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血清 γ -谷氨酰转氨酶与冠心病影响因素及血管病变严重程度 的相关性研究*

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摘要 目的:探究血清 γ -谷氨酰转氨酶(GGT)水平与冠心病影响因素及患者血管病变严重程度之间的相关性。方法:选取2013年7月至2017年10月于我院经冠状动脉造影确诊为冠心病的61例患者为实验组,将其按照临床症状分为稳定性心绞痛组(下简称A组,20例)、不稳定性心绞痛组(下简称B组,21例)和急性心肌梗死组(下简称C组,20例),另选取同期于我院进行冠脉造影检查确诊为非冠心病的30例患者为对照组,检测和比较四组患者的空腹血糖(FBG)、总胆固醇(TC)、甘油三酯(TG)、收缩压(SBP)、舒张压(DBP)、尿酸等水平,而分析GGT与危险因素、冠脉Gensini评分的相关性。结果:(1)实验组患者血清FBG、TC、TG、SBP、DBP、尿酸水平均高于对照组患者,差异具有统计学意义($P<0.05$);(2)GGT水平与冠心病上述危险因素呈正相关性($r=0.236, 0.351, 0.316, 0.239, 0.301, 0.395, P=0.035, 0.000, 0.000, 0.034, 0.001, 0.000$);(3)四组患者GGT及Gensini评分均按照C组>B组>A组>对照组的趋势变化,且各组间对比差异具有统计学意义($P<0.05$);(4)冠心病患者血清GGT水平与Gensini评分呈正相关性($r=0.681, P=0.000$)。结论:冠心病患者血清GGT水平与血清FBG、TC、TG、SBP、DBP、尿酸水平及血管病变的严重程度均呈显著正相关,其可能作为预测冠心病患者病变程度的参考指标。

关键词: γ -谷氨酰转氨酶;冠心病;影响因素;血管病变

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Correlation of Serum γ -Glutamyltransferase Level with the Risk Factors and the Severity of Coronary artery Lesion of Patients with Coronary Heart Disease*

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ABSTRACT Objective: To investigate the correlation of serum γ -glutamyl transferase (GGT) level with the influencing factors of coronary heart disease and the severity of patients with vascular disease. **Methods:** 61 patients diagnosed as coronary heart disease (CHD) from July 2013 to October 2017 in our hospital through coronary angiography were selected as the experimental group, which were divided into stable angina pectoris group (hereinafter referred to as A group, 20 cases), unstable angina (group B, 21 cases) and acute myocardial infarction (group C, 20 cases) according to their clinical symptoms. In the same period, thirty patients without coronary heart disease were selected as the control group. The levels of fasting blood glucose (FBG), total cholesterol (TC), triglyceride (TG), systolic blood pressure (SBP), diastolic blood pressure (DBP) and uric acid in the four groups were measured and compared. The correlation of coronary Gensini score. Finally, the GGT and Gensini scores of four groups of patients were analyzed. **Results:** (1) The FBG, serum TC, TG, SBP, DBP and uric acid levels in the four groups were significantly different (Group C>Group B>Group A>Control group, $P<0.05$); (2) The level of GGT was positively correlated with the above risk factors ($r=0.236, 0.351, 0.316, 0.239, 0.301, 0.395, P=0.035, 0.000, 0.000, 0.0034, 0.001, 0.000$); (3) Both GGT and Gensini scores in the four groups were changed according to the trend of Group C>Group B>Group A>Control group ($P<0.05$); (4) The serum GGT level of patients with coronary heart disease was positively correlated with Gensini score ($r=0.681, P=0.000$). **Conclusion:** The serum GGT levels of CHD patients were positively correlated with the serum levels of FBG, TC, TG, SBP, DBP, uric acid levels and the severity of the vascular lesions, it may be used to predict the severity of lesion in CHD patients.

Key words: GGT; Coronary heart disease; Influencing factors; Degree of vascular lesions

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前言

随着人们生活水平的提升、饮食结构的改变和工作压力的增加,现阶段各类心脑血管疾病的发病率呈逐年上升趋势^[1]。冠心病是指由于冠状动脉血管出现病理性改变而出现血管腔狭窄、堵塞,进而引发心肌缺血,导致心肌细胞缺血性坏死的一类疾病^[2,3]。全球每年因冠心病死亡人数高达 700 万,位于单病种死因首位,我国冠心病发病率和死亡率也不容乐观,如不加以控制,到 2030 年,冠心病发病率将是 2000 年的 3.7 倍^[6,7]。该病的发病机理较为复杂,现阶段临床研究认为高血压、高血脂、高血糖、易怒、过饱等都是诱发冠心病发作的危险因素,该病初次发作时,约有 1/3 的患者会出现猝死^[4,5]。由于冠心病发病急、危险程度高、预后差,常给患者家庭及社会带来较大负担。

γ -谷氨酰转氨酶(γ glutamyltransferase, GGT)是一类广泛存在于心肌、肾、胰、脾等各类器官中的因子,与冠心病、中风、高血压等症的发生存在较为密切的联系^[8,9]。本研究主要探讨了血清 γ -谷氨酰转氨酶(GGT)水平与冠心病影响因素及患者血管病变严重程度之间的相关性,现详述如下:

1 材料与方法

1.1 一般资料

选取 2013 年 7 月至 2017 年 10 月于我院经冠状动脉造影确诊为冠心病的 61 例患者为实验组,将实验组按照其临床症状分为稳定性心绞痛组(下简称 A 组,20 例)、不稳定性心绞痛组(下简称 B 组,21 例)和急性心肌梗死组(下简称 C 组,20 例),其中 A 组 20 例患者中男性 10 例,女性 10 例,年龄 35-64 岁,平均年龄(41.32 ± 5.12)岁, B 组 21 例患者中男性 11 例,女性 10 例,年龄 34-64 岁,平均年龄(42.03 ± 6.13)岁, C 组 20 例患者中男性 9 例,女性 11 例,年龄 35-63 岁,平均年龄(42.62 ± 5.63)岁。另选取同期于我院进行冠脉造影检查确诊为非冠心病的 30 例患者为对照组,其中男性 16 例,女性 14 例,年龄 32-63 岁,平均年龄(43.01 ± 4.39)岁。四组患者一般资料如性别年龄等比较差异均无统计学意义($P > 0.05$),具有可比性。

1.2 纳入及排除标准

纳入标准:(1)实验组患者均经冠脉造影确诊为冠心病;(2)

研究对象年龄位于 30-65 岁之间;(3)研究对象病历资料齐全;(4)患者及其家属对本次调研过程、方法、原理清楚明白并签署知情同意书。排除标准:(1)合并精神疾患患者;(2)合并其他器质性疾病如脑梗死、恶性肿瘤等;(3)器官移植史者。

1.3 检测指标及评测方法

1.3.1 冠脉造影 选择华润万东公司生产的 CGO-2100 医用 X 射线心血管造影机对所有纳入对象进行心脏冠脉造影,记录速度为 25 帧/秒,检测时应最少选择两个相互垂直的投照位置进行观测,检测部位主要包括左主干、左前降支、回旋支近段、左前降支中段等,观测结果由两名经验丰富的影像科医师进行研究决定,阳性为患者有一支冠脉血管病变狭窄程度 $\geq 50\%$ ^[10]。

1.3.2 实验室指标检测 所有研究对象均于检查第一天采取空腹静脉血 5 mL,使用离心机按照 3000 r/min 的速率离心后,采取上层血清,使用西门子生产的 ADVIA 2400 全自动生化分析仪对血样进行检测,记录其 GGT、空腹血糖(fasting blood glucose, FBG)、总胆固醇(Total cholesterol, TC)、甘油三酯(triglyceride, TG)、尿酸水平,并使用江苏鱼跃 YE8700A 型血压计对研究对象血压进行测量。

1.3.3 Gensini 冠脉评分标准 冠脉血管病变狭窄程度经 Gensini 积分系统进行定量评定:以最严重处为标准,根据狭窄直径程度依次计 1 分(狭窄直径 $<25\%$)、2 分(25%-50%)、4 分(50%-75%)、8 分(75%-90%)、16 分(90%-99%)和 32 分($\geq 99\%$);同时,各冠脉分支得分 $\times$ 相应系数为各病变支得分,各病变支得分总和为患者的冠状动脉病变狭窄程度总积分^[11,12]。

1.4 统计学分析

使用 SPSS22.0 软件进行统计学分析,计量、计数资料分别以($\bar{x} \pm s$)、(%)表示,采用 t 检验、卡方检验,两正态分布变量的相关性采用 Pearson 积距相关分析,以 $P < 0.05$ 为差异存在统计学意义。

2 结果

2.1 四组间 FBG、TC、TG、SBP、DBP、尿酸水平的对比

四组 FBG、TC、TG、SBP、DBP、尿酸水平均按照 C 组 $>$ B 组 $>$ A 组 $>$ 对照组的趋势变化,且各组间对比差异具有统计学意义($P < 0.05$),具体数据如表 1 所示。

表 1 四组 FBG、TC、TG、SBP、DBP、尿酸水平对比($\bar{x} \pm s$)

Table 1 Comparison of the levels of FBG, TC, TG, SBP, DBP and uric acid levels among four groups($\bar{x} \pm s$)

Group	n	FBG(mmol/L)	TC(mmol/L)	TG(mmol/L)	SBP(mmHg)	DBP(mmHg)	Uric acid (μ mmol/L)
Group A	20	$6.92 \pm 0.29^{* \# \wedge}$	$5.21 \pm 0.62^{* \# \wedge}$	$1.41 \pm 0.36^{* \# \wedge}$	$123.56 \pm 4.02^{* \# \wedge}$	$83.46 \pm 4.09^{* \# \wedge}$	$364.26 \pm 63.27^{* \# \wedge}$
Group B	21	$7.51 \pm 0.36^{* \#}$	$5.61 \pm 0.38^{* \#}$	$1.64 \pm 0.41^{* \#}$	$129.51 \pm 3.95^{* \#}$	$92.64 \pm 3.81^{* \#}$	$401.56 \pm 72.14^{* \#}$
Group C	20	$8.06 \pm 1.26^{*}$	$5.86 \pm 0.82^{*}$	$1.93 \pm 0.83^{*}$	$135.26 \pm 4.26^{*}$	$98.59 \pm 5.62^{*}$	$420.68 \pm 85.62^{*}$
Control group	30	5.51 ± 1.06	5.01 ± 0.62	1.32 ± 0.62	116.21 ± 5.12	71.63 ± 3.68	321.56 ± 43.68

Note: compared with the Control group, $^{*}P < 0.05$; compared with the Group C, $^{\#}P < 0.05$; compared with the Group B, $^{\wedge}P < 0.05$.

2.2 冠心病患者血清 GGT 水平与 FBG、TC、TG、SBP、DBP、尿酸水平相关性

冠心病患者 FBG、TC、TG、SBP、DBP、尿酸水平与患者 GGT 水平均呈显著正相关关系,具体如表 2 所示。

2.3 四组间 GGT 及 Gensini 评分对比

四组患者 GGT 及 Gensini 评分均按照 C 组 $>$ B 组 $>$ A 组 $>$ 对照组的趋势变化,且各组间对比差异具有统计学意义($P < 0.05$),具体数据如表 3 所示:

表 2 冠心病患者血清 GGT 水平与 FBG、TC、TG、SBP、DBP、尿酸水平相关性

Table 2 Correlation of serum GGT level with the levels of FBG, TC, TG, SBP, DBP and uric acid levels of CHD patients

Risk factors	FBG	TC	TG	SBP	DBP	Uric acid
r	0.236	0.351	0.316	0.239	0.301	0.395
P	0.035	0.000	0.000	0.034	0.001	0.000

表 3 四组 GGT 及 Gensini 评分对比($\bar{x} \pm s$)

Table 3 Comparison of GGT and Gensini scores in the four groups($\bar{x} \pm s$)

Group	n	GGT(U/L)	Gensini score(points)
Group A	20	21.63 $\pm$ 4.59 ^{*#}	1.53 $\pm$ 0.46 ^{*#}
Group B	21	29.56 $\pm$ 9.64 [#]	1.76 $\pm$ 0.51 [#]
Group C	20	39.56 $\pm$ 10.35 [*]	1.96 $\pm$ 0.31 [*]
Control group	30	16.75 $\pm$ 6.59	1.16 $\pm$ 0.82

Note: compared with the Control group, ^{*}P<0.05; compared with the Group C, [#]P<0.05; compared with the Group B, [^]P<0.05.

2.4 冠心病患者血清 GGT 水平与 Gensini 评分的相关性

冠心病患者血清 GGT 水平与其 Gensini 评分呈正相关性($r=0.681, P=0.000$)。

3 讨论

改革开放以来,我国人民的生活水平和饮食结构发生了较大改变,工作压力、高油脂饮食、缺乏锻炼等因素使高血压、高血糖等慢性疾病发病率出现快速上升^[13,14],尤其是年轻人发病率,呈逐年增长趋势。有研究表明年龄、体重、吸烟、酗酒、糖尿病均为冠心病的危险因素^[15,16],然而临床数据显示仍有约 15%-20%的患者不存在这些危险因素即出现发病,对此类病人缺少有效的预防干预措施^[17,18]。近些年的研究表明对危险因素的干预可以有效降低冠心病的发病率,如通过合理的饮食指导、运动干预等能够缓解冠心病患者的临床症状,同时降低其急性心肌梗死的发生率^[19]。现阶段对于冠心病的检测主要依赖对患者临床症状的判断以及冠脉造影等手段,症状诊断对医生的从医经验要求较高,而冠脉造影的方式为有创操作,且花费较贵,患者多难以接受,因而现阶段对冠心病的诊断及预防的重点在于判断其病情严重程度及提出相应干预措施上^[20,21]。

GGT 为一类广泛存在于肾脏、胰腺、脑组织中的物质,主要由肝脏分泌,一般在机体出现急慢性肝炎、肝硬化等症时,其水平会出现大幅提升。近些年的研究显示冠心病、急性胰腺炎等症也会诱发该物质大量分泌^[22],Lanza G A^[23]等发现急性心肌梗死组患者 GGT 水平高于稳定冠心病患者,且 GGT 的水平能够对患者的预后进行判断,由此认为 GGT 可能参与了动脉粥样硬化的进程^[24],活化的 GGT 能够与低密度脂蛋白相结合,增加其在动脉壁附着的可能,进而加快动脉粥样斑块的形成^[25]。Jackson A M 等^[26]发现冠心病患者 GGT 水平显著高于非冠心病患者,急性期患者明显高于稳定期患者。另外,随着冠心病患者其冠脉病变血管支数的增加,其血清 GGT 水平也出现升高趋势,提示 GGT 水平与患者冠脉病变程度还存在一定相关性^[27,28]。

本研究结果显示冠心病患者 GGT 水平较非冠心病患者高,且随着患者病情的加重,患者血清 GGT 水平显著上升,稳定性心绞痛组、不稳定性心绞痛组、急性心肌梗死组和非冠心

病组患者 FBG、TC、TG、SBP、DBP、尿酸水平之间存在较大差异,且这些冠心病的危险因素与患者病情和其 GGT 水平之间存在正相关。原因可能在于冠心病的发生与高血糖、高血脂、高血压等基础病变之间具有较为密切的联系,长期的慢性病会增加冠心病的发病几率,因而冠心病危险因素的水平与其 GGT 水平之间是存在一定相关性。进一步的冠脉造影结果显示四组患者 Gensini 评分与其 GGT 水平也存在正相关,这可能是因为 GGT 可以作为冠脉独立风险因素对冠心病的发病进行预测。这也与多名学者的研究结果相契合^[29,30]。

总而言之,冠心病危险因素水平与血清 GGT 水平呈现正相关,GGT 水平可能作为预测冠心病患者病变程度的参考指标。

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