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慢性心力衰竭合并心房颤动发病的相关机制研究*

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摘要 目的:慢性心力衰竭(Chronic Heart Failure, CHF)是心血管系统常见的疾病,威胁患者的生存周期及生活质量。本研究针对慢性心力衰竭合并房颤的临床特征,进一步探讨其发病机制,为临床治疗提供依据。**方法:**将80例慢性心力衰竭患者平均分为两组,心律正常的为窦性心律组,伴有房颤的作为房颤组。观察并比较两组的左心室射血分数(LVEF)和二尖瓣口舒张期流速(E/A)等心脏功能指标。**结果:**房颤组左心室射血分数(LVEF)为 (0.42 ± 0.08) ;二尖瓣口舒张期流速(E/A)为 (0.65 ± 0.22) ;左心房内径(LAD)为 (53.4 ± 8.2) mm。窦律组左心室射血分数(LVEF)为 (0.45 ± 0.09) ;二尖瓣口舒张期流速(E/A)为 (0.72 ± 0.17) ;左心房内径(LAD)为 (46.7 ± 7.9) mm。房颤组患者的LVEF和E/A值均低于窦律组,而LAD则明显高于窦律组,差异具有统计学意义($P < 0.05$)。房颤组醛固酮、血管紧张素(AngII)、脑钠肽(BNP)及超敏C反应蛋白(hs-CRP)均高于窦律组,差异具有统计学意义($P < 0.05$)。**结论:**慢性心力衰竭合并房颤的发病与患者体内神经内分泌体液系统水平和心脏结构功能有关,具体发病机制需进一步深入研究。

关键词:慢性心力衰竭;房颤;发病机制

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The Relative Pathogenesis of Chronic Heart Failure Combined with Atrial Fibrillation*

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ABSTRACT Objective: Chronic Heart Failure(CHF) is a common disease of cardiovascular system which threatens to the cycle and quality of life. This research aims to investigate the clinical features of chronic heart failure with atrial fibrillation and to analyze the pathogenesis of chronic heart failure complicated with atrial fibrillation so as to provide a basis for clinical treatment. **Methods:** 80 cases with chronic heart failure were selected and divided into two groups according to the proportion of 1:1. The patients with normal rhythm were chosen to be the sinus rhythm group, while others with atrial fibrillation were selected to be the atrial fibrillation group. Then the possible factors of atrial fibrillation were compared and analyzed. **Results:** The LVEF was (0.42 ± 0.08) ; the E/A was (0.65 ± 0.22) ; the LAD was (53.4 ± 8.2) mm of the atrial fibrillation group. The LVEF was (0.45 ± 0.09) ; the E/A was (0.72 ± 0.17) ; the LAD was (46.7 ± 7.9) mm of the sinus rhythm group. The heart function indexes of the atrial fibrillation group were lower than those of the patients in sinus rhythm group, while the LAD was significantly higher than that of the sinus rhythm group with statistically significant differences ($P < 0.05$). The aldosterone, AngII, BNP, HS and CRP in atrial fibrillation group were higher than those of the patients in the sinus rhythm group with statistically significant differences ($P < 0.05$). **Conclusion:** The pathogenesis of chronic heart failure complicated with atrial fibrillation is related to the neuroendocrine fluid system level and cardiac structure and function, but the specific mechanism needs further study.

Key words: Chronic heart failure; Atrial fibrillation; Pathogenesis

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前言

慢性心力衰竭(Chronic Heart Failure, CHF)是由于心室泵血或充盈功能低下而无法满足机体代谢所需要的血量,导致身体组织及器官血液灌注不足,同时出现肺循环和或体循环淤血,是各种心脏病发展到严重阶段的临床综合征^[1]。慢性心力衰竭的特点是左室肥厚或扩张,导致神经内分泌及循环功能异常,典型的临床症状为:呼吸困难、体液潴留、乏力等。其病因复杂,发病率较高,如果不治疗或治疗不及时,心功能不全的症状会不断加重,甚至危及生命^[2]。CHF 并发症种类较多,随着病情缓慢进展,伴发心律失常的可能性逐渐增加,其中房颤(AF)是最常见的心律失常类型。目前临床上对慢性心力衰竭合并房颤的发病机制研究尚浅,没有形成标准的理论^[3]。为了进一步研究该类疾病的发病机制,本文针对慢性心衰合并房颤患者的心功能及结构进行分析。现将具体结果报告如下:

1 临床资料

1.1 一般资料

选取 2011 年 12 月 -2012 年 12 月在本院心血管科接受治疗的慢性心力衰竭患者 80 例,其中男性 45 例,女性 35 例,患者均为中老年人,年龄分布在 45-75 岁,平均年龄为(63.4± 4.2)岁。患者有心脏病史 4-14 年,平均(7.4± 3.8)年,心力衰竭病史 6 个月 -4 年,平均 (2.4± 0.8) 年。以美国纽约心脏病学会(NYHA)心功能的分级^[4]为准,均为Ⅲ级。经诊断,40 例患者伴有心房颤动,将其定义为房颤组;其余 40 例心律正常的患者作

为窦性心律组。两组患者的年龄、性别、病史及心功能分级等方面无显著差异,具有可比性。

1.2 观察指标

1.2.1 心脏结构和功能 经心脏超声彩色多普勒检查 (购于美国),测定患者的左心房内径(LAD)、左心室射血分数(LVEF)及舒张期流速(E/A)。

1.2.2 生化水平 患者空腹静卧 1 小时后,采静脉血。采用酶联免疫吸附法(ELISA)分离血清,检测脑钠素(BNP)的水平;利用 AU2700 型全自动生化分析仪检测血清中高敏 C 反应蛋白(hs-CRP)的含量。

1.3 统计学方法

采用 SPSS13.0 进行数据统计,计数资料用 χ^2 检验,计量资料用 t 检测,采用标准方差($\bar{x} \pm s$)表示,以 $P < 0.05$ 为差异具有统计学意义。

2 结果

2.1 两组患者心脏功能和结构的比较

如表 1 所示,房颤组患者左心房射血分数(LVEF)为 0.42 ± 0.08 ,二尖瓣口舒张期流速(E/A)为 0.65 ± 0.22 ,左心房内径(LAD) 为 53.4 ± 8.2 mm; 窦性心律组患者左心房射血分数(LVEF) 为 0.45 ± 0.09 ,二尖瓣口舒张期流速 (E/A) 为 0.72 ± 0.17 ,左心房内径(LAD)为 46.7 ± 7.9 mm。房颤组患者左心房射血分数和二尖瓣口舒张期流速均低于窦性心律组;而左心房内径则明显高于窦性心律组,差异具有统计学意义($P < 0.05$)。

表 1 两组患者心脏结构和功能的比较

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

Group	Case	LAD(mm)	LVEF(%)	E/A
AF	40	53.4 ± 8.2	0.42 ± 0.08	0.65 ± 0.22
NSR	40	46.7 ± 7.9	0.45 ± 0.09	0.72 ± 0.17
T		$t = 5.86$	$t = 1.86$	$t = 2.46$

Note: compared between two groups, $P < 0.05$.

2.2 两组患者体内生化水平的比较

房颤组患者体内的醛固酮含量为 (345.6 ± 32.7) pg/mL,血管紧张素 II 的含量为 (126.4 ± 44.6) pg/mL,脑钠肽水平为 (3.4 ± 0.2) μ g/L,超敏 C 反应蛋白的含量为 (3.8 ± 0.6) mg/mL; 窦性心律组患者体内的醛固酮含量为 (302.4 ± 37.4) pg/mL,血

管紧张素 II 的含量为 (117.5 ± 50.5) pg/mL,脑钠肽水平为 (2.2 ± 0.4) μ g/L,超敏 C 反应蛋白的含量为 (2.1 ± 0.3) mg/mL。房颤组患者体内的各项生化指标均高于窦性心律组,差异显著具有统计学意义($P < 0.05$)。

表 2 两组患者体内的生化指标比较

Table 2 Comparison of the biochemical indexes of patients between two groups

Group	RAA(pg/mL)	BNP(μ g/L)	Ang II (pg/mL)	hs-CRP(mg/mL)
AF	AF	AF	AF	AF
NSR	NSR	NSR	NSR	NSR
T	T	T	T	T

Note: compared between two groups, $P < 0.05$.

3 讨论

慢性心力衰竭(CHF)作为多种类型心肌损伤疾病的共同归

宿,病变复杂,严重影响患者的生活质量和生存期限^[5]。有研究表明,慢性心力衰竭患者存活率与恶性肿瘤患者存活率相当,随着病情的发展,可对患者心肌造成新的损害并逐渐引发心律

失常,形成恶性循环^[67]。

3.1 心脏结构和功能发生变化

CHF 造成心肌功能降低,泵血功能逐渐下降,导致大量血流淤积在心房和心室内,对心肌内壁压力越来越大,最终导致纤维化形成,心房变性增大。结构变异容易增高心肌自律性,并且影响正常的兴奋和传导性,正常动作电位受影响,以上多种因素触发,增加 AF 形成可能性。心房结构扩张,不断受到牵拉,同样维持 AF 进行,成为 AF 发生的基础条件。心室射血能力降低,一定程度上促进以上循环形成^[11-13]。本研究中,房颤组 LVEF 和 E/A 心脏功能指标均低于窦律组,而 LAD 为(53.4±8.2) mm,明显高于窦律组,说明房颤组心房明显发生重构,与以上叙述基本相符,说明 AF 形成受心脏结构和功能的影响。

3.2 RAAS 水平及 BNP, CRP 的变化

研究显示,CHF 患者的交感神经容易激活,导致体内醛固酮和 AngII 水平增加,其作用于心肌,能够促进心肌细胞凋亡,加重对心肌的损害。醛固酮可导致心肌纤维化形成,造成心肌重构,导致房颤形成。另外,醛固酮和 AngII 水平可使心率加快,造成钾钠水平失衡,动作电位受影响而发生房颤。临床上通常采用血管紧张素转换酶抑制剂治疗房颤的效果已得到证实,进一步说明房颤与醛固酮系统的水平存在一定的联系^[14-16]。BNP 是由于心室壁受到牵拉而产生的物质,其水平高低反映心室结构和功能,具有重要检测意义。并且 BNP 具有稳定的化学性质,生成后大量存在于血液中,容易检测。BNP 升高与 AF 形成关系紧密。有研究证实,房颤患者的心率与脑钠肽水平有关。BNP 是评价心功能和患者预后的重要指标,CHF 患者中显著升高,而伴有 AF 者加重心肌功能损伤,BNP 水平再次升高,预后较差^[17-19]。另有研究表明,CRP 含量高者术后发生 AF 的几率提升,AF 形成与炎症反应有关,CRP 为敏感炎症标志,炎症的存在可促进心房扩大,AF 患者体内 CRP 明显高于心律正常者^[20]。结合本研究,房颤组患者体内的各项生化指标均高于窦性心律组,与文献记载一致。

综上所述,多种物质和因素相互影响促进 CHF 患者心肌重构、心肌细胞凋亡等,从而并发心房颤动。虽然临床从多角度初步探寻 AF 发病机制,但仍然涉及不全面,应该不断采新兴的技术深入探寻 AF 发生机制,为临床诊治和预防提供依据。

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