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心脏彩超与N末端脑钠肽在H型高血压心功能不全中的 临床诊断价值比较*

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摘要 目的:对比分析心脏彩超与N末端脑钠肽(NT pro BNP)在H型高血压心功能不全中的临床诊断价值。**方法:**选择2016年1月~2017年12月在我院进行诊治的119例H型高血压心功能不全患者,采用美国纽约心脏病学会(NYHA)分级方案将患者的心功能等级分成I级组、II级组、III级组、IV级组,并选取同期在我院诊治的Hcy正常的116例高血压患者。检测所有患者的NT pro BNP水平,并采取心脏彩超检测患者的左心房房内径(LAD)、左室舒张末期径(LVEDd)以及左室射血分数(LVEF)。**结果:**H型高血压组的LAD、LVEDd、NT pro BNP水平明显高于Hcy正常高血压组($P<0.05$),LVEF明显低于Hcy正常高血压组($P<0.05$); NT pro BNP和LVEF的阳性率随着H型高血压患者心功能分级的增加,呈上升趋势。不同心功能分级患者NT pro BNP和LVEF的阳性率相比差异具有统计学意义($P<0.05$); H型高血压患者的Hcy水平与LAD呈明显的正相关($r=0.647, P=0.000$), LVEDd呈明显的正相关($r=0.613, P=0.000$), LVEF呈明显的负相关($r=-0.739, P=0.000$), NT pro BNP呈明显的正相关($r=0.832, P=0.000$)。LVEF诊断心功能不全的AUC为0.798,临界值为52.7%,敏感性为83.3%,特异性为57.3%; NT pro BNP诊断心功能不全的AUC为0.802,临界值为260.3 pg/mL,敏感性为85.7%,特异性为58.3%。**结论:**心脏彩超和NT pro BNP诊断H型高血压心功能不全患者的临床价值较高,可为其诊断提供有效的参数依据。

关键词:心脏彩超; N末端脑钠肽; H型高血压心功能不全; 临床诊断价值

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Comparison of the Clinical Diagnostic Value of Cardiac Color Doppler and N Terminal Brain Natriuretic Peptide for H Type Hypertensive Cardiac Insufficiency*

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ABSTRACT Objective: To compare the clinical diagnostic value of cardiac color Doppler and N terminal brain natriuretic peptide in H type hypertensive cardiac insufficiency. **Methods:** Selected 119 cases of patients with H type hypertensive cardiac insufficiency who were treated in our hospital from January 2016 to December 2017, Using the American New York heart association (NYHA) classification scheme the level of cardiac function of patients can be divided into I level, II grade group, III group, the level VI group. The levels of NT Pro BNP in all patients were detected, and the left atrial diameter (LAD), left ventricular end diastolic diameter (LVEDd) and left ventricular ejection fraction (LVEF) were detected by echocardiography. **Results:** The level of LAD, LVEDd and NT Pro BNP in H type hypertension group was significantly higher than that of normal hypertensive group of Hcy ($P<0.05$), and LVEF was significantly lower than that of normal hypertension group ($P<0.05$); The positive rate of NT Pro BNP and LVEF increased with the increase of cardiac function classification in patients with H type hypertension. The positive rates of NT Pro BNP and LVEF were statistically significant compared with the patients with different cardiac function classification($P<0.05$); The level of Hcy in patients with type H hypertension was positively correlated with LAD ($r=0.647, P=0.000$), and had positive correlation between LVEDd ($r=0.613, P=0.000$), and had negative correlation with LVEF ($r=-0.739, P=0.000$). The AUC of LVEF in diagnosis of cardiac insufficiency was 0.798, the critical value was 52.7%, the sensitivity was 83.3%, and the specificity was 57.3%. The AUC of NT pro BNP in diagnosis of cardiac insufficiency was 0.802, and the critical value was 260.3 pg/mL. It is 85.7% and its specificity is 58.3%. **Conclusion:** Cardiac color Doppler ultrasound and NT Pro BNP have high clinical diagnostic value in patients with type H hypertensive cardiac insufficiency, which can provide effective parameters for their diagnosis.

Key words: Cardiac color Doppler ultrasound; N terminal brain natriuretic peptide; H type hypertensive cardiac insufficiency; Clinical diagnostic value

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前言

高血压患者的临床表现主要包括收缩压升高、血压昼夜节律异常、血压波动大、极易出现直立性低血压以及脉压增加等^[1,2]。H型高血压指的是伴有高Hcy血症的原发性高血压。据相关研究资料显示,H型高血压在我国成年高血压患者中大约占75%^[3,4]。Hcy可以促进动脉粥样硬化的形成,其作为独立的心血管危险因素已被广泛接受^[5-7]。近年来,国内外的多项研究表明高血压是一种"心血管病综合征",而伴有Hcy升高型高血压作为高血压的一种新的危险因素而被纳入其中^[11,12]。研究显示Hcy每升高5 $\mu\text{mol/L}$,冠心病的发生风险会升高32%,脑卒中的发生风险则会升高59%,而且高Hcy以及高血压在引发心血管事件方面具有较为显著的协同功能,是导致心律失常及心脏功能不全的重要因素^[8-10]。加强对H型高血压心功能不全患者的临床诊断,对提高治疗效果和保障生命安全均具有重要的临床意义。本研究主要探讨了心脏彩超与NT pro BNP对H型高血压心功能不全中的临床诊断价值,结果如下。

1 资料与方法

1.1 一般资料

选取我院在2016年1月~2017年12月诊治的H型高血压心功能不全患者119例,采用美国纽约心脏病学会(NYHA)分级方案将患者的心功能分成I级组、II级组、III级组、VI级组。I级组35例,男20例,女15例;年龄35~83岁,平均(46.79 $\pm$ 8.42)岁;病程1~13年,平均(4.33 $\pm$ 1.25)年。II级组31例,男17例,女14例;年龄35~83岁,平均(47.13 $\pm$ 9.25)岁;病程1~13年,平均(4.45 $\pm$ 1.37)年。III级组29例,男16例,女13例;年龄35~83岁,平均(46.18 $\pm$ 7.21)岁;病程1~13年,平均(4.28 $\pm$ 1.46)年。VI级组24例,男14例,女10例;年龄35~83岁,平均(47.25 $\pm$ 9.43)岁;病程1~13年,平均(4.75 $\pm$

1.13)年。并选取同期在我院诊治的Hcy正常的高血压患者116例,男64例,女52例;年龄37~80岁,平均(46.93 $\pm$ 10.25)岁;病程1~13年,平均(4.89 $\pm$ 1.07)年。所有患者均同意并支持本次研究。统计学软件比较四组的基线资料差异无统计学意义($P>0.05$),具有可比性。

1.2 研究方法

患者均进行心脏彩超以及NT pro BNP水平检测。心脏超声检查方法:采用飞利浦公司的philips IE33彩色多普勒超声诊断仪,探头频率为2-4 MHz,观察左心室长轴、短轴和心尖两腔、四腔切面对室壁运动的增厚情况和协调性。检测四组患者的LAD、LVEDd以及LVEF。NT pro BNP水平检测经电化学发光-夹心免疫分析法,试剂盒购自苏州科铭生物技术有限公司。

1.3 观察指标

比较Hcy正常高血压患者以及H型高血压患者的LAD、LVEDd、LVEF、NT pro BNP水平;并比较不同心功能分级H型高血压患者的NT proBNP和LVEF阳性率(LVEF<50%判断为阳性,NT pro BNP> 125pg/mL判断为阳性)。采用经spearman相关性分析H型高血压患者Hcy水平与LAD、LVEDd、LVEF、NT pro BNP水平之间的相关性。

1.4 统计学分析

采用统计软件SPSS17.0,组间率的比较经 χ^2 检验,多组间经秩和检验,计量资料($\bar{x}\pm s$)经t检验,以 $P<0.05$ 代表差异具有统计学意义。分别对LVEF、NT pro BNP进行ROC曲线分析,获得相关诊断效能参数。

2 结果

2.1 两组LAD、LVEDd、LVEF、NT pro BNP水平的对比

H型高血压组的LAD、LVEDd、NT pro BNP水平明显高于Hcy正常高血压组($P<0.05$),LVEF明显低于Hcy正常高血压组($P<0.05$),见表1。

表1 两组LAD、LVEDd、LVEF、NT pro BNP水平的对比($\bar{x}\pm s$)

Table 1 Comparison of the levels of LAD, LVEDd, LVEF and NT Pro BNP between two groups($\bar{x}\pm s$)

Group	n	LAD(cm)	LVEDd (cm)	LVEF(%)	NT pro BNP(pg/mL)
Type H hypertension group	119	3.98 $\pm$ 0.45*	4.62 $\pm$ 0.31*	59.13 $\pm$ 5.42*	293.71 $\pm$ 45.28*
Hcy normal hypertension group	116	3.59 $\pm$ 0.34	4.47 $\pm$ 0.25	67.15 $\pm$ 6.38	142.53 $\pm$ 32.46

Note: Compared with the normal Hcy hypertension group, * $P<0.05$.

2.2 不同心功能分级患者 NT proBNP 和 LVEF 的阳性率对比

NT pro BNP 和 LVEF 的阳性率随着 H 型高血压患者心功

能分级的增加,呈上升趋势。不同心功能分级患者 NT pro BNP 和 LVEF 的阳性率相比差异具有统计学意义($P<0.05$),见表2。

表2 不同心功能分级患者 NT pro BNP 和 LVEF 阳性率对比

Table 2 Comparison of the positive rates of NT Pro BNP and LVEF between patients with different cardiac function classification

Classification of cardiac function	n	NT pro BNP		LVEF	
		(+)	(-)	(+)	(-)
Class I group	35	14	21	3	32
Class II group	31	16	15	7	24
Class III group	29	21	8	10	19
Class VI group	24	20	4	12	12
P	-	<0.05		<0.05	

2.3 相关性分析

经spearman相关性分析发现,H型高血压患者的Hcy水

平与 LAD 呈明显的正相关 ($r=0.647, P=0.000$), LVEDd 呈明显的正相关 ($r=0.613, P=0.000$), LVEF 呈明显的负相关 ($r=-0.739, P=0.000$), NT pro BNP 呈明显的正相关 ($r=0.832, P=0.000$)。

2.4 LVEF、NT pro BNP 诊断心功能不全的效能参数

LVEF 诊断心功能不全的 AUC 为 0.798, 临界值为 52.7%, 敏感性为 83.3%, 特异性为 57.3%; NT pro BNP 诊断心功能不全的 AUC 为 0.802, 临界值为 260.3pg/ml, 敏感性为 85.7%, 特异性为 58.3%。

3 讨论

高血压是一种临床上以体循环动脉血压超出正常范围为症状的常见疾病, 肥胖、遗传、饮酒、精神过度紧张等是导致高血压的主要因素^[13-15]。目前, 临床上治疗高血压的药物主要包括钙拮抗剂、 α 受体拮抗剂、血管紧张素 II 受体阻滞剂等^[16-18]。控制高血压是有效降低心脑血管疾病的发生率以及病死率的关键环节和重要措施, 具有极为重要的临床意义^[19-21]。据资料显示, 肺栓塞、外周血管疾病、缺血性脑血管疾病均与血浆中同型半胱氨酸的含量有关^[22]。伴有同型半胱氨酸升高型高血压患者同时具有引起心脑血管事件的两种危险因素, 而这些危险因素会通过不同的途径加速动脉硬化的发生以及发展, 对进一步引起心脑血管疾病具有协同的作用^[23-25]。

NT pro BNP 是一种神经内分泌激素, 由心肌细胞分泌而来^[26-28]。电化学发光-夹心免疫分析法检测 NT pro BNP 具有操作简单、敏感度高、特异性强等优点, 且 NT pro BNP 并无生物活性, 半衰期长, 血浆浓度高^[29,30]。本研究结果显示 H 型高血压患者的 LAD、LVEDd、NT pro BNP 水平显著高于 Hcy 正常高血压患者。高 Hcy 与高血压联合作用时, 更易对心脏产生损伤, 其机制可能与 Hcy 促进氧化应激, 使高血压病情加重, 进而造成心脏重构有关。NT pro BNP 和 LVEF 的阳性率随着 H 型高血压患者心功能分级的增加, 呈上升趋势。NT pro BNP 和 LVEF 的阳性率在不同心功能分级患者中相比差异具有统计学意义, 表明高 Hcy 与高血压联合作用会导致心肌舒缩功能异常, 其发生机制可能是高 Hcy 使线粒体基质金属蛋白酶激活, 造成线粒体通透性变化而引发。本研究与 Sundstrom 等^[31]的研究结果相一致。近年来, 开展多种指标的联合检测越来越受到临床的重视, 如何将心脏彩超和 NT pro BNP 进行联合检测, 发挥取长补短的效果, 提高诊断效能, 是未来临床研究的重点课题。

综上所述, 心脏彩超和 NT pro BNP 诊断 H 型高血压心功能不全患者的临床价值较高, 可为其诊断提供有效的参数依据。

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