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扩张型心肌病慢性心力衰竭患者血浆脑利钠肽水平的临床意义

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摘要 目的:探究扩张型心肌病慢性心力衰竭患者血浆脑利钠肽水平的临床意义。**方法:**收集 2012 年 3 月至 2016 年 3 月我院收治的 90 例扩张型心肌病慢性心力衰竭患者,将患者按照 NYHA 心功能分级分为 A 组(II 级)20 例、B 组(III 级)38 例、C 组(IV 级)32 例。比较各组患者的血浆脑利钠肽(BNP)以及超声心动图相关指标,包括左心室射血分数(LVEF)、左心房内径(LA)、左室舒张末期径(LVEDD)以及左室收缩末期径(LVESD),分析血浆 BNP 与 NYHA 分级和超声心动图相关指标的相关性,以及比较血浆 BNP 和 LVEF 在慢性心力衰竭病情程度中的能力。**结果:**C 组患者的血浆 BNP 浓度显著高于 A 组和 B 组($P<0.05$),而 B 组患者的血浆 BNP 浓度显著高于 A 组,比较差异具有统计学意义($P<0.05$)。心脏超声检测发现,C 组患者的 LA 显著高于 A 组($P<0.05$),而 LVEF、LVEDD 及 LVESD 比较差异无统计学意义($P>0.05$)。血浆 BNP 与 NYHA 分级呈正相关关系,但与 LVEDD、LVESD、LVEF、LA 无明显相关关系($P>0.05$)。血浆 BNP 对评价心力衰竭患者病情程度呈现出较强的能力(受试者工作特征曲线下面积 = 0.902, $P<0.001$)。血浆 BNP = 523.5 pg/mL 为中重度心力衰竭患者的诊断最佳值。LVEF 对评价心力衰竭患者病情程度无明显能力(受试者工作特征曲线下面积 = 0.392, $P=0.276$)。**结论:**血浆 BNP 浓度对扩张型心肌病慢性心力衰竭患者的诊断、筛查以及心功能分级具有重要的临床意义。

关键词:扩张型心肌病;慢性心力衰竭;脑利钠肽

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Clinical Significance of Dynamic Analysis of Plasma Brain Natriuretic Peptide in Patients with Dilated Cardiomyopathy with Chronic Heart Failure

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ABSTRACT Objective: To investigate the clinical significance of dynamic analysis of plasma brain natriuretic peptide in patients with dilated cardiomyopathy with chronic heart failure. **Methods:** Ninety patients with dilated cardiomyopathy with chronic heart failure admitted into our hospital from March 2012 to March 2016 were divided into group A (20 cases), group B (38 cases), and group C (32 cases) according to the NYHA grading. The plasma BNP levels and LVEF, LA, LVEDD, and LVESD in the three groups were detected and compared. The correlation of plasma BNP and cardiac function and ultrasonic cardiogram indexes were analyzed. And the capability of plasma BNP and LVEF in diagnosis of patients were analyzed and compared. **Results:** The plasma BNP level in group C was markedly higher than that of group A and group B ($P<0.05$), and that in group B was much higher than that of group A ($P<0.05$). And LA in group C was significantly higher than that of group A ($P<0.05$), while differences in LVEF, LVEDD, and LVESD were not obvious ($P>0.05$). The plasma BNP was positively correlated to NYHA grading, but had no significant correlation with the LVEF, LVEDD, LVESD, and LA ($P>0.05$). Based on results of receiver operating characteristic curve analysis, plasma BNP = 523.5 pg/mL was the threshold value for identification of patients with NYHA III and IV (AUC=0.901, $P<0.001$), while LVEF had not the capability (AUC=0.392, $P=0.276$). **Conclusion:** Detection of plasma BNP level had important clinical significance on diagnosis, screening and cardiac functional grading of patients with dilated cardiomyopathy with chronic heart failure.

Key words: Dilated cardiomyopathy; Chronic heart failure; Brain natriuretic peptide

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前言

扩张型心肌病(dilated cardiomyopathy, DCM)是临床上常见的心肌疾病,主要表现为左心室或者双心室扩大合并收缩功能障碍,目前发病原因尚不完全清楚^[1,2]。慢性心力衰竭是一种以神经内分泌激活、外周血流分布异常以及心室功能不全为特征的复杂性临床综合征,是各种心脏疾病的终末阶段^[3]。早期诊断及评估慢性心力衰竭的病情程度将对于 DCM 的治疗及预后意义深远^[4]。血浆脑利钠肽(brain natriuretic peptide, BNP)是一种可反映心力衰竭重要的生物标志物,并且在诊断、程度分级以及预后方面均有显著作用^[5]。因此,本研究探讨了扩张型心肌病慢性心力衰竭患者血浆脑利钠肽动态分析的临床意义,现报道如下。

1 资料与方法

1.1 病例资料

收集 2012 年 3 月至 2016 年 3 月陕西中医药大学第二附属医院收治的 90 例扩张型心肌病慢性心力衰竭患者,均符合中华医学会心血管病学分会 2007 年制定的《中国慢性心力衰竭诊断治疗指南》中的诊断标准^[6]。患者入院后均给予心脏超声检查以及 BNP 检测。其中,男性患者 63 例,女性患者 27 例,年龄 25~75 岁,平均(53.4±12.1)岁。纽约心脏病协会(NYHA)心功能分级:II 级 20 例;III 级 38 例;IV 级 32 例。将患者按照心功能分级分别列为 A 组(II 级)、B 组(III 级)、C 组(IV 级)。各组年龄、性别等一般资料比较差异无统计学意义($P>0.05$),具有可比性。见表 1。

表 1 各组患者的基线资料比较(n)

Table 1 Comparison of the baseline data between three groups (n)

Groups	n	Age	Sexuality(Male/Female)	Smoker	Drinker	Hypertension	Hyperlipaemia	Diabetes
Group A	20	48.1±9.2	14/6	6	5	4	2	1
Group B	38	52.5±11.3	27/11	13	12	5	3	3
Group C	32	55.7±12.1	22/10	11	14	5	3	4

1.2 纳入、排除标准

(1)纳入标准:①有 6 个月以上慢性心力衰竭史;②左室射血分数(LVEF)<45%。

(2)排除标准:①肌酐>110 mol/L 者;②血压未得到有效控制者;③合并有肺血管疾病、慢性阻塞性肺病以及严重肺部感染者。

1.3 检测方法

(1)BNP 检测:所有患者在入院第 2 d 晨间采集静脉血 3~5 mL 置于 EDTA 抗凝管中,采用荧光免疫法测定患者的血浆 BNP 浓度。

(2)超声心动图检查:采用美国 Philips IE 33 彩色多普勒超声诊断仪测定患者的 LVEF、左心房内径(LA)、左室舒张末期内径(LVEDD)以及左室收缩末期内径(LVESD)。

1.4 统计学分析

采用 SPSS18.0 统计学软件进行数据处理,计量资料用均

数标准差($\bar{x} \pm s$)表示,组间比较采用 t 检验,多组间比较采用单因素方差分析,相关性分析采用 Pearson 相关系数分析法,以 $P<0.05$ 表示差异具有统计学意义。

2 结果

2.1 各组扩张型心肌病患者血浆 BNP 和超声心动图相关指标比较

随着 NYHA 心脏功能分级的增大,患者血浆 BNP 的浓度也相应地升高。统计学分析表明,C 组患者的血浆 BNP 水平显著高于 A 组和 B 组($P<0.05$),而 B 组患者的血浆 BNP 水平显著高于 A 组,差异均具有统计学意义($P<0.05$)。心脏超声检测结果显示:C 组患者的 LA 显著高于 A 组($P<0.05$),而三组 LVEF、LVEDD 及 LVESD 比较差异无统计学意义($P>0.05$)。详见表 2。

表 2 各组患者血浆 BNP 和超声心动图相关指标比较($\bar{x} \pm s$)

Table 2 Comparison of the plasma BNP level and ultrasonic cardiogram indexes between the three groups ($\bar{x} \pm s$)

Groups	n	BNP (pg/mL)	LVEF (%)	LA (cm)	LVEDD (cm)	LVESD (cm)
Group A	20	393.58±76.29	37.02±5.13	4.91±0.62	7.05±0.82	5.92±0.73
Group B	38	1056.70±143.53 [°]	35.73±4.90	5.21±0.70	7.03±0.86	5.85±0.72
Group C	32	1385.26±216.75 ^{°°}	34.1±4.81	5.48±0.74 [°]	6.95±0.87	5.70±0.75

Note: Compared with group A, [°] $P<0.05$; Compared with group B, ^{°°} $P<0.05$.

2.2 血浆 BNP 水平与扩张型心肌病患者心功能及超声心动图指标的相关性

血浆 BNP 水平与扩张型心肌病患者 NYHA 分级呈正相关关系,但与 LVEF、LVEDD、LVESD、LA 无明显相关关系($P>0.05$)。详见表 3。

2.3 血浆 BNP 水平与 LVEF 评估心力衰竭(III~IV 级)的价值

比较

以血浆 BNP=523.5 pg/mL 为中重度心力衰竭患者的诊断最佳值,其评价心力衰竭患者病情程度的价值较高(受试者工作特征曲线下面积=0.902,特异性为 88.5%,敏感性为 80%, $P<0.001$),而 LVEF 评价心力衰竭患者病情程度无明显统计学意义(受试者工作特征曲线下面积=0.392, $P=0.276$)。

表 3 血浆 BNP 水平与心功能及超声心动图指标的相关性

Table 3 Correlation of the plasma BNP level with the cardiac function and ultrasonic cardiogram indexes

Statistic	NYHA	LVEF	LA	LVEDD	LVESD
BNP					
r value	0.561	0.016	0.172	0.140	0.162
P value	<0.01	>0.05	>0.05	>0.05	>0.05

3 讨论

DCM 的病因目前尚不完全明确,但炎症反应、病毒感染、基因突变以及自身免疫反应等均有可能引起 DCM,其临床主要表现为心脏扩大、心率失常、进行性心力衰竭、血栓栓塞及猝死等症状^[7]。慢性心力衰竭是包括 DCM 在内的多种心脏疾病的终末阶段,出现症状后 5 年的死亡率极高,甚至高于一些恶性肿瘤,10 年的存活率仅为 22%^[8,9]。因此,早期诊断、筛查及评估心力衰竭患者的病情程度对 DCM 心力衰竭患者的及时治疗、治疗措施以及预后均有重要的临床意义^[10]。

目前,心力衰竭的诊断主要以心力衰竭的体征、症状,心脏结构的变化、心功能异常变化为依据进行评估^[11,12]。BNP 是心肌细胞释放出的一类激素^[13],以氨基酸前体蛋白的形式进行合成,于细胞内修饰组装为激素原,而最终贮存于心房颗粒内^[14]。BNP 能够增强肾小球的滤过率,降低钠离子的重吸收,而达到利尿排钠的作用^[15]。此外,BNP 还可以通过松弛血管的平滑肌,扩张动静脉而达到降血压和心脏负荷的效应^[16]。有研究表明心力衰竭患者体内利钠肽系统的激活是机体内分泌异常的表征之一^[17],而 BNP 的变化还可用于由于其他原因引起的呼吸困难,且敏感度可达 90%以上,特异性达 80%以上^[18]。对于首次接受治疗的心力衰竭患者,BNP 的浓度可作为筛查和评估患者病情的指标,发挥及早诊断及早治疗的作用^[19]。因此,本研究探究了扩张型心肌病慢性心力衰竭患者血浆脑利钠肽水平变化的临床意义。

本研究结果显示 C 组患者的血浆 BNP 浓度显著高于 A 组和 B 组,而 B 组患者的血浆 BNP 浓度显著高于 A 组,提示血浆 BNP 的浓度与慢性心力衰竭患者的新分级有密切的关联性,能够较好地反映患者的病情严重程度。Tachi 等^[20]研究表明 LVEF 能够较好的评估慢性心力衰竭患者心功能的情况,可作为患者心功能不全的评价指标之一。而本研究超声心动图检测结果显示 C 组患者的 LA 显著高于 A 组,而 LVEF、LVEDD 及 LVESD 比较差异无统计学意义,提示 LVEF 的变化并不能明显辨别 DCM 慢性心力衰竭患者的心功能分级。此外,血浆 BNP 与 NYHA 分级呈正相关关系,而与 LVEF、LVEDD、LVESD、LA 无相关关系,再次证明了血浆 BNP 与患者的心功能分级的密切关系,但升高的 BNP 并不能较好的反映心脏结构性的变化。Lubien 等^[21]研究也表明,虽然血浆 BNP 水平是诊断左室功能不全的敏感性、特异性指标,但它并不能辨别左室收缩功能不全或舒张功能不全,而在收缩功能尚正常的情况下,血浆 BNP 水平的上升则能够预测数张功能异常的状况。此外,血浆 BNP 对评价心力衰竭患者病情程度呈现出较强的能力,而 LVEF 对评价心力衰竭患者病情程度无明显能力,提示血浆 BNP 水平可作为诊断 DCM 患者心力衰竭的重要

标志物。

总之,血浆 BNP 水平对扩张型心肌病慢性心力衰竭患者的诊断、筛查以及心功能分级具有重要的临床参考价值。

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