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冠心病患者胰岛素抵抗程度的影响因素分析*

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摘要 目的:分析冠心病患者胰岛素抵抗程度的影响因素。**方法:**选择我院收治的冠心病住院患者 166 例,根据胰岛素抵抗指数(HOMA-IR)水平将其分成四组。A 组:HOMA-IR $\leq$ 1.53(n=36);B 组:1.53<HOMA-IR $\leq$ 3.46(n=30);C 组:3.46<HOMA-IR $\leq$ 5.13(n=36);D 组:HOMA-IR $\geq$ 5.14(n=64)。检测和比较各组一般临床资料和相关生化指标的差异,并进一步分析影响冠心病患者胰岛素抵抗程度的危险因素。**结果:**C、D 组腰围、空腹血糖(FBG)、餐后 2 h 血糖(2 h PBG)、低密度脂蛋白胆固醇(LDL-C)均高于 A、B 组;D 组空腹胰岛素(INS)均高于 A、B 组,B、C 组 INS、LDL-C 均高于 A 组;D 组体重、TC 高于 A 组。上述差异均有统计学意义($P<0.05$)。多因素分析结果显示 BMI、腰臀比(WHR)、FBG、INS、TC、HDL-C 均是 HOMA-IR 的影响因素($P<0.05$)。**结论:**体重、腰围、FBG、2hPBG、INS、TC、HDL-C 的上升均为加重冠心病患者胰岛素抵抗程度的危险因素。

关键词:冠心病;胰岛素抵抗;危险因素;分布特点

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Analysis of the Distribution Characteristics of Various Risk Factors in Patients with Coronary Heart Disease in Patients with Different Levels of Insulin Resistance*

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ABSTRACT Objective: To study the distribution characteristics of multiple risk factors in patients with coronary heart disease in patients with different levels of insulin resistance. **Methods:** 166 cases of hospitalized patients with coronary heart disease in our hospital, according to insulin resistance index (HOMA-IR) level will be divided into four groups: group A: HOMA-IR was less than or equal to 1.53 (n=36); group B: 1.53 < HOMA-IR was less than or equal to 3.46 (n=30); group C 3.46 < HOMA-IR was less than or equal to 5.13 (n=36); group D: HOMA-IR was more than or equal to 5.14 (n=64). Used the stable model assessment insulin resistance level of coronary heart disease risk factors distribution. **Results:** C and D group's waist circumference, FBG, 2hPBG, LDL-C were higher than B, D group INS were higher than B, B group, INS, C group LDL-C, D group, A group, TC higher than A group. The difference was statistically significant (BMI, WHR, INS, TC, HDL-C, HOMA-IR) were statistically significant ($P<0.05$). Weight, waist circumference, 2hPBG, TC, HDL-C, INS were increased in patients with coronary heart disease and insulin resistance in hospitalized patients with FBG. **Conclusion:** Body weight, waist circumference, FBG, 2hPBG, INS, TC, and HDL-C are all increased in patients with coronary heart disease and insulin resistance.

Key words: Coronary heart disease; Insulin resistance; Risk factors; Distribution characteristics

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前言

冠心病是临床上常见的心血管疾病之一^[1]。近年来,随着人们生活方式与饮食结构的改变,该病的发病率呈逐年增高,严重影响患者的生活质量。临床研究显示冠心病和 2 型糖尿病常相伴而行,具有胰岛素抵抗的患者冠心病发病率更高^[2]。近年来有研究表明^[3,4]胰岛素抵抗是冠心病等心血管疾病的病理生理基础,也是冠心病发病的强力预测因素。然而,不同胰岛素抵抗

水平的患者冠心病发病情况如何仍缺乏有关报道^[5]。为了能进一步了解冠心病患者不同胰岛素抵抗水平下多种危险因素的分布特点,本研究选取了 168 例冠心病住院患者进行研究,现将结果报道如下。

1 资料和方法

1.1 临床资料

选择 2012 年 9 月~2014 年 9 月在我院住院的冠心病患

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者 168 例作为研究对象。入选标准:①符合 WHO 制定的冠心病诊断标准^[9];②知情同意并自愿接受本次研究。排除标准:①合并糖尿病、严重肝肾疾病者;②近期内服用胰岛素治疗者。其中,男 108 例,女 58 例;年龄 49~76 岁,平均(54.9±10.5)岁;心肌梗死 64 例,心绞痛 76 例,心肌缺血 26 例。

1.2 研究方法

所有患者在入院一周内,禁食 12 h 后,于次日清晨抽取空腹静脉血,之后口服葡萄糖 75 g,采集 2 h 后的静脉血。测定其空腹血糖(FBG)、餐后 2 h 血糖(2hPBG)、空腹胰岛素(INS)、餐后 2h 胰岛素(2hINS)、空腹总胆固醇(TC)、低密度脂蛋白胆固醇(LDL-C)、高密度脂蛋白胆固醇(HDL-C)、脂蛋白 α(LP-α)、三酰甘油(TG)、血尿酸(UA)、谷氨酰转氨酶(GGT)等含量。其中,血糖和胰岛素水平统一采用酶法测定;通过 Friedewald 公式计算 LDL-C=(TC-HDL-C-TG)/2.2。根据数学模型稳定模式评估法计算 HOMA-IR=(FBG×INS)/22.5。参考 HOMA-IR 结果将 168 例患者分成四个组,A 组:HOMA-IR≤1.53(n=36);B 组:1.53<

HOMA-IR≤3.46(n=30);C 组:3.46<HOMA-IR≤5.13(n=36);D 组:HOMA-IR≥5.14(n=64),为冠心病胰岛素抵抗组。并计算各组患者的体质指数(BMI)=体重/身高平方;腰臀比(WHR)=腰围/臀围。

1.3 统计学分析

数据以 SPSS20.0 统计软件分析。计数资料采用(%)比较进行 χ^2 检验;计量资料采用($\bar{x} \pm s$)比较,配对进行 t 检测;多因素分析 Logistic 回归分析。以 P<0.05 为差异有统计学意义。

2 结果

2.1 各组一般资料比较

D 组患者体重明显重于 A 组,C、D 组患者腰围均大于 A、B 组,差异均有统计学意义(P<0.05)。四组间在性别、年龄、BMI 及 WHR 方面上比较,差异均无统计学意义(P>0.05)。见表 1。

表 1 各组一般资料比较($\bar{x} \pm s$)

Table 3 Comparison of the general data between different groups ($\bar{x} \pm s$)

Facts	Group A(n=36)	Group B(n=30)	Group C(n=36)	Group D(n=64)
male(n, %)	24(66.67)	20(66.67)	23(63.89)	41(64.06)
age(year)	55.6±10.2	56.1±10.2	53.9±10.4	54.2±10.3
weight(kg)	70.5±11.8	72.4±12.3	72.8±11.9	75.9±12.7 ^{①②}
BMI(kg/m ²)	25.8±3.5	26.2±3.7	26.4±3.5	26.7±3.3
waistline(cm)	92.9±8.4	93.8±9.3	97.1±9.5 ^①	96.8±10.6 ^②
WHR	0.93±0.06	0.96±0.08	0.97±0.07	1.05±0.09

Note: compared with group A, ^①P<0.05; compared with group B, ^②P<0.05.

2.2 各组相关生化指标比较

C、D 组患者 FBG、2hPBG、LDL-C 均明显高于 A、B 组;D 组患者 INS 高于 A、B 组,B、C 组 INS、LDL-C 高于 A 组;D 组

患者 TC 高于 A 组,差异均有统计学意义(P<0.05)。四组间在 2hINS、HDL-C、LP-α、TG、UA 及 GGT 含量比较,差异均无统计学意义(P>0.05)。见表 2。

表 2 各组相关生化指标比较($\bar{x} \pm s$)

Table 2 Comparison of the biochemical indexes between different groups ($\bar{x} \pm s$)

Facts	Group A(n=36)	Group B(n=30)	Group C(n=36)	Group D(n=64)
FBG(mmol/L)	5.2±1.6	5.3±2.0	7.3±3.2 ^{①②}	8.4±3.4 ^{①②}
2hPBG(mmol/L)	10.2±4.7	11.1±6.9	15.3±5.7 ^{①②}	17.0±6.2 ^{①②}
INS(mU/L)	6.2±2.1	12.4±3.1 ^①	15.6±5.6 ^①	25.9±9.6 ^{①②}
2hINS(mU/L)	71.7±50.6	72.9±45.7	76.5±51.3	75.3±50.0
TC(mmol/L)	4.0±0.9	4.3±1.2	4.6±0.8	4.7±1.2 ^①
LDL-C(mmol/L)	2.2±0.9	2.5±0.8 ^①	2.8±0.7 ^{①②}	3.0±1.0 ^{①②}
HDL-C(mmol/L)	1.2±0.4	1.1±0.3	1.1±0.3	1.2±0.3
LP-α(mg/L)	156.5±74.1	165.3±90.1	166.1±91.5	162.4±98.3
TG(mmol/L)	2.1±1.3	2.3±1.2	2.6±1.4	2.8±1.5
UA(μmol/L)	279.3±75.4	296.8±71.8	285.4±73.5	287.4±92.6
GGT(IU/L)	31.6±20.4	28.5±20.1	33.2±22.2	28.4±20.9

Note: compared with group A, ^①P<0.05; compared with group B, ^②P<0.05.

2.3 HOMA-IR 水平与冠心病危险因素的相关性分析

以 HOMA-IR 作为因变量,年龄、BMI、WHR、FBG、INS、TC、LDL-C、HDL-C 以及 TG 作为自变量进行多因素线性回归分析。可知,BMI、WHR、FBG、INS、TC、HDL-C 均是 HOMA-IR

的影响因素,见表 3。

3 讨论

冠心病作为一种心脑血管疾病,现已发展成严重危害人类

表 3 HOMA-IR 水平与冠心病危险因素相关分析

Table 3 Correlation between HOMA-IR level and risk factors of coronary heart disease

Statistic	Age	BMI	WHR	FBG	INS	TC	LDL-C	HDL-C	TG
r value	-0.042	0.303	0.324	0.365	0.394	0.311	0.124	-0.301	0.163
P value	0.735	0.025*	0.020*	0.009*	0.005*	0.021*	0.412	0.024*	0.230

身体健康主要疾病之一^[7,8]。相关研究表明^[9]胰岛素抵抗是冠心病的强力预测因素,并且与冠心病其他危险因素有着密切关系。胰岛素抵抗是胰岛素促进葡萄糖摄取和利用的生物反应下降,进而刺激 β 细胞释放过多的胰岛素,从而引发高胰岛素血症的状态^[10]。大量研究证实^[11-13]发生此反应的主要原因是胰岛素受体缺陷或其功能受损。胰岛素抵抗还会直接引起动脉粥样硬化及脂质代谢紊乱等发生,使机体凝血异常,从而促进冠心病病情的进展^[13]。因此,探析冠心病患者不同胰岛素抵抗水平下多种危险因素分布特点,对冠心病的诊断和治疗具有重要意义。

本研究通过对 168 例冠心病住院患者进行发现,结果显示 HOMA-IR 水平较高者,其体质量与腰围相对较大,说明随着胰岛素抵抗程度的加剧,冠心病患者的体质量与腰围也会增加,符合马红红等报道结果^[16],这可能是因为体重、腰围超过正常标准会促进胰岛素抵抗的进展。对于肥胖患者而言,其胰岛素受体数量相对减少,因而易影响葡萄糖的利用度。此外, HOMA-IR 水平较高者,其 FBG、2hPBG、INS、TC、HDL-C 也相对较高。与 Peter Willeit 等报道结果基本一致^[17],表明随着胰岛素抵抗程度的加重,冠心病患者的空腹血糖、餐后 2 h 胰岛素、空腹胰岛素、空腹总胆固醇以及高密度脂蛋白胆固醇的含量逐步增高。虽然 TG 也呈上升趋势,但变化并不明显。究其原因可能是因为胰岛素抵抗与血脂、脂蛋白代谢异常存在着一定的正相关性,当胰岛素抵抗进展加剧时,血脂代谢异常亦加剧。同时作为胰岛素抵抗的一项代偿机制 - 高胰岛素血症,可以提高机体内肝脏酯酶的活性,将 HDL-C 分解成小颗粒的 LDL-C,从而在整体上降低 HDL-C 的浓度^[18]。因此,胰岛素与脂代谢异常共同加速这冠心病的发生。HOMA-IR 与冠心病危险因素的相关性分析结果显示 BMI、WHR、FBG、INS、TC、HDL-C 均是 HOMA-IR 的独立危险因素,说明胰岛素抵抗与上述因素相互作用,互为因果。Yanwen Qin 等研究报道^[19]小时年龄是胰岛素抵抗的影响因素,而本研究中并未得到此结果,这可能是因为本研究中将合并高血压与糖尿病的冠心病患者排除在外,而此类疾病的发生率随年龄增长而增加^[20]。

综上所述,体重、腰围、FBG、2hPBG、INS、TC、HDL-C 的上升均是冠心病合并胰岛素抵抗住院患者的主要分布特点。此类患者应严格地控制自己的饮食习惯、保持良好的生活方式。

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