dialysis group ($P<0.05$). **Conclusion** Carotid Doppler ultrasound can effectively measure intima-media thickness, and the peak blood flow velocities and end-diastolic blood flow velocities in common carotid artery and internal carotid artery in patients with chronic kidney diseases, which is helpful for the prevention and treatment of cerebrovascular diseases in patients with chronic kidney diseases.

Keywords: Doppler ultrasound; chronic renal disease; carotid artery; atherosclerosis; hemodynamics

前言

慢性肾病是临床诊疗中比较常见的慢性疾病类

型,该病也是导致动脉粥样硬化的高危因素,慢性肾病患者出现心脑血管疾病的患病率及病死率高于普通人群,而早期诊断并给予有效治疗是改善该病临床症状及预后的关键措施^[1-2]。颈动脉检查能够在一定程度上反映慢性肾病患者全身动脉粥样硬化情况,有助于评价其血流动力学变化,在临床上具有一定价值^[3]。鉴于此,本研究选取长沙市第一医院收治

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的慢性肾病患者作为研究对象,进一步探讨颈动脉多普勒超声在慢性肾病患者动脉粥样硬化程度及血流动力学中的应用价值。

1 资料与方法

1.1 一般资料

所选取患者均经临床诊断确诊,入院时间为2015年1月~2016年1月,所有患者均对本研究知情并自愿参与。80例入选患者分为血液透析组40例和腹膜透析组40例,前者患者中男22例,女18例,年龄33~72岁,平均年龄(50.33±13.74)岁;后者患者中男20例,女20例,年龄37~70岁,平均年龄(51.47±14.05)岁。同期选取40例健康体检者作为对照组,其中男21例,女19例,年龄35~67岁,平均年龄(50.21±13.25)岁。各组基本资料比较无显著差异($P>0.05$),具有可比性。

1.2 方法

为确保检查结果的准确性,所有患者的颈动脉超声检查均由同一名技术熟练的超声医生完成。仪器采用GE-VIVID7超声诊断仪,频率控制在10 MHz。患者取仰卧位,使其颈部仰伸并充分暴露,在颈部测量位置距分叉1 cm处测量颈总动脉内中膜厚度。为提高数据精准性,需要在不同位置测量3次,并将所得平均值作为测量结果。在颈动脉多普勒超声检测中,于管腔放置取样框,按照管径2/3规范取样门大小,并使其角度尽可能与血流方向平行,根据颈总动脉和颈内动脉多普勒频谱测量各组峰值血流速度和舒张末血流速度。

1.3 统计学分析

采用SPSS 18.0统计学软件,计量资料采用均数±标准差表示。多组间比较采用方差分析,两两比较行SNK法, $P<0.05$ 表示有统计学意义。

2 结果

2.1 各组内中膜厚度比较

血液透析组和腹膜透析组患者内中膜厚度均较对照组明显增厚($P<0.05$),腹膜透析组与血液透析组患者之间的内中膜厚度比较无统计学意义($P>0.05$),见表1。

表1 各组内中膜厚度比较(mm)			
Tab.1 Comparison of intima-media thickness in 3 groups (mm)			
组别	<i>n</i>	右侧颈总动脉	左侧颈总动脉
对照组	40	0.83±0.17	0.84±0.20
腹膜透析组	40	0.99±0.31	1.05±0.16
血液透析组	40	1.12±0.33	1.08±0.30
<i>F</i> 值	-	4.20	4.37
<i>P</i> 值	-	<0.05	<0.05

2.2 各组颈总及颈内动脉峰值血流速度比较

对照组颈总及颈内动脉峰值血流速度均明显低于腹膜透析组和血液透析组,差异比较有统计学意义($P<0.05$),腹膜透析组患者颈总及颈内动脉峰值血流速度高于血液透析组($P<0.05$),见表2。

表2 各组颈总及颈内动脉峰值血流速度比较(cm/s)					
Tab.2 Comparison of the peak blood flow velocities in common carotid artery and internal carotid artery in 3 groups (cm/s)					
组别	<i>n</i>	左侧颈总动脉	左侧颈内动脉	右侧颈总动脉	右侧颈内动脉
对照组	40	43.41±13.25	61.23±12.03	42.17±12.08	60.27±10.25
腹膜透析组	40	73.35±15.42	76.24±13.35	72.15±15.33	74.32±13.47
血液透析组	40	70.10±14.20	68.08±11.34	67.34±13.82	67.53±15.40
<i>F</i> 值	-	24.35	13.32	20.46	17.88
<i>P</i> 值	-	<0.05	<0.05	<0.05	<0.05

2.3 各组颈总及颈内动脉舒张末血流速度比较

3组在颈总及颈内动脉舒张末血流速度方面比较具有统计学意义($P<0.05$),其中对照组较腹膜透析组和血液透析组低,腹膜透析组又高于血液透析组,各组比较差异明显($P<0.05$),见表3。

3 讨论

多项临床研究显示,慢性肾病是导致脑卒中发生的独立危险因素,而心血管疾病也是导致肾脏疾病发生的常见原因^[4-6]。一旦慢性肾病发展到晚期,如果不及时采用肾移植手术治疗,将进一步加重肾

表3 各组颈总及颈内动脉舒张末血流速度比较(cm/s)

Tab.3 Comparison of the end-diastolic blood flow velocities in common carotid artery and internal carotid artery in 3 groups (cm/s)

组别	n	左侧颈总动脉	左侧颈内动脉	右侧颈总动脉	右侧颈内动脉
对照组	40	14.03±4.22	23.16±4.55	13.15±5.02	22.15±4.27
腹膜透析组	40	24.66±3.09	34.22±4.17	23.05±3.87	34.30±4.52
血液透析组	40	20.03±2.95	32.01±3.31	19.04±4.02	32.08±3.25
F值	-	44.01	30.12	25.05	32.54
P值	-	<0.05	<0.05	<0.05	<0.05

衰竭症状,严重威胁患者的生命健康。目前,血液透析和腹膜透析是临床上用于治疗晚期肾病的主要手段,能够在一定程度上改善患者的病情进展^[7]。早期诊断肾病是延缓或防治肾病进一步发展的关键,在早期没有临床症状的情况下,动脉粥样硬化患者的血管能够检查到内中膜的增厚、血流动力学状态的改变以及斑块的形成。此外,有研究显示,慢性肾病患者在接受透析治疗的同时,由于动脉粥样硬化导致的心血管疾病发生率将增加,而血管损伤是目前认为导致患者病情进展的主要原因^[8-9]。

本组研究结果显示,慢性肾病患者内中膜厚度明显较对照组增厚,且腹膜透析组与血液透析组患者的颈总及颈内动脉舒张末血流速度以及颈总及颈内动脉峰值血流速度比较同样存在一定差异,说明长期血液透析患者在动脉粥样硬化性心血管疾病发生方面具有较为严重的病情进展程度^[10-14]。超声作为临床上用于早期诊断血管硬化的常用方法,增加动脉粥样硬化血管检查,能够较为直观地观察到患者管壁斑块形成,对评估斑块稳定性具有积极的指导作用^[15-16]。有学者提出慢性肾病患者颈动脉内中膜厚度与冠脉血流储备具有密切关系,随着颈动脉内中膜厚度的增厚,患者冠脉血流储备也随之下降,可以说动脉粥样硬化起始于慢性肾病的早期阶段^[17]。这与本组研究结果相符合。

综上所述,颈动脉多普勒超声能够有效测量慢性肾病患者颈总及颈内动脉峰值血流速度、舒张末血流速度及内中膜厚度,对防治患者出现心脑血管事件具有积极作用,值得临床深入研究。

【参考文献】

[1] 傅宁华,杨斌,姚春晓,等.声触诊组织定量分析评估慢性肾病患者肾脏弹性[J].中华医学超声杂志(电子版),2010,7(12):2122-2126.
FU N H, YANG B, YAO C X, et al. Quantitative analysis of acoustic palpation tissue to evaluate renal elasticity in patients with chronic kidney disease[J]. Chinese Journal of Medical Ultrasound (Electronic

Edition), 2010, 7(12): 2122-2126.

- [2] LENOIR O, JASIEK M, HÉNIQUE C, et al. Endothelial cell and podocyte autophagy synergistically protect from diabetes-induced glomerulosclerosis[J]. Autophagy, 2015, 11(7): 1130-1145.
- [3] 许立岩,张新书,姜凡,等. RT-3DE技术评估早期慢性肾病患者左心室收缩同步性[J]. 中国超声医学杂志, 2017, 33(2): 125-128.
XU L Y, ZHANG X S, JIANG F, et al. Evaluation of left ventricular systolic synchrony in patients with early chronic kidney disease by RT-3DE technique[J]. Chinese Journal of Ultrasound in Medicine, 2017, 33(2): 125-128.
- [4] 刘飞,徐东,张科峰,等. 颈动脉狭窄程度对冠脉搭桥术中大脑动脉血流变化的影响[J]. 热带医学杂志, 2016, 16(4): 474-476.
LIU F, XU D, ZHANG K F, et al. Effects of carotid stenosis on cerebral arterial blood flow changes during coronary artery bypass grafting[J]. Journal of Tropical Medicine, 2016, 16(4): 474-476.
- [5] 王应,刘从国,程蓉,等. 糖尿病肾病患者血液透析中血压变化特点及护理措施探讨[J]. 海军医学杂志, 2015, 7(4): 334-336.
WANG Y, LIU C G, CHENG R, et al. Characteristics of blood pressure changes and nursing measures in hemodialysis patients with diabetic nephropathy[J]. Journal of Navy Medicine, 2015, 7(4): 334-336.
- [6] 孔维敏,刘林,薛存屹,等. 颈动脉内中膜增厚及斑块对中风和冠心病事件的影响[J]. 中国热带医学, 2016, 16(1): 76-79.
KONG W M, LIU L, XUE C Y, et al. Effects of carotid intima-media thickening and plaque on stroke and coronary heart disease events[J]. China Tropical Medicine, 2016, 16(1): 76-79.
- [7] 高亚军,屈永才,薛艺东. 颈动脉粥样硬化及血流动力学变化与脑梗死的相关性研究[J]. 中国实用神经疾病杂志, 2015, 11(7): 86-88.
GAO Y J, QU Y C, XUE Y D. Correlation between carotid atherosclerosis and hemodynamic changes and cerebral infarction[J]. Chinese Journal of Practical Nervous Diseases, 2015, 11(7): 86-88.
- [8] 杨克,张云山,刘秋颖,等. 血液透析患者动脉粥样硬化的高频超声评价[J]. 海军医学杂志, 2013, 34(5): 324-327.
YANG K, ZHANG Y S, LIU Q Y, et al. High frequency ultrasound evaluation of atherosclerosis in hemodialysis patients[J]. Journal of Navy Medicine, 2013, 34(5): 324-327.
- [9] 任永凤,王洲,李健,等. 慢性肾病患者颈动脉多普勒超声应用及临床价值[J]. 蚌埠医学院学报, 2015, 40(4): 513-516.
REN Y F, WANG Z, LI J, et al. Application and clinical value of carotid Doppler ultrasound in patients with chronic kidney disease[J]. Journal of Bengbu Medical College, 2015, 40(4): 513-516.
- [10] SVENNINGSEN P, ANDERSEN H, NIELSEN L H, et al. Urinary serine proteases and activation of ENaC in kidney-implications for physiological renal salt handling and hypertensive disorders with albuminuria[J]. Pfluegers Arch, 2015, 467(3): 531-542.

- [11] 段丽英, 贾蓉. 彩色多普勒超声在评估颈动脉粥样硬化斑块与脑梗死相关性中的应用价值研究[J]. 山西医药杂志, 2016, 45(15): 1765-1767.
- DUAN L Y, JIA R. Application of color Doppler ultrasound in assessing the correlation between carotid atherosclerotic plaque and cerebral infarction[J]. Shanxi Medical Journal, 2016, 45(15): 1765-1767.
- [12] 吴苑华, 胡萍香, 朱彤, 等. 超声弹性成像声触诊组织定量分析技术在慢性肾病中的应用价值[J]. 中国医学装备, 2016, 13(12): 59-62.
- WU Y H, HU P X, ZHU T, et al. Application value of ultrasound elastography acoustic palpation tissue quantitative analysis technique in chronic kidney disease[J]. Chinese Medical Equipment, 2016, 13(12): 59-62.
- [13] SALK I, YILDIZ G, EGILMEZ H, et al. Carotid artery Doppler ultrasonography in patients with chronic kidney disease[J]. Med Sci Monit, 2014, 7(20): 11-18.
- [14] YU F P, ZHAO Y C, GU B, et al. Chronic kidney disease and carotid atherosclerosis in patients with acute stroke[J]. Neurologist, 2015, 20(2): 23-29.
- [15] HAKIMI S S, SABERI H, ROKNIYAZDI H, et al. Carotid artery stenosis in patients with chronic kidney disease undergoing dialysis: epidemiological aspects, main risk factors and appropriate diagnostic criteria[J]. Saudi J Kidney Dis Transpl, 2014, 25(1): 58-65.
- [16] AO D H, ZHAI F F, HAN F, et al. Large vessel disease modifies the relationship between kidney injury and cerebral small vessel disease[J]. Front Neurol, 2018, 26(9): 498.
- [17] 赵蕊, 吴玉林, 安琳, 等. 超声诊断在老年慢性肾病中的应用价值研究[J]. 中国全科医学, 2012, 15(19): 2181-2183.
- ZHAO R, WU Y L, AN L, et al. Application value of ultrasound diagnosis in elderly patients with chronic kidney disease[J]. Chinese Journal of General Practice, 2012, 15(19): 2181-2183.

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