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急性冠脉综合征患者 GRACE 评分与心功能及冠脉病变的关系研究

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摘要 目的:探讨全球急性冠状动脉疾病登记(GRACE)风险评分与急性冠脉综合征(ACS)患者心功能及冠脉病变的关系。**方法:**回顾性分析 2015 年 4 月至 2017 年 6 月我院收治的 276 例 ACS 患者的临床资料,根据 GRACE 评分结果进行分组,GRACE 评分>140 分者作为高危组(93 例),GRACE 评分 109~140 分者作为中危组(96 例),GRACE 评分<109 分者作为低危组(87 例),比较三组的一般资料、生化指标、心功能指标、冠脉病变严重程度,采用 Spearman 相关系数分析 GRACE 评分与心功能指标和冠脉病变严重程度的相关性。**结果:**高危组和中危组男性所占比例、年龄、高血压比例、载脂蛋白-B(Apo-B)、空腹血糖(FBG)、纤维蛋白原(FIB)、胱抑素-C(Cys-C)、同型半胱氨酸(Hcy)、左心房前后径(LAAP)、左心室收缩末期内径(LVESD)、左心室舒张末期内径(LVEDD)、多支血管病变所占比例以及重度狭窄和完全闭塞所占比例高于低危组,且高危组高于中危组,差异均有统计学意义($P<0.05$);高危组和中危组三酰甘油(TG)、载脂蛋白-A(Apo-A)、左心室射血分数(LVEF)低于低危组,且高危组低于中危组,差异均有统计学意义($P<0.05$)。Spearman 相关系数分析显示,GRACE 评分与 LAAP、LVESD、LVEDD、冠脉病变血管支数、狭窄程度呈正相关关系($P<0.05$),GRACE 评分与 LVEF 水平呈负相关关系($P<0.05$)。**结论:**GRACE 评分越高,ACS 患者的心功能越差,冠脉病变越严重,GRACE 评分可以反映 ACS 患者的心功能水平和冠脉病变的严重程度。

关键词:急性冠脉综合征;全球急性冠状动脉疾病登记风险评分;心功能;冠脉病变

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Relationship Between GRACE Score and Cardiac Function and Coronary Lesion in Patients with Acute Coronary Syndrome

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ABSTRACT Objective: To investigate the relationship between the global acute coronary disease registration (GRACE) risk score and cardiac function and coronary artery lesions in patients with acute coronary syndrome (ACS). **Methods:** The clinical data of 276 patients with ACS, who were treated in 148th Central Hospital of PLA from April 2015 to June 2017, were analyzed retrospectively and divided into high risk group ($n=93$, GRACE score over 140 points), middle risk group ($n=96$, GRACE score between 109~140 points) and low risk group ($n=87$, GRACE score less than 109 points) according to the GRACE score. The general data, biochemical indexes, cardiac function indexes and severity of coronary lesions were compared among the three groups. The spearman correlation coefficient was used to analyze the correlation between GRACE score and cardiac function index and severity of coronary lesions. **Results:** The proportion of men, age, hypertension, ratio of apolipoprotein -B (Apo-B), fasting blood glucose (FBG), fibrinogen (FIB), Cystatin -C (Cys-C), homocysteine (Hcy), left atrial diameter (LAAP), end systolic diameter left ventricular (LVESD), left ventricular end diastolic diameter (LVEDD), multi vessel disease and the proportion of severe stenosis and complete occlusion of the proportion in the high risk group and the middle risk group were higher than those in the low risk group, and the high risk group was higher than the middle risk group, the differences were statistically significant ($P<0.05$). The levels of TG, Apo-A and LVEF in the high risk group and the middle risk group were lower than those in the low risk group, the differences were statistically significant ($P<0.05$). Spearman correlation coefficient analysis showed that there was a positive correlation between GRACE score and LAAP, LVESD, LVEDD, the number of coronary lesions and the degree of stenosis ($P<0.05$) and there was a negatively correlation between the GRACE score and the level of LVEF ($P<0.05$). **Conclusion:** The higher the GRACE score, the worse the heart function in ACS patients and the severity of coronary disease. The GRACE score can reflect the cardiac function level and the severity of coronary artery disease in ACS patients.

Key words: Acute coronary syndrome; Global registry of acute coronary events; Cardiac function; Coronary lesion

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前言

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急性冠脉综合征(Acute coronary syndrome, ACS)是以完全或不完全闭塞性血栓形成作为病理基础的一组临床急症,是一类非同质性病变,住院期间死亡率及远期死亡率均较高,严重影响了患者的生活质量,甚至威胁其生命安全^[1,2]。ACS 早期多

以单支血管病变为主,病情进展到一定阶段后,其危险因素增多,病变血管受累愈发严重^[3,4]。对于确诊的 ACS 患者,早期精准、快速评估其风险,根据其病情危险程度采取针对性的治疗措施,既可避免造成医疗资源浪费,又能提高临床疗效^[5]。全球急性冠状动脉疾病登记(Global Registry of Acute Coronary Events, GRACE)风险评分是评估 ACS 患者危险程度的首要方法,目前虽已被广泛应用于临床,但目前医学界对其研究主要集中于探讨与免疫因子的相关性及其联合应用对主要不良心脏事件的预测价值^[6]。而关于研究 GRACE 评分与 ACS 患者心功能及冠脉病变关系的报道相对较少。因此,本研究收集我院近两年诊治的 ACS 患者的临床资料,分析 GRACE 评分与患者心功能及冠脉病变严重程度的关系,评价 GRACE 评分对 ACS 患者心功能及冠脉病变的预测价值,以期为 ACS 的临床治疗提供参考依据,现作如下报道。

1 资料和方法

1.1 一般资料

回顾性分析 2015 年 4 月至 2017 年 6 月我院收集的 276 例 ACS 患者的临床资料。纳入标准:(1)符合 ACS 的临床诊断标准^[7],经冠脉造影、心肌酶及心电图检查确诊;(2)病历资料完整;(3)完成本研究中所有调查项目。排除标准:(1)急性脑卒中患者;(2)伴严重肝肾功能损伤者;(3)有自身免疫系统疾病者;(4)有急性感染及血液系统疾病者;(5)并发严重心脏瓣膜病及恶性肿瘤者。276 例患者中,男 164 例,女 112 例;年龄 43~78 岁,平均(56.74±8.73)岁;不稳定型心绞痛 77 例,ST 段抬高型心肌梗死 84 例,非 ST 段抬高型心肌梗死 115 例。根据 GRACE 评分进行分组,93 例 GRACE 评分>140 分为高危组;96 例 GRACE 评分在 109~140 分之间作为中危组;87 例 GRACE 评分<109 分为低危组。所有患者或家属均签署知情同意书,研究方案经我院伦理委员会审核批准。

1.2 方法

收集患者的病历资料,对其进行 GRACE 评分、生化指标测定、心功能评价以及冠脉病变评价。

1.2.1 GRACE 评分 患者入院 24 h 内完成 GRACE 评分,GRACE 评分表包括年龄(8 级评分,年龄越高评分越高)、心率(7 级评分,心率越快评分越高)、收缩压(7 级评分,收缩压越高评分越低)、肌酐(7 级评分,肌酐水平越高评分越高)、心功能 Killip 分级(4 级,分级越高评分越高)和危险因素(包括心脏骤停、心电图 ST 段改变、心肌坏死标志物升高,依次评 39、28、14 分)等 6 个项目,记录患者总得分,总得分<109 分为低危,109~140 分为中危,>140 分为高危^[8]。同时常规测定患者入院时的体质指数(Body Mass Index, BMI),记录是否有糖尿病史、高血压病史。

1.2.2 生化指标测定 患者入院后,于次日抽取清晨空腹静脉血 3~5 mL,置于肝素抗凝试管中,由我院检验科测定空腹血糖(Fasting blood-glucose, FBG)、三酰甘油(Triglyceride, TG)、总胆固醇(total cholesterol, TC)、高密度脂蛋白胆固醇(High-density lipoprotein cholesterol, HDL-C)、低密度脂蛋白胆固醇(Low-density lipoprotein cholesterol, LDL-C)、载脂蛋白 A(Apolipoprotein-A, Apo-A)、载脂蛋白 B(Apolipoprotein-B,

Apo-B)、纤维蛋白原(Fibrinogen, FIB)、胱抑素 C(Cystatin-C, Cys-C)、同型半胱氨酸(Homocysteine, Hcy)等指标水平。

1.2.3 心功能评价 采用美国 GE 公司生产的 Vivid-7 超声诊断仪对患者心脏进行扫描检查,按照 Simpson 法测量左心房前后径(Left atrial diameter, LAAP)、左心室收缩末期内径(left ventricular end systolic diameter, LVESD)、左心室射血分数(Left Ventricular Ejection Fractions, LVEF)和左心室舒张末期内径(Left ventricular end diastolic diameter, LVEDD)。

1.2.4 冠脉病变评价 所有患者均按照 Judkins 法行冠脉造影(经桡动脉或股动脉),左支冠脉投照体位采用头位 30°、右前斜 30°+头位 30°、右前斜 30°+足位 30°、左前斜 45°+足位 30°、足位 30°,右支冠脉投照体位采用左前斜 45°、左前斜 20°+头位 20°。所有患者均成功进行冠脉造影,造影质量均能满足观察需求,造影结果由 2 名具有 5 年以上经验的医师共同分析病变类型,观察病变血管数和狭窄情况。判断标准^[9]:狭窄直径≥50%的病变所累的血管为病变血管;狭窄程度分为轻度狭窄(50%~74%)、中度狭窄(75%~94%)、重度狭窄(95%~99%)和完全闭塞 4 级。

1.3 统计学方法

本研究中所有数据均采用 SPSS18.0 软件进行统计学分析,平均年龄、BMI、生化指标和心功能指标等计量资料经正态性检验符合正态分布,采用均数±标准差($\bar{x} \pm s$)描述,两组组间比较采用独立样本 t 检验,三组组间比较采用方差分析 F 检验;性别、高血压病例、冠脉病变支数、狭窄程度病例数等计数资料以率(%)表示,组间比较采用 χ^2 检验;采用 Spearman 相关系数分析 GRACE 评分与心功能指标和冠脉病变严重程度的相关性;以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 三组一般资料及生化指标比较

高危组和中危组男性所占比例、年龄、高血压比例及 Apo-B、FBG、FIB、Cys-C、Hcy 水平高于低危组,且高危组高于中危组,差异均有统计学意义($P < 0.05$);高危组和中危组 TG 和 Apo-A 水平低于低危组,且高危组低于中危组,差异均有统计学意义($P < 0.05$)。三组 BMI、TC、HDL-C 和 LDL-C 水平三组比较差异无统计学意义($P > 0.05$)。见表 1。

2.2 三组心功能指标比较

高危组和中危组 LAAP、LVESD 和 LVEDD 水平高于低危组,且高危组高于中危组,差异均有统计学意义($P < 0.05$);高危组和中危组 LVEF 低于低危组,且高危组低于中危组,差异均有统计学意义($P < 0.05$),见表 2。Spearman 相关系数分析显示,GRACE 评分与 LAAP、LVESD、LVEDD 水平呈正相关关系($r=0.574, 0.586, 0.612, P=0.033, 0.031, 0.029$),GRACE 评分与 LVEF 水平呈负相关关系($r=-0.738, P=0.008$)。

2.3 三组冠脉病变程度比较

高危组和中危组多支血管病变所占比例以及重度狭窄和完全闭塞所占比例高于低危组,且高危组高于中危组,差异均有统计学意义($P < 0.05$),见表 3。Spearman 相关系数分析显示,GRACE 评分与冠脉病变血管支数、狭窄程度均呈正相关($r=0.794, 0.812, P=0.006, 0.002$)。

表 1 三组患者的一般资料及生化指标比较

Table 1 Comparison of general data and biochemical indexes of three groups

Indexes	High risk group(n=93)	Middle risk group(n=96)	Low risk group(n=87)	χ^2/F	P
Male[n(%)]	66(70.97)*#	58(60.42)*	40(45.98)	6.725	0.028
Age (years)	69.34± 5.83*#	61.96± 5.42*	51.37± 4.96	7.153	0.000
Hypertension[n(%)]	68(73.12)*#	59(61.46)*	39(44.83)	7.684	0.026
BMI(kg/m ²)	23.87± 1.48	24.16± 1.59	24.42± 1.61	0.724	0.893
FBG(mmol/L)	6.75± 2.18*#	5.84± 3.26*	5.23± 3.35	2.448	0.015
TG(mmol/L)	1.32± 0.68*#	1.63± 1.08*	2.14± 1.79	3.409	0.000
TC(mmol/L)	4.63± 0.87	4.69± 0.92	4.57± 0.76	0.839	0.891
HDL-C(mmol/L)	1.45± 0.38	1.25± 0.64	1.03± 0.28	0.955	0.713
LDL-C(mmol/L)	2.63± 0.82	2.59± 1.08	2.48± 1.15	0.548	0.914
Apo-A(g/L)	0.92± 0.23*#	1.14± 0.26*	1.37± 0.22	2.743	0.014
Apo-B(g/L)	0.97± 0.18*#	0.85± 0.21*	0.68± 0.17	2.473	0.017
FIB(g/L)	5.86± 1.12*#	4.45± 1.31*	3.98± 1.08	3.357	0.000
Cys-C(mg/L)	1.48± 0.52*#	1.16± 0.23*	1.01± 0.13	2.074	0.021
Hcy(mmol/L)	18.79± 4.35*#	15.28± 3.89*	13.02± 3.04	5.794	0.000

Note: compared with the low risk group, *P<0.05; compared with the middle risk group, #P<0.05.

表 2 三组 LAAP、LVESD、LVEDD、LVEF 水平比较($\bar{x} \pm s$)Table 2 Comparison of LAAP, LVESD, LVEDD and LVEF levels among three groups($\bar{x} \pm s$)

Groups	n	LAAP(mm)	LVESD(mm)	LVEDD(mm)	LVEF(%)
High risk group	93	32.48± 3.92*#	53.42± 4.17*#	50.09± 5.38*#	50.87± 4.68*#
Middle risk group	86	28.93± 4.05*	49.79± 4.32*	45.24± 6.13*	56.92± 5.03*
Low risk group	87	26.31± 3.22	47.08± 4.46	42.21± 5.30	63.71± 5.44
F		5.216	6.375	8.197	7.452
P		0.000	0.000	0.000	0.000

Note: compared with the low risk group, *P<0.05; compared with the middle risk group, #P<0.05.

表 3 三组冠脉病变血管支数、狭窄程度比较[n(%)]

Table 3 Comparison of multi vessel disease count and degree of stenosis among three groups[n(%)]

Groups	n	Diseased vessel count		Diseased vessel stenosis degree	
		Single-vessel	Multi-vessel	Mild and moderate stenosis	Severe stenosis and entirely shut
High risk group	93	2(2.15)	91(97.85)*#	21(22.58)	72(77.42)*#
Middle risk group	96	13(13.54)	83(86.46)*	46(47.92)	50(52.08)*
Low risk group	87	45(51.72)	42(48.28)	70(80.46)	17(19.54)
χ^2		11.369		8.143	
P		0.000		0.003	

Note: compared with the low risk group, *P<0.05; compared with the middle risk group, #P<0.05.

3 讨论

ACS 是一种进行性疾病,包括不稳定型心绞痛和急性心肌梗死,急性心肌梗死根据其心电图表现又可以分为 ST 段和非 ST 段抬高型心肌梗死两种类型^[10]。我国 ACS 的年发病率约 50/10 万,每年死于 ACS 的人数超过了 100 万,已经成为严重危害我国人民健康及威胁患者生命安全的疾病之一^[11]。ACS 病程一般在儿童时期就已经开始,成年后开始出现临床症状,对于确诊的 ACS 病例,早期准确地对其危险程度进行分层有利于改善患者的预后^[12,13]。目前,有很多种分层方法及生物标志物可用于 ACS 的危险分层,其中 GRACE 评分法是从真实病例

资料中总结出来的危险因素评分方法,GRACE 评分表包括年龄、心率、收缩压、肌酐、Killip 分级和危险因素(包括心脏骤停、心肌标志物水平升高和 ST 段变化)6 个项目,GRACE 评分越高,心血管事件及死亡的发生几率越高,危险性越高。GRACE 评分已经成为公认的 ACS 危险程度评估工具,欧洲 2011 年版 UA/NSTEMI 治疗指南中明确强调 GRACE 评分是 ACS 患者缺血风险评估的有力工具^[14,15]。但目前关于 GRACE 评分对 ACS 患者心脏功能和冠脉病变的预测价值的研究较少。

本研究显示,男性比例、年龄、高血压比例及 Apo-B、FBG、FIB、Cys-C、Hcy 水平从高到低依次为高危组、中危组、低危组, TG 和 Apo-A 水平从低到高依次为高危组、中危组、低危组,差

异均有统计学意义 ($P < 0.05$), 而 BMI、TC、HDL-C 和 LDL-C 水平三组比较差异无统计学意义 ($P > 0.05$)。说明性别、年龄、血压、TG、Apo-A、Apo-B、FBG、FIB、Cys-C、Hcy 是 GRACE 评分的影响因素。已有研究^[16,17]证实血脂水平与冠心病的发生发展有关,是动脉硬化的主要原因之一。GRACE 评分越高,提示患者 Apo-B 水平升高,而 TG 和 Apo-A 水平降低,表明载脂蛋白和胆固醇水平对 ACS 病情危重程度有一定的提示预警作用。TC、HDL-C 和 LDL-C 水平与 GRACE 评分无明显相关性,可能与本研究在选择病例时未剔除服用过降脂药物的病例有关。Cys-C 是一种半胱氨酸蛋白酶抑制剂,参与了冠心病的发生与发展过程^[18]。FIB 是冠脉血栓形成的重要因子,通过与活化的血小板相互作用发挥其功能^[19]。Hcy 是蛋氨酸的中间代谢产物,具有改变凝血因子的功能,血液中 Hcy 水平升高可损伤血管内皮细胞,增加了血栓形成风险^[20]。随着 GRACE 评分增加, FIB、Cys-C、Hcy 水平升高。LAAP、LVEF、LVESD 和 LVEDD 是评价心脏功能的常用指标,其中 LVEF 的临床应用最为广泛, LVEF 水平越低,心脏功能越差。随着 GRACE 评分的增加, LAAP、LVESD 和 LVEDD 水平增加, LVEF 水平降低 ($P < 0.05$), GRACE 评分与 LAAP、LVESD、LVEDD 水平呈正相关,与 LVEF 水平呈负相关 ($P < 0.05$)。说明 GRACE 评分可预测 ACS 患者的心脏功能,对心室重构具有指导意义。冠脉病变血管支数和狭窄程度是反映 ACS 病情严重程度的重要指标。本研究中,多支冠脉血管病变的病例数、病变冠脉血管狭窄程度为重度 and 完全闭塞的病例高危组最多,其次为中危组,低危组最少,差异有统计学意义 ($P < 0.05$)。说明 GRACE 评分可以反映 ACS 患者的冠脉病变支数和狭窄程度,早期 GRACE 评分对 ACS 患者冠脉病变程度具有很好的预测价值,为临床治疗提供帮助。

综上所述,GRACE 评分与 ACS 患者的性别比例、年龄、高血压比例等一般资料及多种生化指标有关,可为临床治疗提供丰富的信息;GRACE 评分越高,ACS 患者的心脏功能越差,冠脉病变更严重,GRACE 评分可以反映 ACS 患者的心功能水平和冠脉病变的严重程度。

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(上接第 6178 页)

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