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老年患者下肢动脉粥样硬化与心血管疾病的危险因素相关分析

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摘要 目的:探讨老年患者下肢动脉粥样硬化与心血管疾病危险因素关系,为疾病的预防控制和治疗提供依据。**方法:**收集从2016年1月到2017年1月在南华大学附属第一医院进行下肢静脉彩色多普勒超声检查的715例住院患者的基本临床数据和检测数据,确诊为下肢动脉粥样硬化的患者215例作为实验组,剩余500例为对照组,比较两组心血管危险因素,并采用Logistics回归分析筛选出下肢动脉粥样硬化的独立危险因素。**结果:**实验组年龄、存在高血压病史及糖尿病史比例及血清总胆固醇(TC)、甘油三酯(TG)、载脂蛋白B(APO-B)、血清肌酐(Cr)、尿酸(UA)、超敏C-反应蛋白(hs-CRP)、空腹血糖(FBG)、血浆纤维蛋白原(Fib)、收缩压(SBP)、舒张压(SDP)水平均高于对照组($P<0.05$),而体质指数(BMI)、低密度脂蛋白胆固醇(LDL-C)、高密度脂蛋白胆固醇(HDL-C)、载脂蛋白AI(APO-AI)、鞘氨醇1-磷酸(S1P)、清道夫受体(SRB1)水平均低于对照组($P<0.05$)。多因素Logistics回归分析显示,年龄($OR=1.156$)、糖尿病史($OR=2.623$)、UA($OR=1.005$)、TG($OR=2.345$)、FBG($OR=1.066$)为下肢动脉粥样硬化的独立危险因素(均 $P<0.05$)。**结论:**心血管的危险因素与下肢动脉粥样硬化有关,其中年龄、糖尿病史、UA、TG、FBG为下肢动脉粥样硬化的独立危险因素,对上述因素进行针对性干预可以有效预防下肢动脉粥样硬化的发生。

关键词:老年;动脉粥样硬化;心血管疾病;危险因素

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Correlation between Low Limb Atherosclerosis and Risk Factors of Cardiovascular in Elderly Patients

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ABSTRACT Objective: To investigate the correlation between low limb atherosclerosis and the risk factors of cardiovascular in elderly patients, and to provide the proof for the prevention and control of the disease. **Methods:** The basic data and examination date of 715 elderly inpatients, who underwent color Doppler ultrasound in First Hospital Affiliated to Nanhua University from January 2016 to January 2017, were collected. Among them, 215 patients diagnosed with lower limb atherosclerosis were chosen as experimental group, the remaining 500 patients, as control group. Cardiovascular risk factors were compared between the two groups, and The independent risk factors of low limb atherosclerosis were screened out by Logistics regression analysis. **Results:** Age, incidence of hypertension and diabetes history, the levels of total cholesterol (TC), triglycerides (TG), apolipoprotein B (APO-B), serum creatinine (Cr), uric acid (UA), high-sensitivity C-reactive protein (s-CRP), fasting plasma glucose (FBG), fibrinogen (Fib), systolic blood pressure (SBP), diastolic blood pressure (DBP) in the experimental group were higher than those in the control group ($P<0.05$); while the body mass index (BMI), the levels of low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C), apolipoprotein AI (APO-AI) and Sphingosine 1 phosphate (S1P), Scavenger Receptor Class B Type 1 (SRB1) were lower than those in the control group ($P<0.05$). Multivariate logistics regression analysis showed that age ($OR=1.156$), history of diabetes ($OR=2.623$), UA ($R=1.005$), TG ($R=2.345$), FBG ($OR=1.066$) were the independent risk factors of lower limb atherosclerosis (all $P<0.05$). **Conclusion:** The risk factors of cardiovascular disease are related to the lower limb atherosclerosis, among which, age, history of diabetes, UA, TG, FBG are independent risk factors of lower extremity atherosclerosis, and targeted intervention of the above factors can effectively prevent the occurrence of lower limbs atherosclerosis.

Key words: Elderly; Atherosclerosis; Cardiovascular disease; Risk factors

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前言

下肢动脉粥样硬化性疾病是一种多发于老年人的血管性

缺血性疾病,已被美国国家胆固醇教育计划(The national cholesterol education program, NCEP)成人治疗组第三次报告(Adult treatment group, ATP)III^[1,2]列为冠心病的等危证。下肢

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动脉粥样硬化患者早期主要临床症状为跛行,并伴随发生肢端麻木等,同时下肢可能出现严重出血,严重的患者肢端可能出现溃疡^[3,4]。下肢动脉粥样硬化发病率随着年龄的增长而增长,且其发生与心脑血管疾病关系密切,心脑血管疾病反过来可以促进动脉粥样硬化的发生及发展,使得动脉管腔出现狭窄,甚至形成血栓^[5,6]。本研究选择南华大学附属第一医院 215 例确诊下肢动脉粥样硬化患者,探讨其与心血管疾病危险因素的相关性,为疾病的预防控制和治疗提供依据。

1 资料与方法

1.1 一般资料

选择从 2016 年 1 月到 2017 年 1 月在南华大学附属第一医院住院的并接受下肢动脉彩色多普勒超声检查者 715 例,其中确诊下肢动脉粥样硬化的患者 215 例,作为实验组,所有患者符合下肢动脉粥样硬化诊断标准^[7]:① 有下肢症状(如:毛发少、足温低、下肢静息痛、间歇性跛行等)、股动脉杂音、足背/胫后动脉搏动消弱或消失;② 静息踝臂指数(ankle brachial index, ABI)<0.9/ 趾臂指数(Toe brachial index, TBI)<0.6,或运动后 ABI 下降 $\geq 20\%$;③ 影像学检查显示下肢动脉狭窄或闭塞性病变。其余的 500 例作为对照组。纳入标准:① 年龄>60 岁;② 患者依从性高,自愿参加本次研究。排除标准:① 心肌炎及肝肾发生重大病变的患者;② 精神意识不正常患者;③ 代谢异常及炎症患者;④ 临床资料不完整患者。本次研究过程经过我院医学伦理委员会同意,征得患者及其家属的同意,并签署知情同意书。

1.2 方法

详细记录所有患者的临床资料,其中包括性别、年龄、体质

量值数(BMI)、病史(糖尿病和高血压)及生活习惯(是否抽烟)。所有患者分别于入院后第二天清晨空腹抽取肘静脉血 4 mL,静置半小时后,3000 rpm 离心 15 min, -4℃ 冻存待测。用胶乳增强免疫比浊法检测血清中的糖化血红蛋白(HbA1c)、血清肌酐(Cr)、超敏 C-反应蛋白(hs-CRP)、血浆纤维蛋白原(Fib)水平,采用酶联免疫吸附法检测血清中的总胆固醇(TC)、血清甘油三酯(TG)、低密度脂蛋白胆固醇(LDL-c)、高密度脂蛋白胆固醇(HDL-c)、载脂蛋白 B(APO-B)、载脂蛋白 AI(APO-AI)、尿酸(UA)、空腹血糖(FBG),试剂盒均购自美国 R&D 公司,所有操作均严格按照试剂盒操作说明书进行。采用 RT-PCR 法检测血液中清道夫受体(SRB1)水平,另外应用液质联用分析方法检测血清中鞘氨醇 1-磷酸(S1P)水平。患者静坐 5 min,监测患者舒张压(SBP)、收缩压(DBP)等,测量 3 次取平均值。

1.3 统计方法

采用 SPSS20.0 对数据进行分析。计量资料用均数 $\pm$ 标准差($\bar{x} \pm s$)来表示,两组之间的比较采用 t 检验,计数资料采用 χ^2 检验;多因素分析采用二分类 Logistics 回归分析。P<0.05 表示差异具有统计学意义。

2 结果

2.1 两组基线资料的比较

实验组年龄、存在高血压病史及糖尿病史比例及 TC、TG、APO-B、Cr、UA、hs-CRP、FBG、Fib、SBP、DBP 水平均高于对照组(P<0.05),而 BMI、LDL-C、HDL-C、APO-AI、S1P、SRB1 水平均低于对照组(P<0.05)。两组性别、存在吸烟史比例、HbA1c 水平比较,差异均无统计学意义(P>0.05)。如表 1 所示。

表 1 两组基线资料的比较

Table 1 Comparison of baseline data between two groups

Groups	Experience groups (n=215)	Control groups (n=500)	t or χ^2 value	P value
Age(years)	70.00 $\pm$ 22.28	55.99 $\pm$ 15.12	-9.773	0.000
Gender(male/female)	101/114	264/236	2.040	0.153
BMI(kg/m ²)	22.30 $\pm$ 3.07	23.97 $\pm$ 2.83	7.051	0.000
History of hypertension[n (%)]	156(72.56)	175(35.00)	85.303	0.000
Smoking history[n(%)]	117(54.42)	286(57.20)	0.473	0.492
History of diabetes[n(%)]	130(60.47)	194(38.80)	28.478	0.000
TC(mmol/L)	5.17 $\pm$ 1.23	4.86 $\pm$ 1.18	-3.180	0.002
TG(mmol/L)	2.85 $\pm$ 0.84	2.38 $\pm$ 0.55	-8.856	0.000
LDL-C(mmol/L)	2.95 $\pm$ 0.90	3.23 $\pm$ 0.8	3.840	0.000
HDL-C(mmol/L)	1.18 $\pm$ 0.33	1.28 $\pm$ 0.33	3.716	0.000
APO-B(mmol/L)	1.03 $\pm$ 0.26	0.82 $\pm$ 0.38	-7.392	0.000
APO-AI(mmol/L)	1.22 $\pm$ 0.37	1.50 $\pm$ 0.41	8.617	0.000
SRB1(mmol/L)	0.53 $\pm$ 0.13	1.06 $\pm$ 0.21	30.282	0.000
Cr(μ mol/L)	88.83 $\pm$ 56.78	63.27 $\pm$ 15.19	-9.327	0.000
UA(μ mol/L)	354.66 $\pm$ 98.48	304.56 $\pm$ 87.21	-6.770	0.000

表 1 两组基线资料的比较

Table 1 Comparison of baseline data between two groups

Groups	Experience groups (n=215)	Control groups (n=500)	t or χ^2 value	P value
hs-CRP(mg/L)	16.77± 8.22	12.44± 5.84	-7.991	0.000
HbA1c(%)	6.21± 1.11	6.19± 1.24	-0.204	0.838
FBG(mmol/L)	7.76± 1.98	6.48± 1.61	-9.075	0.000
Fib(g/L)	3.62± 1.02	3.42± 0.69	-3.052	0.002
S1P(μ g/L)	106.31± 21.56	126.51± 32.05	7.354	0.000
SBP(mmHg)	133.34± 37.21	118.66± 11.23	-8.019	0.000
DBP(mmHg)	73.28± 7.92	68.98± 6.48	-7.593	0.003

2.2 多因素 Logistics 回归分析

将是否患有下肢动脉粥样硬化作为因变量,上述有统计学意义的变量为自变量进行二分类 Logistics 回归分析,影响老年

人下肢动脉粥样硬化的危险因素分别是年龄、糖尿病史、UA、TG、FBG(均 $P < 0.05$),如表 2 所示。

表 2 危险因素的多因素 Logistics 回归分析

Table 2 The multi-factor Logistics regression analysis of risk factors

Risk factors	B	SE	Wald	P 值	OR(95%CI)
Age	0.134	0.017	62.066	0.000	1.156(1.120~1.198)
History of diabetes	0.963	0.033	10.326	0.001	2.623(1.457~5.786)
UA	0.004	0.003	7.234	0.006	1.005(1.002~1.008)
TG	0.234	0.046	23.233	0.008	2.345(1.327~3.005)
FBG	0.008	0.034	8.299	0.006	1.066(1.008~2.232)

3 讨论

下肢动脉粥样硬化是心血管疾病常见的并发症之一,多发于老年人,但是由于下肢动脉粥样硬化的早期临床症状并不明显,当患者出现明显的临床症状时,下肢功能已经出现障碍,因此早期的诊断及科学有效的治疗具有重要意义^[8-10]。下肢动脉粥样硬化发病机制主要有以下三方面^[11-13]:① 动脉壁内皮细胞受到损伤,引起其功能改变及增加其细胞通透性;② 单核细胞存在于血液中,通过黏附在细胞上,随后进入内皮细胞内部,将脂质吞噬后变成泡沫细胞,形成脂肪斑并粘附于血管内壁;③ 血小板也可以在炎症部位进行聚集,释放生长因子后刺激平滑肌细胞进入内膜并增殖,形成纤维斑块。下肢形成动脉粥样硬化后,血管内的压力升高,并不利于血液的代谢及运行,机体的心血管容易出现病变^[14,15]。

本研究显示,年龄因素为下肢动脉粥样硬化的独立危险因素,与相关的文献^[16,17]报道一致。有研究发现男性 50 岁左右的动脉粥样硬化疾病的发病率随年龄的增高而升高,出现这种现象的原因可能是随着年龄的增高,体内睾酮的分泌量下降,睾酮水平越低,血管内皮功能越差,进而诱发动脉粥样硬化^[18-20]。FBG 实验组高于对照组,说明下肢动脉粥样硬化患者 FBG 水平异常,且进一步 Logistics 回归分析显示 FBG 及糖尿病均是下肢动脉粥样硬化的独立危险因素,其机制可能是:血糖水平和氧化应激反应增加,提高体内自由基的数量,从而破坏血管内皮细胞,增强白细胞和内皮细胞之间的作用,同时低密度脂蛋白被氧化和被糖基化后沉淀在管壁上,经过长期的病理过程

诱发动脉粥样硬化^[21-23]。实验组患者的 TG 水平高于对照组,且 Logistics 回归分析显示,TG 是形成下肢动脉粥样硬化的危险因素之一,由于大量的血脂堆积在血管壁上,使其厚度增加,血管内部的弹力板破裂,内膜下的脂质沉积在管壁上,另外泡沫细胞和炎性细胞的浸润过程,平滑肌细胞发生迁移和增生,这是动脉粥样硬化发生的病理过程^[24-26]。高尿酸血症与多种心血管疾病的发生及发展具有密切联系^[27],本研究发现实验组患者的 UA 水平明显高于对照组,且 UA 是形成下肢动脉粥样硬化的危险因素之一,其诱发动脉粥样硬化的机制可能是由于血压升高后诱发肾小球动脉硬化,进而引起生成大量的乳酸,同时乳酸可以竞争性抑制 UA 的排泄,使得 UA 的排泄量减少,反过来,大量的 UA 在血管壁上沉积,引起局部的炎症反应,损伤血管内膜,加重动脉粥样硬化^[28-30]。

综上所述,老年患者下肢动脉粥样硬化与心血管疾病病变的有关,其危险因素中包括年龄、糖尿病史、TG、FBG 及 UA。应对其各项危险因素制定具有针对性的预防措施:如加强健康教育,建立老年人健康档案,长期随访调查指导;调整不良的饮食习惯,改变膳食习惯,提高优质蛋白和高纤维素食的摄入,减少含脂类量大的食物的摄入量等,是患者保持良好心态,将血脂、血糖等危险因素控制在安全范围之内。

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