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高血压患者血压控制水平、血脂水平及颈动脉斑块与冠脉病变的关系*

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摘要 目的:探讨血压控制水平、血脂水平和颈动脉斑块与高血压患者冠脉病变程度和病变支数的关系。**方法:**回顾性分析 2014 年 01 月至 2016 年 05 月收住于南京中医药大学附属江苏省中西医结合医院心血管科的原发性高血压患者 273 例,按血压控制水平分为达标组和未达标组。按颈动脉超声结果判断有无斑块,冠状动脉造影结果使用 Gensini 评分和病变支数表示,并检测血脂指标。**结果:**血压控制达标者 130 人(47.61%),颈动脉有斑块者 193 例(70.70%)。与血压控制达标患者相比,血压控制不达标者冠脉病变支数及冠脉狭窄程度得分均明显增加($P<0.05$)。血压不达标合并斑块患者冠脉病变支数和狭窄程度与血压达标无斑块、血压达标合并斑块及血压不达标无斑块患者相比均明显增加 ($P<0.001$)。患者 HDL-C 水平与冠状动脉狭窄程度呈负相关($r=-0.139$, $P=0.022$),AI 与冠状动脉狭窄程度呈正相关($r=0.136$, $P=0.025$),LDL/HDL-C 和 AI 与冠脉病变支数均呈正相关,分别为($r=0.128$, $P=0.035$)和($r=0.137$, $P=0.023$)。**结论:**血压控制不佳,高血脂和颈动脉斑块形成可增加高血压患者冠脉病变的严重程度。

关键词: 血压控制;血脂;颈动脉斑块;冠脉病变

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The Relationship between Blood Pressure Control, Blood Lipid Levels, Carotid Artery Plaque and Severity of Coronary Artery in Patients with Hypertension*

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ABSTRACT Objective: To explore the relationship between blood pressure control, blood lipid levels, carotid artery plaque and the severity and numbers of diseased coronary artery in patients with hypertension. **Methods:** A total of 273 cases of hospitalized patients with primary hypertension were included in the department of Cardiology, Hospital on Integration of Chinese and Western Medicine Affiliated to Nanjing University of Chinese Medicine from January 2014 to May 2016. According to the level of blood pressure control, patients were divided into good control group and poor control group. According to carotid artery ultrasonography, patients were judged with plaque or not. The results of coronary angiography were presented using Gensini scores and the number of diseased artery. Blood lipid levels were tested. **Results:** There were 130 patients (47.61%) with good blood pressure control, and 193 patients (70.70%) with carotid artery plaque. Compared with the good blood pressure control, poor blood pressure control patients had increased numbers of diseased coronary artery and higher Gensini scores ($P<0.05$). Compared with the patients who had good blood pressure control without plaque, good blood pressure control with plaque or poor blood pressure control without plaque, patients with poor blood pressure control and carotid artery plaque had more numbers of diseased coronary artery and higher Gensini scores ($P<0.001$). HDL-C was negatively correlated with coronary artery stenosis degree ($r=-0.139$, $P=0.022$), AI and coronary artery stenosis degree was positively related ($r=0.136$, $P=0.025$). LDL/HDL-C and AI were positively correlated with the number of diseased coronary artery, respectively [$r=0.128$, $P=0.035$] and ($r=0.137$, $P=0.023$). **Conclusions:** Poor blood pressure control, hyperlipemia and carotid artery plaque could increase the severity of coronary artery disease in patients with hypertension.

Key words: Blood pressure control; Blood lipids levels; Carotid artery plaque; Diseased coronary artery

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前言

冠心病是威胁人类生命健康的“第一杀手”,高血压是冠

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脉病变危险因素之一。和血压正常者相比,高血压患者患冠心病的风险增加 2-5 倍^[1]。高血脂是高血压患者常见伴发疾病,也是冠脉病变常见危险因素。近年来,颈动脉粥样硬化成为外周动脉病变研究的热点,能较好的预测冠脉病变。但这些因素与冠脉病变的关系在高血压人群中研究较少,伴有这些因素对高血压患者冠脉病变支数和冠脉 Gensini 评分影响如何? 本研究旨在通过探讨这些危险因素与冠脉病变程度量化后的关系,为高血压患者冠心病的预防提供参考,提高患者生存质量。

1 资料与方法

1.1 调查对象

选择 2014 年 01 月至 2016 年 05 月收住于南京中医药大学附属江苏省中西医结合医院心血管科,同时行颈动脉超声和冠脉造影的原发性高血压患者 273 例,纳入标准:(1)符合中国高血压防治指南 2010 年诊断标准^[2];(2)首次做造影的成年患者;(3)排除继发性高血压、感染、免疫系统疾病、心肌病、恶性肿瘤和严重肝肾功能不全者等。其中男 149 例,女 124 例;年龄 37-85 岁,平均年龄(63.88± 9.66)岁。按照中国高血压基层管理指南^[3],将患者分为血压控制达标组(130 人)和未达标组(143 人)。

1.2 调查方法

1.2.1 基线资料 记录性别、年龄、身高和体重,是否有冠心病史、脑血管病病史,计算患者的体重指数(BMI)=体质量(kg)/身高(m)²。测量血压和心率。1 mmHg=0.133kPa。273 例患者中,男 149 例(54.58%),女 124 例(45.42%);年龄 37-85 岁,平均(63.88± 9.66)岁。颈动脉超声提示颈动脉有斑块者 193 例(70.70%),其中软斑 66 例(24.18%),硬斑 38 例(13.92%),混合斑 89 例(32.60%)。冠脉造影结果显示冠心病患者 182 例(66.67%),其中病变累及单支、双支、三支血管者分别为 84 例(46.15%)、52 例(28.57%)、46 例(25.27%)。血压控制达标 130 例(47.62%),未达标 143 例(52.38%)。

1.2.2 颈动脉超声检查 采用 Philips iE-33 彩色超声诊断仪,探头频率 3-11MHz。研究对象于上午空腹进行颈动脉超声检查,取仰卧位,右侧自无名动脉分叉处、左侧从主动脉弓起始处

开始,连续观察颈总动脉、颈内外动脉分叉处、颈内动脉、颈外动脉主干及分支,观察有无斑块。颈动脉内-中膜厚度≥ 1.2 mm 且局部向腔内突出者定义为斑块^[4]。

1.2.3 冠状动脉造影及诊断评价标准 所有对象均采用经桡动脉或股动脉的 Judkins 法行左右冠状动脉常规体位投照,造影机为西门子 DFC 或飞利浦 FD20/10,结果由冠心病心导管专业医师评定。任何一支狭窄直径≥ 50%诊断为冠心病,病变累及前降支、回旋支、右冠脉中的 1、2、3 支,分别视作单、双、三支病变,如累及左主干则按同时累及前降支和回旋支计算。采用 Gensini 冠脉评分系统^[5]对每位患者冠脉病变进行评分,是判断冠状动脉严重程度的定量指标。

1.2.4 生化指标的测定 所有患者空腹 10 h 以上,检测前避免摄入大量高脂食物,于早晨抽取静脉血测定甘油三酯(TG)、总胆固醇(TC)、高密度脂蛋白胆固醇(HDL-C)、低密度脂蛋白胆固醇(LDL-C)。采用罗氏全自动生化分析仪。Non-HDL-C=TC-HDL-C。AI=(TC-HDL-C)/HDL-C。

1.3 统计学分析

计量资料符合正态分布的以均数± 标准差表示,经过方差齐性检验后,以成组 t 检验或单因素方差分析比较组间差别。非正态分布的数据以中位数(四分位间距)表示,以非参数检验比较各组间差别。计数资料用百分率表示,等级资料的组间比较采用秩和检验。双变量正态分布资料计算用 Pearson 相关系数,对不符合双变量正态分布资料,计算用 Spearman 相关系数。用 SPSS16.0 软件进行数据的统计分析,P<0.05 为差异有统计学意义。

2 结果

2.1 血压控制情况与冠脉病变的关系

如表 1 显示,与血压控制达标患者相比,血压控制水平不达标患者冠脉病变支数增多(P<0.01),冠脉狭窄程度得分也增加(P=0.006),提示血压控制水平是高血压患者冠脉病变的重要危险因素。

表 1 不同血压控制水平高血压患者冠脉病变程度的比较

Table 1 Comparison of the severity and numbers of diseased coronary artery between patients with different blood pressure control levels

Groups	Case	Diseased coronary artery (n)				Gensini scores
		None	Single vessel disease	Double vessel disease	Three vessel disease	Median and Quantiles
Good blood pressure control	130	55(42.3)	40(30.7)	24(18.5)	11(8.5)	5(0,18)
Poor blood pressure control	143	36(25.2)	44(30.8)	28(19.6)	35(24.4)	11(3,26)
Z value					-3.754	-2.751
P value					<0.001	0.006

2.2 颈动脉粥样硬化与冠脉病变的关系

如表 2 所示,血压不达标合并斑块患者,无论与血压达标无斑块、血压达标合并斑块,还是血压不达标无斑块患者相比,冠脉病变的支数都增多(P<0.05),冠脉狭窄程度得分也增加(P<0.01),提示斑块是高血压患者冠脉病变的重要危险因素。

2.3 血脂指标及相关比值与冠脉病变关系

如表 3 所示,HDL-C 与冠状动脉狭窄程度呈负相关(r=-0.139,P=0.022),AI 与冠状动脉狭窄程度呈正相关(r=0.136,P=0.025);LDL/HDL-C 和 AI 与冠脉病变支数均呈正相关,分别为(r=0.128,P=0.035)和(r=0.137,P=0.023)。

3 讨论

表 2 不同高血压患者合并颈动脉斑块冠脉病变程度的比较

Table 2 Comparison of the severity and numbers of diseased coronary artery among patients with different blood pressure control level and carotid artery plaque

Groups	Case	Diseased coronary artery (n)				Gensini scores Median and Quantiles
		None	Single vessel disease	Double vessel disease	Three vessel disease	
Good control without carotid artery plaque	42	25(59.5)	12(28.6)	4(9.5)	1(2.4)	1(0,7.25)
Good control with carotid artery plaque	88	30(34.1)	28(31.8)	20(22.7)	10(11.4)	9(0.5,22)
Poor control without carotid artery plaque	38	18(47.4)	12(31.6)	5(13.2)	3(7.9)	5(0,14)
Poor control with carotid artery plaque	105	18(17.1)	32(30.5)	23(21.9)	32(30.5)	16(5,31)
χ^2/Z value		-5.498	-3.423	-4.024		29.793
P value		<0.0011	0.0012	<0.0013		<0.001

Note: We take "poor control with carotid artery plaque group" as a control group, "1" means it compared with the Good control without carotid artery plaque group; "2" means it compared with the Good control with carotid artery plaque group; "3" means it compared with Poor control without carotid artery plaque group.

表 3 血脂指标与冠状动脉病变的相关性分析

Table 3 Relationship between blood lipids and the severity and numbers of diseased coronary artery

Blood lipids or ratio	Severity of diseased coronary artery		Numbers of diseased coronary artery	
	r	P	r	P
TG/(mmol·L ⁻¹)	0.062	0.310	0.042	0.488
LDL-C/(mmol·L ⁻¹)	0.011	0.854	0.065	0.282
HDL-C/(mmol·L ⁻¹)	-0.139	0.022	-0.107	0.079
TC/(mmol·L ⁻¹)	-0.022	0.720	0.018	0.764
LDL/HDL-C	0.106	0.082	0.128	0.035
TG/HDL-C	0.098	0.105	0.076	0.211
non-HDL-C/(mmol·L ⁻¹)	0.041	0.503	0.071	0.239
AI	0.136	0.025	0.137	0.023

高血压是我国心血管疾病最重要的危险因素,也是心血管死亡的主要原因^[3]。一项包含 188 个国家人口死亡原因的调查研究中发现,2013 年心血管疾病的死亡人数占全球总死亡人数的 31.5%,位居首位^[6]。李静^[7]等在 2011 年进行的一项全国调查研究中发现,我国冠心病合并高血压患者可达 61.7%,与本研究 66.67%接近,本研究结果还显示血压未达标患者冠心病发生率为 74.83%,明显高于达标者(57.69%)。同时,结果表明血压控制不达标者冠脉病变狭窄程度和支数都明显高于另一组(P<0.05)。杨艳^[8]也发现高血压患者,不稳定性心绞痛的发病率明显高于血压正常者。以往的研究多是将有无高血压作为一个变量,强调预防高血压的重要性,本研究进一步补充说明在高血压人群中,血压控制水平对预防冠脉病变发生发展同样重要。

血脂代谢异常对冠脉病变有较大的预测价值。对单项血脂指标而言,较高的总胆固醇(TC)、低密度脂蛋白胆固醇(LDL-C)和较低的高密度脂蛋白胆固醇(HDL-C)是冠心病发生的危险因素,但本研究中仅提示 HDL-C 与 Gensini 得分即冠脉病变程度呈负相关(r=-0.139, P=0.022),即 HDL-C 水平越高,冠脉病变程度越轻,与胡莉华,柴玉琼等研究^[9,10]结果一致。HDL-C 一直被

视为机体抗粥样硬化的脂质蛋白,每降低 0.4 mmol/L,冠心病的发病风险就会升高 2%-3%,而 HDL-C>1.55 mmol/L 被认为是冠心病的保护因素^[11],增加 HDL-C 水平可以有效减少冠心病发病风险。LDL-C 是最主要的脂质危险因素,被认为是血脂监测及调控的第一目标。但近年来临床发现,仍有部分 LDL-C 降至目标范围的患者,冠状动脉粥样硬化的进程并未得到延缓,因此研究者开始关注非高密度脂蛋白胆固醇(non-HDL-C)以及血脂比值对冠脉病变发生风险的预测价值。Non-HDL-C 是指除 HDL-C 以外其他血脂蛋白中胆固醇含量的总和^[12],其与冠心病的关系得到越来越多研究的证实^[13,14],我国已将其作为降脂治疗的第二指标。但本研究中未发现明显相关关系,可能与选择人群和样本量较小有关,还需要扩大样本量进一步探讨。本研究表明,LDL-C/HDL-C 比值与冠脉病变支数的相关性有统计学意义,呈正相关,和国内外研究结果一致^[10,15]。即使单项血脂指标正常,当 LDL-C/HDL-C 比值上升时,冠脉病变血管的支数增多,发生冠心病的风险增加。LDL-C/HDL-C 可以反映动脉粥样硬化脂质危险因素和保护因素之间的动态比例,是有效评估冠状动脉粥样硬化斑块的指标。国外一项荟萃分析也指

出 LDL-C/HDL-C>2.0 与冠脉斑块体积进展相关^[6]。动脉硬化指数(AI)是国际医学界制定的一个衡量动脉硬化程度的指标, AI>5 时冠心病发生风险增加 6 倍^[7]。本研究发现,只有动脉硬化指数(AI)不仅和冠脉病变的支数呈正相关($r=0.136$, $P=0.025$), 还和冠脉病变的得分即狭窄程度呈正相关 ($r=0.137$, $P=0.023$), 与既往研究结果^[9,18]类似,说明 AI 较单一的血脂指标更有参考价值,能更好地预测冠脉病变风险。临床医生可将 AI 作为评估患者冠脉病变风险的监测指标。综上所述,对高血压患者进行血脂监测时,不但要关注单项血脂指标控制水平,还要重视综合血脂指标的调控,两者需要联合运用。

颈动脉粥样硬化所致的颈动脉斑块与冠状动脉粥样硬化密切相关^[9]。国内外多项研究表明颈动脉斑块是冠心病发生的独立危险因素,较颈动脉内-中膜厚度更有预测价值^[20]。故本研究只探讨了高血压人群中颈动脉斑块和冠脉病变的关系。合并颈动脉斑块的高血压患者,冠脉病变支数和狭窄程度较单纯高血压患者明显增加,和杨佳、褚爱萍等的研究结果一致^[21,22],随着颈动脉斑块的检出,高血压患者冠脉病变支数增多,呈上升趋势,而且同时存在血压控制不佳和颈动脉斑块的患者各冠脉病变支数的比例最大(单支 30.5%,双支 21.9%,三支 30.5%),Gensisi 积分也最高,明显高于血压控制达标且无斑块的患者,也高于只存在血压不达标或者颈动脉斑块的患者,说明血压水平和颈动脉斑块对患者冠脉病变的影响存在协同作用。颈动脉超声作为一种无创、简便的检测方式,虽然不能取代冠脉造影检查,但若颈动脉发生粥样硬化形成斑块,则一定程度上可以反映全身血管共有的病理改变,而冠心病是动脉粥样硬化最常见的类型,所以其与冠脉病变密切相关,相比较传统的危险因素高血压、血脂和血糖,更可以用作评价冠脉病变早期发展的指标。

无任何临床表现的冠心病事件约为冠心病总发生率 1/3,因而识别亚临床冠心病状态很重要^[23],尤其在高血压这个易发冠心病人群中。本研究与以往冠脉病变危险因素的研究对象不同,主要纳入不同年龄阶段的成人高血压患者,从冠脉病变支数和狭窄程度两个角度定量描述冠脉病变情况。我们发现,需要合理控制血压水平,加强综合血脂指标和颈动脉血管病变的监测和筛选,从而进行早期干预,尽可能地降低高血压人群冠脉病变的发生风险。这为临床工作者,尤其是基层医院提供参考。本研究样本量较小,且为回顾性研究,存在一定偏倚,需要设计前瞻性研究进一步探讨。

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