

Original Article

Analysis of 610 cases inpatients with chronic heart failure

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Highlights

The study analyzed the clinical characteristics and medical treatment of hospitalized patients with chronic heart failure and highlight the advantages of the combination of traditional Chinese and western medicine in the treatment of heart failure.

Editor's Summary

The advantages of combination of traditional Chinese and western medicine in the treatment of heart failure are explained from different angles in this research, which provides evidences for further application.

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Abstract

Objective: To analyze the clinical characteristics and medical treatment of hospitalized patients with chronic heart failure, and provide medication for the patients. **Methods:** According to medical records of inpatients, demographic information, etiology, clinical features and treatment information were collected. **Results:** A total of 610 cases with heart failure from our hospital between July 2010 and June 2016 were analyzed. The average age of all the patients was 63. Males accounted for 50.49%. There were 82.7% patients with NYHA functional classification at III-IV. 31.3% patients with coronary artery disease, 28.4% with rheumatic heart diseases and 21.8% with expansion of heart disease. 27.4 percent of the patients with the left ventricular ejection fraction lower than 40%. There were 78.9% patients received aldosterone antagonist treatment, 63.4% received ACEI/ARB, 62.1% received digoxin, 59.8% received beta blockers, and 75.4% patients received decoction, and 80.8% received Chinese patent medicine. **Conclusion:** The study has shown that high utilization of traditional Chinese medicine is to highlight the advantages of the combination of traditional Chinese and western medicine in the treatment of heart failure. The usage of spironolactone, ACEI/ARB, beta blockers in our hospital was lower than the ratio reported, higher than that of the national average. However, the use of diuretics is lower than that of national average, which may relate to the use of damp-clearing herbs. Clinicians should pay attention to the high utilization rate of digoxin. Patients with the left ventricular ejection fraction > 50% accounted for 61.1%, which required more attention should be paid to the diagnosis and treatment of patients with heart failure of the ejection fraction remains.

Key words: Heart failure, Clinical features, Treatment, Combination of traditional Chinese and Western medicine.

摘要

目的: 分析慢性心力衰竭住院患者临床特点和药物治疗情况, 总结慢性心力衰竭临床特点, 为患者的药物治疗提供依据。

方法: 根据住院心衰患者病例资料, 收集其人口学信息、心衰病因及临床特点和治疗情况。

结果: 对河南中医药大学第一附属医院 2010 年 7 月至 2016 年 6 月, 共 610 例心衰患者进行数据分析, 患者平均年龄为 63.03 岁, 男性占 50.49%, 大部分患者为美国纽约心脏协会心功能分级 III~IV 级, 占 82.7%。心衰患者中冠心病占 31.3%、风心病占 28.4%、扩心病占 21.8%, 左室射血分数 < 40% 的患者占 27.4%。住院期间醛固酮受体拮抗剂的应用率为 78.9%, ACEI/ARB 为 63.4%, 地高辛为 62.1%, β 受体阻滞剂为 59.8%, 中药汤药为 75.4%, 中成药为 80.8%。

结论: 中成药、汤药使用比率较高, 充分突出中西医结合特色治疗心衰病的优势; 在螺内酯、ACEI/ARB (血管紧张素转换酶抑制剂/血管紧张素 II 受体拮抗剂)、 β 受体阻滞剂等药物运用低于指南水平, 高于国内平均水平, 其中利尿剂使用低于国内平均水平, 这可能与利尿渗湿药的运用关系密切; 地高辛使用率较高, 提示临床医师注意; 左室射血分数 $\geq 50\%$ 的患者占 61.1%, 这要求我们更加重视射血分数保留心衰患者的诊断及治疗。

关键词: 慢性心力衰竭; 临床特点; 治疗; 中西医结合

Abbreviations: CHF, Chronic heart failure; NYHA, New York Heart Association; TCM, Traditional Chinese medicine.

Competing interests: The authors declare that there is no conflict of interests regarding the publication of this paper.

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Introduction

Chronic heart failure (CHF) is the terminal stage of cardiovascular disease, with the characteristics of high incidence, mortality and medical expenses. The prevent and treatment for CHF is difficult in China. Because the vast land area and large differences in local economic levels made it difficult to perform a large-scale epidemiological study, which could really reflect the clinical situation. Moreover, the incidence of other frequently occurring diseases, such as “three highs”, is on the rise and the population of heart failure patients is constantly expanding. The huge population also makes it difficult to conduct a large-scale study. Therefore, small-scale clinical research is needed to understand the prevention and treatment of CHF. In this study, we prospectively analyzed the characters of patients with CHF in our hospital to understand the clinical features, which may improve the prevention and treatment.

Data and methods

Research object

All patients with CHF included in this study were from Cardiovascular Center of the First Affiliated Hospital of Henan University of Traditional Chinese medicine (TCM) from July 2010 to June 2016.

Diagnostic criteria. Diagnostic criteria for CHF were reference to the 2014 edition of China's guidelines for CHF [1]. Cardiac function classification criteria were according to the New York Heart Association (NYHA) grading standards for cardiac function classification.

Inclusion criteria. ① CHF; ② cardiac function grade II-IV; ③ If the same patient is hospitalized more than once during this period, collect the information according to the latest record.

Exclusion criteria. ① Patients discharged automatically within 24h without any treatment; ② end-stage patients with malignant tumors; ③ patients with mental disorders, language exchange problems; ④ The medical records are incomplete.

Research methods

According to the records of inpatients with CHF, the data of patients were collected, including the patient's name, age, gender, home address, etiology, Chinese medicine treatment (Chinese patent medicine, Chinese herbal medicine), heart function classification, left ventricular ejection fraction, hospitalization days. Made clinical questionnaires for patients with CHF. Established a database for further analysis.

Statistical analysis

All data were normalized. Using excel to establish the database, the data was imported into SPSS 22.0 for statistical analysis. Measurement data in line with the normal distribution were recorded using ($\bar{x} \pm S$). The differences of two groups were compared using *t* test and the differences of multiple groups were compared using one-way analysis of variance. The comparison between two groups of non-normal distribution was performed by two non-parametric independent samples. Count data was analyzed by frequency or rate (%), χ^2 tests was used to analyze data among groups.

Results

The basic characteristics of patients with CHF

According to the inclusion and exclusion criteria of this study, 610 cases were included. The basic information was showed in Table 1.

Table 1 The baseline characteristics of 610 hospitalized patients with heart failure ($\bar{X} \pm S$)

Characteristics	Cases(%)	Parameter
Age (y)	610 (100%)	63.03 \pm 15.60
Male [n (%)]	610 (100%)	308 (50.5)
Smoking [n (%)]	610 (100%)	122 (20.0)
Driking [n (%)]	610 (100%)	91 (14.9)
Atrial fibrillation [n (%)]	610 (100%)	215 (35.2)
Coronary heart disease [n (%)]	610 (100%)	191 (31.3)
Rheumatic heart disease [n (%)]	610 (100%)	173 (28.4)
Dilated heart disease [n (%)]	610 (100%)	133 (21.8)
Chronic pulmonary diseases [n (%)]	610 (100%)	129 (21.1)
diabetes [n (%)]	610 (100%)	110 (18.0)
Cerebrovascular disease [n (%)]	610 (100%)	81 (13.3)
Chronic kidney disease [n (%)]	610 (100%)	55 (9.0)
Left ventricular ejection fraction [n (%)] ≤ 40	529 (86.7%)	-
$>40 \sim <50$	-	145 (27.4)
≥ 50	-	61 (11.5)
NYHA cardiac function classification [n(%)]	600 (98.4%)	323 (61.1)
II	-	-
III	-	104 (17.3)
IV	-	345 (57.5)
Plasma BNP (pg/ml)	286 (46.9%)	151 (25.2)
Plasma NT-proBNP (pg/ml)	156 (25.6%)	1210.84 \pm 1717.69
Hospitalization time (d)	610 (100%)	1965.17 \pm 16823
		17.39 \pm 11.60



Common basic etiologies

The primary causes of heart failure were coronary heart disease with 191 cases (31.3%), followed by rheumatic heart disease with 173 cases (28.4%), dilated cardiomyopathy with 133 cases (21.8%), hypertension with 29 cases (4.8%) pulmonary heart disease with 21 cases (3.4%), arrhythmia with 14 cases (2.3%), congenital heart disease with 5 cases (0.8%), viral myocarditis with 5 cases (0.8%), infection with 2 cases (0.3%), alcoholic cardiomyopathy with 2 cases (0.3%), hypertrophic cardiomyopathy with 1 case (0.2%), constrictive pericarditis with 1 case (0.2%) and perinatal cardiomyopathy with 1 case (0.2%), high altitude heart disease with 1 case (0.2%) and unknown etiology with 25 cases (4.1%).

Western medicine treatment

Aldosterone receptor antagonists had the highest utilization rate with 481 cases (78.9%), the usage rate of amiodarone was the lowest (44 cases, 7.2%). The frequency of other western medicine is as follows: 387 cases (63.4%) for ACEI/ARB, 379 cases (62.1%) for digoxin, 365 (59.8%) for β -blockers, 303 (49.7%) for nitrates, 282 (46.2%) for antiplatelet drugs and 280 for trimetazidine. 271 cases (44.4%) for diuretics, 231 cases (37.9%) for lipid-lowering drugs, 208 cases (34.1%) for potassium chloride, 152 cases (24.9%) for thiazide diuretics and 140 cases (23.0%) for antibiotics. 121 cases (19.8%) for famelin and 76 cases (12.5%) for calcium antagonists.

Combination western medicine with TCM

In this study, 246 kinds of herbs were applied total 6789 times simultaneously with standard western medicine treatment. The frequencies of first three used herbs were Fuling (*Poria cocos*) (282 cases, 46.2%), Baizhu (*Atractylodes*) (259 cases, 42.5%), and Huangqi (*Astragalus membranaceus*) (243 cases, 39.8%). There were 493 patients (80.8%) who received Chinese patent medicine. The top three were Qiliqianxin Capsule (203 times), Yangxin oral liquid (112 times) and Qishenyiqi Pill (93 times). 460 patients taking decoction, the proportion of the total number was 75.4%. A total of 48 kinds of prescriptions were used, of which the top 3 were Shengmai San (137 times), Baoyuan Soup (135 times) and Taohongsiwu Soup (63 times). There were 206 cases (33.8%) with Qi and Yin deficiency and blood stasis, 131 cases (21.5%) with deficiency of blood stasis and phlegm, and 123 cases (20.2%) with deficiency of blood and blood stasis.

Discussion

Heart Failure Survey in Shanghai [2] showed that the average age of patients with CHF increased by 17.3

years in last 20 years. An epidemiological survey of the asia-pacific region [3] results showed that the average age of morbidit of heart failure was 67 to 70 years old, lower than that in Europe and the United States. The 2015 China Cardiovascular Report [4] pointed out that the average age of CHF patients is 66 ± 15 years. The average age of patients with heart failure in this study was 63.03 ± 15.60 years, lower than that in other regions at home and abroad. This may be related to the un-strict control of risk factors, untimely diagnosis and poor compliance. The proportion of men and women in this study was similar, which is quite different from the large-scale study in China. It may be related to population structure of this area.

A retrospective survey [5] showed that in the 20 years from 1980 to 2000, the first risk factor for hospitalized patients with CHF turned from rheumatic heart disease to coronary heart disease, followed by hypertension and rheumatic heart disease. This is similar to the findings of the Shanghai Heart Failure Investigation Co-operation Group [2]. A multicenter prospective heart failure study in China analyzed the data of nearly 10 000 heart failure patients in several hospitals and showed that coronary heart disease (49.4%), hypertension (54.6%), chronic kidney disease (29.7%) ranked the first three causes of worsening heart failure. The results of this study showed that the first three causes of heart failure are coronary heart disease, rheumatic heart disease and dilated heart disease. This is inconsistent with the epidemiological findings in our country. The higher prevalence of heart disease may be related to the use of ultrasonography in our hospital in recent years. The incidence of rheumatic heart disease decreased year by year, which may be benefit from the progress of medical examination and treatment. At the same time, the rapid increase of the incidence of coronary heart disease is closely related to the change of life style.

The heart center of our hospital adhered to the recommended guidelines for the treatment of heart failure, but the diuretic use rate is lower than the national average [6], which may be related to the high frequency use of the ater-discharging and damp-clearing herbs. The application rate of digoxin in the Asia-Pacific region [3] is declining year by year due to the impact of international clinical research. the higher using rate in our hospital deserves the attention of clinicians. Patients with atrial fibrillation accounted for 35.2% and the application rate of warfarin was 19.8%, which reminded clinicians to pay attention to the anticoagulant therapy for patients with atrial fibrillation. Luo LT *et al* [7 - 9] found patients with CHF syndromes consistent with the results of this study.



2016 European Society of Cardiology updated guidelines for acute and CHF [10] and added heart failure with median ejection fraction. At present, there was no evidence-based medical treatment and the guidelines for patients with LVEF $\geq 40\%$ which was recognized as heart failure. China Heart Failure Registry [6] analysis showed that 62.5% of patients with LVEF $\geq 40\%$ has heart failure. Heart failure survey results in Asia Pacific [3] in 2000 - 2004, heart failure patients with LVEF $\geq 50\%$ accounted for 51% and it added up to 69% in 2006 - 2010. The data show that there is a high proportion of patients in the middle and upper part of the Asia-Pacific region and the number of patients who have been retained. In this study, heart failure patients with LVEF $> 40\%$ accounted for 72.6%, suggesting that we should pay attention to the patients with LVEF $> 40\%$.

TCM classification of heart failure has decreased from 7 types of the 2002 "Clinical Guideline of new drug research in TCM (Trial)" [11], to 6 types of 2014 consensus of Chinese experts in diagnosis and treatment of CHF [12] and then to 5 types of 2016 CHF TCM and Western medicine diagnosis and treatment expert consensus [13]. It reflects the benefit of combination of TCM and Western medicine. In this study, the distribution of syndromes, herbs, Chinese patent medicines are consistent with other experts consensus and the findings [14 - 15]. The high usage rate of TCM highlights the advantages of combined TCM and western medicine in treating CHF.

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