Eficacia clínica de la trimetazidina combinada con digoxina en el tratamiento de la insuficiencia cardíaca congestiva con fibrilación auricular

Clinical Efficacy of Trimetazidine Combined with Digoxin in the Treatment of Congestive Heart Failure with Atrial Fibrillation

Zhirong Xiao1,*,**, Taijuan Wang3, Min Wang2, Zhi Chen1

1Department of Pediatric Cardiology, Hunan Children's Hospital, Changsha, 410007, China
2ENT (HN Surgery Department), Hunan Children's Hospital, Changsha, 410007, China
3Qingdao Hengxing University of Science and Technology, Qingdao, 266100, China

*Corresponding author: Zhirong Xiao, Email: 137057155@qq.com
**Zhirong Xiao and Taijuan Wang contribute equal to this article as co-first author

Resumen
Investigar la eficacia clínica de la trimetazidina combinada con digoxina en el tratamiento de la insuficiencia cardíaca congestiva con fibrilación auricular. Métodos: Los pacientes con fibrilación auricular e insuficiencia cardíaca se seleccionaron como objeto de investigación, y se dividieron aleatoriamente en un grupo de observación y un grupo de control convencional que recibieron trugutazina combinada con digoxina. Se observó el efecto del tratamiento, se midió el índice de ultrasonido Doppler color y BNP en sangre periférica. Contenido EP1, estadísticas de complicaciones en los dos grupos. Resultados: La tasa efectiva total en el grupo de observación fue del 94.64%, y el efecto curativo fue significativamente mejor que el del grupo control (80.00%). El pico E (72.35 ± 7.39) cm / s, valor E / A (1.386 ± 0.154) y FEVI (65.38% ± 7.03%) ), LVEDD [(54.39 ± 5.42) mm], BNP [(173.86 ± 19.47) ng / L] y EP1 [(2.38 ± 0.31) fmol / m1] fueron significativamente más bajos que los del grupo control. La tasa de complicaciones en el grupo de observación fue del 7,14%; la tasa de complicaciones en el grupo control fue de 6.67%, y la diferencia entre los dos grupos no fue estadísticamente significativa (P> 0.05). Conclusión: la trimetazidina y la digoxina pueden mejorar la eficacia del tratamiento de pacientes con fibrilación auricular e insuficiencia cardíaca, y tienen una importancia terapéutica positiva para mejorar la función ventricular.

Palabras clave: fibrilación auricular; insuficiencia cardíaca función ventricular

Abstract
To investigate the clinical efficacy of trimetazidine combined with digoxin in the treatment of congestive heart failure with atrial fibrillation. Methods: Patients with atrial fibrillation and heart failure were selected as the research object, and they were randomly divided into an observation group and a conventional control group given trugutazine combined with digoxin. The treatment effect was observed, the color Doppler ultrasound index and BNP in peripheral blood were measured. Contenido EP1 content, statistics of complications in the two groups. Results: The total effective rate in the observation group was 94.64%, and the curative effect was significantly better than that in the control group (80.00%). The E peak (72.35 ± 7.39) cm / s, E / A value (1.386 ± 0.154), and LVEDD [(54.39 ± 5.42) mm], BNP [(173.86 ± 19.47) ng / L] and EP1 [(2.38 ± 0.31) fmol / m1] were significantly lower than those in the control group. The complication rate in the observation group was 7.14%; the complication rate in the control group was 6.67%, and the difference between the two groups was not statistically significant (P> 0.05). Conclusion: Trimetazidine and digoxin can improve the treatment efficiency of patients with atrial fibrillation and heart failure, and have positive therapeutic significance for improving ventricular function.

Key words: Atrial fibrillation; heart failure; ventricular function

1. Introduction

Congestive heart failure refers to a group of clinical syndromes that are full of heart, and the pumping function is reduced, which leads to insufficient cardiac output. It is a common cardiovascular disease in clinical patients, and arrhythmias and palpitations may occur in patients. As the course of disease continues to progress, patients will experience a variety of complications. Rapid atrial fibrillation is more common, which seriously affects the patient's health and even life safety. Atrial fibrillation (Atrial fibrillation, AF) is the most common type of arrhythmia in clinical practice, and it is more common in patients with primary cardiac diseases such as
hypertension heart disease, coronary heart disease, cardiomyopathy, and heart valve disease. Clinically, the management of heart failure caused by atrial fibrillation should start from the two aspects of restoring cardiac function, ensuring myocardial blood supply, reversing atrial fibrillation, and restoring sinus rhythm. Trimetazidine can relieve myocardial ischemia, while digoxin can exert positive muscle strength, negative frequency, and negative conduction. In order to effectively help patients relieve pain, it is necessary to continuously find effective treatment methods in clinical practice. Through long-term research and clinical practice, it has been found that the use of trimetazidine combined with digoxin in the treatment of congestive heart failure with atrial fibrillation has achieved good clinical results. During the treatment process, it effectively promotes the recovery of patients and improves their lives' quality. In order to further explore the efficacy of trimetazidine combined with digoxin in the treatment of atrial fibrillation with heart failure, the author conducted the following studies, and the results are reported as follows.

2. Materials and Methods

2.1 Clinical information

The clinical data of 116 patients with atrial fibrillation and heart failure treated in our hospital from August 30, 2016 to August 30, 2017 were collected, including 75 males and 41 females, aged 32-61 years old, with an average (43.29 ± 7.56) years. All patients had a history of atrial fibrillation, including 35 cases of hypertension heart disease, 57 cases of coronary heart disease, and 24 cases of heart valve disease. According to the New York Heart Association (NYHA) cardiac function classification, out of 116 patients, cardiac function was grade II 30, grade III 45, and grade IV 41. All patients were diagnosed by clinical symptoms and electrocardiogram, cardiac color Doppler ultrasound, and chest X-ray examination.

2.2 Grouping method

According to different treatment methods, 116 patients were divided into observation group and control group. In the control group, 60 patients were given conventional treatment such as diuresis, dehydration, vasodilation, and anticoagulation, including 38 males and 22 females, aged 32 to 60 years, with an average (43.03 ± 7.32) years of age, and the duration of AF was 1 to 5 years, Average (2.58 ± 0.37) years; 56 patients in the observation group were given trimetazidine combined with digoxin based on conventional treatment, including 37 males and 19 females, aged 34 to 61 years, with an average (43.85) ± 7.95) years old, the course of AF was 1 to 4 years, with an average (2.33 ± 0.32) years. There were no significant differences in age, gender, cardiac function, and course of disease between the two groups, and they were comparable.

2.3 Treatment method

The control group received oral diuretics, aspirin enteric-coated tablets, telmisartan and digoxin. The observation group was given oral treatment with diuretics, aspirin enteric-coated tablets, telmisartan, trimetazidine, and digoxin. Complications were counted in both groups.

2.4 Observation indicators

2.4.1 Efficacy criteria

Significant effect: NYHA cardiac function rating decreased by 2; Effective: NYHA cardiac function rating decreased by 1; Ineffective: NYHA cardiac function rating did not decrease or increased. Total effective rate = (number of significant cases + number of effective cases) / total number of cases.

2.4.2 Cardiac ultrasound indicators

Color Doppler echocardiography measures early filling peak velocity (E peak), late diastolic filling peak velocity (A peak), E / A ratio, left ventricular end diastolic diameter (LVEDD), and ejection fraction (Left Ventricular Ejection Fractions, LVEF).

2.4.3 Blood index

After treatment, venous blood was collected at 3000 r / min, 4 ° C, and centrifuged for 10 min, and the upper serum was collected at -80 ° C. The content of B-type natriuretic peptide (BNP) and macroendothelin-1 (EP1) was determined by using an ELISA kit produced by Promega Corporation.

2.5 Statistical method

SPSS18.0 software was used. The t-test was used for the analysis of measurement data. The 2 test was used for the analysis of count data. The results were judged to be statistically significant according to P <0.05.

3. Results
3.1 Treatment effect of two groups of patients

In the observation group, 33 cases were markedly effective, 20 cases were effective, and 3 cases were ineffective. The total effective rate was 94.64% (53/56); 31 cases were significantly effective in the control group, 17 were effective, and 12 were ineffective. The total effective rate was 80.00% (48/60). The treatment effect in the observation group was significantly better than that in the control group (P <0.05). See Table 1.

Table 1. Comparison of treatment effect between observation group and control group [n (%)]

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Marked effect effective</th>
<th>invalid</th>
<th>Total efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>56</td>
<td>33</td>
<td>20</td>
<td>94.64%</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>31</td>
<td>17</td>
<td>80.00%</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>

3.2 Cardiac color Doppler ultrasound index of two groups of patients

The E peak (72.35 ± 7.39) cm/s, E/A value (1.386 ± 0.154), LVEF (65.38 ± 7.03)%, and LVEDD (54.39 ± 5.42) mm in the observation group were significantly higher than those in the control group (P <0.05); A peak (52.21 ± 5.33) cm/s was significantly lower than the control group (P <0.05). See Table 2.

Table 2. Comparison of left ventricular diastolic function between patients with atrial fibrillation and heart failure in two groups (x̄ ± s)

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>E peak cm/s</th>
<th>A peak cm/s</th>
<th>E/A</th>
<th>LVEF (%)</th>
<th>LVEDD (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>56</td>
<td>72.35±7.39</td>
<td>52.21±5.33</td>
<td>1.386±0.15</td>
<td>65.38±7.03</td>
<td>54.39±5.42</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>55.29±5.41</td>
<td>75.81±7.98</td>
<td>0.729±0.09</td>
<td>58.23±5.39</td>
<td>43.42±4.92</td>
</tr>
<tr>
<td>t</td>
<td></td>
<td>6.231</td>
<td>0.0295</td>
<td>0.0319</td>
<td>0.0253</td>
<td>0.0415</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0308</td>
<td>0.0403</td>
</tr>
</tbody>
</table>

3.3 Blood index of two groups of patients

The BNP (173.86 ± 19.47) ng/L and EP1 (2.384 ± 0.31) fmol/ml in the observation group were significantly lower than those in the control group (P<0.05). See Table 3.

Table 3. Comparison of blood indexes of patients with atrial fibrillation and heart failure (x̄ ± s)

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>BNP (ng/L)</th>
<th>EP1 (fmol/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>56</td>
<td>173.86±19.47</td>
<td>2.38±0.31</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>27.58±29.42</td>
<td>3.09±0.46</td>
</tr>
<tr>
<td>t</td>
<td></td>
<td>6.702</td>
<td>5.820</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>0.0308</td>
<td>0.0403</td>
</tr>
</tbody>
</table>

3.4 Comparison of adverse reactions between two groups of patients

During the medication period, 1 patient in the observation group had poor appetite, 1 patient had abdominal pain and diarrhea, and the complication rate was 7.14%; 1 patient in the control group had poor appetite and 1 patient had nausea and vomiting, and the complication rate was 6.67% There was no statistically significant difference between the groups (P>0.05). See Table 4.

Table 4. Compare the incidence of adverse reactions between the two groups of patients

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Poor appetite</th>
<th>Abdominal pain</th>
<th>Complication rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>56</td>
<td>2</td>
<td>2</td>
<td>7.14%</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>2</td>
<td>2</td>
<td>6.67%</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>P&gt;0.05</td>
</tr>
</tbody>
</table>

4. Discussion

Atrial fibrillation (Atrial fibrillation, AF) is the most common type of arrhythmia clinically, and related studies have reported that the incidence of atrial fibrillation in people over 70 years of age can reach more than 10% [1]. The disease is more common in patients with primary heart diseases such as hypertensive heart disease, coronary heart disease, cardiomyopathy, heart valve disease [2]. When atrial fibrillation occurs, the frequency of atrial agitation can reach 300 ~ 600 ~ / min, and cause symptoms such as palpitations, dizziness, chest
compression, shortness of breath, and dyspnea [3]. When the sinus node function is normal, abnormal atrial fibrillation does not reach the ventricular tract, so it does not cause abnormal ventricular frequency and rhythm. However, due to the heart's own disease and impaired sinoatrial node function, atrial fibrillation will cause accelerated ventricular rate, shortened ventricular diastole, and decreased stroke output, which will lead to ischemic target organs, increased myocardial work, and myocardial remodeling. When the above pathophysiological changes exceed the patient's ability to compensate, it will cause heart failure [4]

In clinical practice, the management of heart failure complicated with atrial fibrillation should start from the aspects of restoring cardiac function, ensuring myocardial blood supply, reversing atrial fibrillation, and restoring sinus rhythm [5]. Trimetazidine is a commonly used antianginal drug in clinical practice. On the one hand, it can inhibit the metabolism of fatty acids and reduce the synthesis of free fatty acids to ensure that the myocardium uses glucose oxidation for more functions, increase the utilization of oxygen, and then relieve it. Myocardial ischemia [6]; on the other hand, it can play a myocardial protective role by reducing calcium overload, improving lactic acid utilization, and inhibiting acidosis [7]. Some scholars [8] have found that trimetazidine can significantly improve the autonomic function of the nerves and increase heart rate variability in elderly patients with chronic heart failure. Digoxin is a digitalis drug. On the one hand, it can exert positive muscle strength to relieve the symptoms of heart failure, on the other hand, it can exert negative frequencies and negative conduction effects to slow atrioventricular conduction and reduce ventricular rate of atrial fibrillation [9]. In this study, patients in the observation group were treated with trimetazidine and digoxin on the basis of conventional treatment, with a total effective rate of 93.33% and a significantly better effect than the control group; E peak (72.35 ± 7.39) cm / s, E / The A value (1.386 ± 0.154), LVEF (65.38 ± 7.03)% and LVEDD (54.39 ± 5.42) mm were significantly higher than those in the control group. This shows that trimetazidine and digoxin help improve ventricular diastolic function in patients. Some researchers [10] confirmed that trimetazidine can effectively improve cardiac function in a controlled experiment of 60 patients with chronic congestive heart failure. In addition, the complication rate in the observation group was 7.14%; the complication rate in the control group was 6.67%, and the difference between the two groups was not statistically significant (P> 0.05), suggesting that trimetazidine combined with digoxin in the treatment of congestive heart Failure with atrial fibrillation does not increase adverse reactions in patients, and the medication is safe and reliable.

Non-invasive examination methods such as echocardiography, cardiac color Doppler ultrasound, and electrocardiogram can effectively diagnose heart failure, but they still have certain limitations. The levels of B-type natriuretic peptide and macroendothelin-1 peptides found in recent years will change significantly in patients with heart failure [11-12]. B-type natriuretic peptides are a class of peptides synthesized and secreted by ventricular myocytes. When ventricular load and ventricular wall tension increase, the secretion of BNP will increase accordingly, and its level can better reflect left ventricular function. Large endothelin-1 is mainly derived from vascular endothelial cells, endocardium and cardiomyocytes in the body. When circulating blood is insufficient, the synthesis and secretion of EP-1 will increase accordingly. Its level can better reflect the systemic blood volume situation [13-14]. According to the above studies, BNP (173.86 ± 19.47) ng / L and EP1 (2.38 ± 0.31) fmol / ml were significantly lower in the observation group than in the control group. This shows that trimetazidine and digoxin can improve the indicators related to blood center function [15].

In summary, we believe that trimetazidine and digoxin can improve the treatment efficiency and improve ventricular function, which has positive significance for the treatment of patients with AF and heart failure.

5. Conclusion

Trimetazidine combined with digoxin in the treatment of congestive heart failure with atrial fibrillation can effectively improve the treatment effect, promote the recovery of heart function, improve the prognosis of patients, and improve the quality of life of patients at the same time, which is worthy of clinical application and promotion.

References


