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超声心动图对高血压心室肥厚患者左心功能的评价及意义*

贾兴泽¹ 赵婷丽¹ 李运夏¹ 高 静¹ 郭晓东² 刘慧卿¹ 李成田¹ 林 荣¹

(1 冀中能源邢台矿业集团有限责任公司总医院 河北 邢台 054000; 2 解放军第 302 医院 北京 100039)

摘要 目的:本研究利用超声心动图检测高血压心室肥厚患者左心房结构,探讨当左心结构发生变化时心脏功能所受到的影响,为高血压及其并发症的临床诊断提供检测及诊断参考。**方法:**选取 2011 年 5 月-2013 年 1 月在我院接受检查的高血压心室肥厚患者 76 例作为观察组,另选取同期经体检的健康人群 60 例为健康对照组,利用超声心动图观察左心功能和结构,比较两组研究对象的左心房内径(LAD)、心肌质量(LVMM)、舒张末容积(LVEDV)、收缩末容积(LVESV)、左心室射血分数(LVEF)及二尖瓣口舒张末期流速比值(E/A)。**结果:**两组间心室收缩功能无显著性差异($P>0.05$);高血压组 LAD 高于对照组,LVEF 及 E/A 低于对照组,差异具有统计学意义($P<0.05$);高血压 I 期、II 期、III 期患者间比较,左房内径随血压的升高逐渐递增,而左心室射血分数和二尖瓣口舒张末期流速比值则逐渐递减,差异具有统计学意义($P<0.05$)。**结论:**超声心动图可以直观的显示高血压心室肥厚患者左心功能及血流动力学的变化,对临床诊断具有积极的意义。

关键词:高血压;心室肥厚;超声心动图;左心功能;临床诊断

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Significance of Evaluating the Left Heart Functions by Ultrasound for Patients with Hypertension and Ventricular Hypertrophy*

JIA Xing-ze¹, ZHAO Ting-li¹, LI Yun-xia¹, GAO Jing¹, GUO Xiao-dong², LIU Hui-qing¹, LI Cheng-tian¹, LIN Rong¹

(1 Third Department of Internal Medicine, General Hospital of Jizhong Energy Affiliated to Xingtai Mining Industry Group Co., LTD., Xingtai, Hebei, 054000, China; 2 302 Hospital of PLA, Beijing, 100039, China)

ABSTRACT Objective: To discuss the functions of heart through the inspection of the changes in the left atrial structure of patients with hypertension by means of the ultrasonic cardiogram so as to provide some references for the clinical diagnosis. **Methods:** Sixty patients with hypertensive heart disease who were treated in our hospital from May 2011 to January 2013 were selected as the observation group, and another sixty healthy people who were inspected in our hospital at the same time were chosen to be the control group. Then the structure and function of left heart were detected by UCG, and the left atrium diameter (LAD), myocardial quality (LVMM), end-diastolic volume(LVEDV), end-systolic volume(LVESV), left ventricular ejection fraction(LVEF) and the ratio of mitral diastolic velocity (E/A) were observed and compared between two groups. **Results:** There was no statistically significant difference about the ventricular systolic function between two groups ($P>0.05$). The LAD of patients in the observation group was higher than that of the patients in the control group, while the LVEF and E/A were lower than those of the patients in the control group with statistically significant differences($P<0.05$). With the increasing of blood pressure, the LAD increased while the LVEF and E/A decreased among the patients in the three stages of hypertension with statistically significant differences ($P<0.05$). **Conclusions:** It is suggested that the ultrasonic cardiogram should be significant to the clinical diagnosis by presenting the data intuitively.

Key words: Hypertension; Ventricular Hypertrophy; Ultrasound; Left heart function; Clinical diagnosis

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前言

高血压是常见的慢性病,也是心脑血管疾病主要的危险因素,脑卒中、心肌梗死、心力衰竭是其并发症。高血压及其并发症直接或间接导致的死亡率逐年上升,严重影响患者的身心健康、生活质量及生存时间。高血压患者体内体循环动脉压力保持长期且持续性增高,使患者心脏后负荷过重,引起心功

能不全等心脏病变。患者早期症状不明显,但随着病情的逐步发展,心脏结构及功能受高血压影响而发生改变,心室肥厚或扩大继而引发心功能减退,患者会出现心慌、气短甚至猝死^[1-3]。因此,在高血压发病早期进行诊断并治疗,对缓解病情、延长生存期,提高生活质量尤为重要^[4-6]。目前,超声心动图被广泛应用于临床诊断及预后评估,效果显著^[7-9]。为进一步探讨超声心动图的诊断价值,我们对高血压心室肥厚患者的左心功能和结构

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作者简介:贾兴泽(1970-),副主任医师,硕士,主要从事心脏方面的研究,E-mail:laohushanshang@163.com

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的变化进行观察和分析,为临床诊断提供参考。

1 资料与方法

1.1 一般资料

选取 2011 年 5 月-2013 年 1 月在我院接受检查及治疗的高血压心室肥厚患者 76 例作为观察组,包括男 45 例,女 31 例,年龄 47-72 岁,平均 53 ± 3 岁,高血压病史 4-15 年。根据 WHO 对于高血压的诊断标准进行判断并进行分组^[10]: I 期 23 例,II 期 34 例,III 期 19 例。另选 60 例同期接受体检的健康人群为对照组,包括男 35 例,女 25 例,年龄 42-70 岁,平均 52 ± 1 岁。排除同时合并精神、肝脏等疾病患者。两组年龄、性别等一般资料无显著差异,具有可比性。

1.2 检测方法^[11]

使用麦迪逊 X6 超声诊断仪进行心脏超声检查,采用 6 MHz 探头频率。患者取左侧卧位,对胸骨左缘进行探测,在胸骨左缘长轴切面、心尖四腔心切面、心尖五腔心切面,检测左心房内径、心肌质量、舒张末期容积、收缩末期容积、左心射血分数、二尖瓣口舒张末期血流速度 E 峰与 A 峰比值等心功能指标。

1.3 评价标准

左心房内径 (LAD)、心肌质量 (LVMM)、舒张末期容积 (LVEDV)、收缩末期容积 (LVESV)、左心室射血分数 (LVEF)、二

尖瓣口舒张末期血流速度比值 (E/A)。

1.4 统计分析

将检测数据采用 SPSS18.0 软件进行统计学处理,计量资料利用 ($\bar{x} \pm s$) 表示。t 检验及标准方差分析进行两组比较,组间均数比较采用单因素分析,以 $P < 0.05$ 为差异具有统计学意义。

2 结果

2.1 两组患者的心脏结构和功能参数

如表 1 所示,对照组 LAD 为 (45.57 ± 6.33) mm, LVMM 为 (119.50 ± 18.69) g, LVEDV 为 (102.35 ± 21.19) ml, LVESV 为 (29.66 ± 6.89) ml, LVEF 为 $(70.63 \pm 4.28)\%$, E/A 为 (0.80 ± 0.34) ; 观察组 I 期 LAD 为 (51.43 ± 8.29) mm, LVMM 为 (158.30 ± 24.50) g, LVEDV 为 (117.20 ± 19.10) ml, LVESV 为 (38.63 ± 12.16) ml, LVEF 为 $(66.60 \pm 13.52)\%$, E/A 为 (0.61 ± 0.12) ; II 期 LAD 为 (58.76 ± 4.87) mm, LVMM 为 (145.60 ± 29.30) g, LVEDV 为 (119.70 ± 29.09) ml, LVESV 为 (36.23 ± 10.25) ml, LVEF 为 $(63.57 \pm 5.68)\%$, E/A 为 (0.57 ± 0.33) ; III 期 LAD 为 (69.26 ± 2.13) mm, LVMM 为 (164.50 ± 30.87) g, LVEDV 为 (152.13 ± 35.51) ml, LVESV 为 (96.93 ± 28.43) ml, LVEF 为 $(50.03 \pm 6.76)\%$, E/A 为 (0.49 ± 0.57) 。

表 1 两组患者心脏结构和功能比较

Table 1 Comparison of function and structure of heart between two groups

分组 Group	左心房内径 LAD (mm)	心肌质量 LVMM(g)	舒张末期容积 LVEDV(ml)	收缩末期容积 LVESV(ml)	射血分数 LVEF(%)	血流速度比值 E/A
Control	45.57± 6.33	119.50± 18.69	102.35± 21.19	29.66± 6.89	70.63± 4.28	0.80± 0.34
Observation I	51.43± 8.29	158.30± 24.50	117.20± 19.10	38.63± 12.16	66.60± 13.52	0.61± 0.12
II	58.76± 4.87	145.60± 29.30	119.70± 29.09	36.23± 10.25	63.57± 5.68	0.57± 0.33
III	69.26± 2.13	164.50± 30.87	152.13± 35.51	96.93± 28.43	50.03± 6.76	0.49± 0.57

2.2 两组患者心功能比较

高血压患者组与健康对照组相比,左心收缩功能无显著性差异,无统计学意义 ($P > 0.05$); 高血压患者左心房内径、心肌质量、舒张末期容积及收缩末期容积均大于健康人群,差异显著,具有统计学意义 ($P < 0.05$); 而高血压患者的左心室射血分数及二尖瓣口舒张末期血流速度 E 峰与 A 峰比值则显著小于健康人群的对应值,差异具有统计学意义 ($P < 0.05$)。

2.3 高血压不同分期患者心功能比较

将高血压患者按照不同分期进行分组,检测数据统计发现,①左心房内径及舒张末期容积随高血压分期逐步增高,高血压 I 期 $<$ 高血压 II 期 $<$ 高血压 III 期; ②左心室射血分数及二尖瓣口舒张末期血流速度比值 (E/A) 随高血压分期逐步降低,即高血压 I 期 $>$ 高血压 II 期 $>$ 高血压 III 期。随着血压的升高,高血压患者左心房内径和舒张末期容积逐渐升高,而左心室射血分数和二尖瓣口舒张末期血流速度比值则逐渐降低,差异显著且具有统计学意义 ($P < 0.05$)。

3 讨论

高血压是临床常见的心血管系统疾病,长期持续性血压升高会对患者的血流动力学造成严重的影响^[12]。高血压的危害性

与患者的血压水平相关,还与其他心血管病危险因素、靶器官损伤及并发症等有关。心脏作为高血压病理生理作用的主要靶器官,血压长期持续性升高极易引发心肌扩张、心室肥厚及冠状血管病变等^[13,14]。高血压患者随着血压的升高,心脏左室后负荷加重,左室充盈压升高,左房后负荷增加,心肌收缩性加强,心室发生重构,导致左室收缩及舒张功能减退,严重则引发心力衰竭或猝死等^[15,16]。据报道,左心室肥厚是高血压的主要特征表现,随着心室肥厚面积增加,心脑血管疾病发生的危险随之增加^[17]。因此,对高血压进行有效的治疗可最大限度地降低心血管病的危险。

超声心动图检测具高分辨率及准确距离检测等优点而广泛应用于临床,为诊断疾病、评价心功能及治疗等提供客观指标,能够有效且准确的诊断心血管疾病和监测血流动力学异常^[18,19]。超声心动图具有较高的灵敏性,可以定量房室内径、室壁厚度及血管结构等诊断心肌疾病,测量 LVEF、LVEDV、评价心功能不全,不仅能够检测出心肌功能的变化,还可诊断早期高血压心室肥厚,为疾病的治疗和预后提供依据^[20]。

本研究利用超声心动图探究高血压心室肥厚患者左心结构的变化,探究并分析评价患者的心功能。研究数据显示高血压患者左心内径、心肌质量及舒张末期容积均大于健康人群,说

明高血压患者当血压持续累积升高时心脏结构发生了改变。通过评价高血压心脏病患者的心功能,我们发现血压与左心房内径和舒张末容积呈正相关,与左心室射血分数和E/A值呈负相关($P < 0.05$)。结果说明,高血压心室肥厚患者的心功能指标明显低于正常值,患者发生心力衰竭、冠心病等心血管疾病的危险远远高于健康人群。

综上所述,高血压对心肌造成的损害严重威胁患者生命,对高血压患者的心脏功能进行客观评价、早期诊断及治疗对预后具有重要的意义。超声心动图能够直观的显示高血压患者的心脏结构,从解剖学层面直接准确地确定左心房增大的面积或左心室肥厚的程度,客观的评价心脏功能,为诊断提供确切数据,具有临床推广价值及应用前景。

参考文献(References)

- [1] Peterson GE, de Backer T, Contreras G, et al. Relationship of left ventricular hypertrophy and diastolic function with cardiovascular and renal outcomes in African Americans with hypertensive chronic kidney disease[J]. Hypertension, 2013, 62(3): 518-525
- [2] Egan BM, Li J, Qanungo S, et al. Blood pressure and cholesterol control in hypertensive hypercholesterolemic patients: national health and nutrition examination surveys 1988-2010 [J]. Circulation, 2013, 128(1): 29-41
- [3] Misra KH, Das MC, Ramani YR. Effect of telmisartan on the regression of the left ventricular hypertrophy in the patients of essential hypertension[J]. J Clin Diagn Res, 2013, 7(7): 1352-1355
- [4] Hijazi Z, Oldgren J, Wallentin L, et al. Response to letter regarding article, "Cardiac biomarkers are associated with an increased risk of stroke and death in patients with atrial fibrillation: a randomized evaluation of long-term anti coagulation therapy (RE-LY) sub study" [J]. Circulation, 2013, 127(2): 278-279
- [5] Nojiri T, Yamamoto K, Maeda H, et al. Effects of inhaled tiotropium on left ventricular diastolic function in chronic obstructive pulmonary disease patients after pulmonary resection[J]. Ann Thorac Cardiovasc Surg, 2012, 18(3): 206-211
- [6] Mirza SJ, Radaideh GA. Pattern of left ventricular hypertrophy seen on transthoracic echo in patients with hypertensive cardiomyopathy when compared with idiopathic hypertrophic cardiomyopathy [J]. J Pak Med Assoc, 2013, 63(1): 16-19
- [7] Adekunle AE, Adeseye AI, Adebayo OT, et al. Left ventricular mass formulae and prevalence rates of echocardiographic left ventricular hypertrophy in nigerians with essential hypertension[J]. N Am J Med Sci, 2013, 5(5): 325-329
- [8] Catena C, Colussi G, Valeri M, et al. Association of aldosterone with left ventricular mass in hypertension: interaction with plasma fibrinogen levels[J]. Am J Hypertens, 2013, 26(1): 111-117
- [9] Milan A, Tosello F, Naso D, et al. Ascending aortic dilatation, arterial stiffness and cardiac organ damage in essential hypertension [J]. J Hypertens, 2013, 31(1): 109-116
- [10] Schillaci G, Battista F, Pucci G. A review of the role of electrocardiography in the diagnosis of left ventricular hypertrophy in hypertension[J]. J Electrocardiol, 2012, 45(6): 617-623
- [11] Menni C, Boffi L, Cesana F, et al. Variant on chromosome 9p is associated with left ventricular mass: results from two cohorts of essential hypertensive individuals [J]. J Hypertens, 2012, 30 (11): 2144-2150
- [12] Takeda M, Amano Y, Tachi M, et al. MRI differentiation of cardiomyopathy showing left ventricular hypertrophy and heart failure: differentiation between cardiac amyloidosis, hypertrophic cardiomyopathy and hypertensive heart disease [J]. Jpn J Radiol, 2013, 31[Epub ahead of print]
- [13] Yokota H, Imai Y, Tsuboko Y, et al. Nocturnal Blood Pressure Pattern Affects Left Ventricular Remodeling and Late Gadolinium Enhancement in Patients with Hypertension and Left Ventricular Hypertrophy[J]. PLoS One, 2013, 26, 8(6): 67825
- [14] Desai MY, Bhonsale A, Smedira NG, et al. Predictors of long-term outcomes in symptomatic hypertrophic obstructive cardiomyopathy patients undergoing surgical relief of left ventricular outflow tract obstruction[J]. Circulation, 2013, 16, 128(3): 209-216
- [15] Simone G, Devereux RB, Izzo R, et al. Lack of reduction of left ventricular mass in treated hypertension: the strong heart study [J]. J Am Heart Assoc, 2013, 6, 2(3): 000144
- [16] Gosse P, Cremer A, Papaioannou G, et al. Arterial stiffness from monitoring of timing of korotkoff sounds predicts the occurrence of cardiovascular events independently of left ventricular mass in hypertensive patients[J]. Hypertension, 2013, 62(1): 161-167
- [17] Modan M, Wierzbowska-Drabik K, Kurpesa M, et al. Echocardiographic indices of left ventricular hypertrophy and diastolic function in hypertensive patients with preserved LVEF classified as dippers and non-dippers[J]. Arch Med Sci, 2013, 20, 9(2): 268-275
- [18] 史亚娜, 王凡非, 邓捷, 等. 心尖肥厚型心肌病的临床特征及治疗[J]. 现代生物医学进展, 2012, 12(34): 6684-6685+6646
Shi Ya-na, Wang Fan-fei, Deng Jie, et al. Clinical characteristics and treatment methods of the AHCM [J]. Progress in Modern Biomedicine, 2012, 12(34): 6684-6685+6646
- [19] 顾秀莲, 樊济海, 巢胜吾, 等. 心脏室间隔起搏与右室心尖部起搏对心功能的影响[J]. 现代生物医学进展, 2013, 13(21): 4081-4084
Gu Xiu-lian, Fan Ji-hai, Chao Sheng-wu, et al. Cardiac Function Influence on Right Ventricular Septum Pacing and Right Ventricular Apex Pacing [J]. Progress in Modern Biomedicine, 2013, 13 (21): 4081-4084
- [20] 刘楠楠, 侯明晓, 曹军英, 等. 应用斑点成像及组织多普勒估测左室充盈压[J]. 现代生物医学进展, 2013, 13(13): 2521-2524
Liu Nan-nan, Hou Ming-xiao, Cao Jun-ying, et al. Research on the Prediction of LV Filling Pressure by Speckle Tracking and Tissue Doppler Imaging [J]. Progress in Modern Biomedicine, 2013, 13(13): 2521-2524