RESEARCH ARTICLE

Interventional effect analysis of 24-hour dynamic electrocardiogram on coronary heart disease arrhythmias and ischemic myocardium

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The incidence rate and mortality rate of coronary heart disease are rising, which seriously threatens people's health. Effective diagnosis of coronary heart disease can improve the quality of prognosis for patients. To analyze the diagnostic value of 24-hour dynamic electrocardiogram in the intervention of coronary heart disease, arrhythmia, and ischemic myocardium, this study recruited 64 patients with coronary heart disease who underwent treatment from April 2021 to April 2022 in the hospital. The random classification method was adopted to randomly divide 64 patients into research and control groups with 32 people in each group. The research group applied 24-hour dynamic electrocardiogram for diagnosis, while the control group received routine electrocardiogram for diagnosis. The detection rates of arrhythmia, myocardial ischemia, ST downshift amplitude, maintenance time, and satisfaction of different diagnostic methods were compared. The results showed that, after applying different diagnostic methods, the 24-hour dynamic electrocardiogram used by the research group demonstrated significantly higher detection rates for arrhythmia and myocardial ischemia compared to that of conventional electrocardiogram in control group ($P < 0.05$). At the same time, the difference of the detection rate for different types of arrhythmias was also observed with significant difference ($P < 0.05$). In terms of ST downshift amplitude and maintenance time, 24-hour dynamic electrocardiogram outperformed conventional method ($P < 0.05$). In addition, the satisfaction with 24-hour dynamic electrocardiogram exceeded conventional detection method ($P < 0.05$). The results confirmed that 24-hour dynamic electrocardiogram had significant diagnostic effect on coronary heart disease, arrhythmia, and myocardial ischemia with high detection rate and low missed detection rate. The operation is simple and flexible, which has great promotional value.

Keywords: 24-hour dynamic electrocardiogram; coronary heart disease; arrhythmias; myocardial ischemia.

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Introduction

As the pace of life accelerates, people's lifestyles are also constantly changing. Coronary heart disease (CHD) is an ischemic heart disease. In recent years, the incidence rate and mortality rate are also constantly increasing, which has a significant impact on the lives and health of high-risk populations. How to prevent and treat CHD has become an increasingly important issue for people to pay attention to [1]. Atherosclerosis mainly focuses on blood vessels, coronary arteries, and heart organs, which leads to serious blockage and stenosis of arteries and vessels in patients [2]. CHD patients generally exhibit a series of symptoms such as myocardial necrosis, myocardial ischemia, and myocardial hypoxia. CHD is one of the three major human diseases. As a cardiovascular disease, it is common in elderly patients. However, in recent years, there has been an increasing trend in young patients. The current diagnostic methods for coronary heart disease lack the ability to predict sudden events and have insufficient understanding for pathogenesis such as it is not clear if the initial event of atherosclerosis is blood flow disorder, inflammatory cell effect, or oxidative stress; if apoptosis of atherosclerotic vascular wall cells should be inhibited or enhanced; and the low penetration rate of gold standards. At present, the clinical diagnosis of coronary heart disease mainly relies on clinical symptoms, resting and dynamic electrocardiograms, exercise tests, and other examinations with a high rate of clinical misdiagnosis. Therefore, the current diagnostic examination for coronary heart disease urgently needs innovation [3]. Angina pectoris is one of the typical symptoms of CHD, which is a clinical syndrome of acute and transient myocardial ischemia and hypoxia caused by insufficient coronary artery blood supply. Each attack lasts for about 3-5 minutes, and occurs several times a day, even leading to sudden death. Electrocardiogram diagnosis has an important impact on early CHD detection. It can promote early detection and active treatment for patients [4]. In clinical practice, early diagnosis has significant implications for avoiding the development of the disease. 24-hour dynamic electrocardiogram (24-ECG) records the long-term continuous changes of the patient's electrocardiogram in different states including ST changes, heart rate changes, data after physical exercise, and various heart rate data. By qualitatively and quantitatively analyzing arrhythmia and myocardial ischemia, the causes of various symptoms such as syncope, dizziness, palpitations, *etc*. can be effectively identified. The possible cardiac lesions can be detected timely [5]. This method can record all abnormal electrical waves, monitor patients for various arrhythmias and myocardial ischemia within 24 hours, and provide an accurate and reliable diagnostic basis. In clinical applications, it has a high detection rate, especially for early CHD [6].

Extensive research on the application of electrocardiogram in the diagnosis of coronary heart disease has been conducted by many scientists. Rymer *et al*. investigated the screening value of dobutamine echocardiography and treadmill exercise electrocardiogram in CHD. The results indicated that the screening value was significant [7]. Chatterjee *et al*. explored the diagnostic value of coronary artery Computer Tomography (CT) angiography combined with dynamic electrocardiogram for CHD, providing a reference basis for clinical diagnosis [8]. Li *et al*. studied the diagnostic efficacy of three-dimensional electrocardiogram and conventional 12 leads electrocardiogram in CHD patients and found that they both could effectively improve the diagnostic rate [9]. Liu *et al*. conducted a study on the practical effect of CT angiography combined with 12 leads dynamic electrocardiogram in the diagnosis of CHD. The results showed that it could improve the accuracy of CHD diagnosis and had clinical application value [10].

Many different electrocardiogram methods have been adopted by scientists to diagnose CHD. Although most methods can achieve good diagnostic results, they invisibly increase the diagnostic costs. To improve the diagnostic efficiency while reducing the patient's cost, a diagnostic method for 24-ECG was proposed in this study. The intervention efficacy in CHD, arrhythmia, and ischemic myocardium was investigated. The results of this study were expected to improve the testing accuracy while reducing testing costs, detect and prevent diseases early, and improve testing quality.

Materials and methods

Selection of patients

64 CHD patients (41 males and 23 females) who were diagnosed and treated at a hospital in Changsha, Hunan, China from April 2021 to April 2022 were included in this study. The random classification method was adopted to randomly divide 64 patients into the research group (RG) and the control group (CG) with 32 patients in each group. The RG used 24-ECG for diagnosis,

while the CG adopted routine electrocardiogram for diagnosis. The inclusion criteria for the RG were as follows: (1) All patients met the CHD arrhythmia diagnostic criteria of Chinese Diagnostic Standards for Ischemic Heart Disease [11]. (2) The age of patient was 18 years old and above, the patient and family members were aware of this research and signed informed consent form. (3) The patient's clinical compliance was good, and the cooperation degree was high. The patient was not easy to remove the electrocardiogram machine. (4) The patient had no previous history of stroke. The exclusion criteria were that: (1) The patient had other heart diseases. (2) The patient had dysfunction in important organs such as the liver and kidneys. (3) The patient had a major mental illness. (4) The patient suffered from immune system disorders. (5) The patient who had undergone surgical treatment within 6 months. (6) The patient's clinical data was incomplete. (7) The patient did not sign the informed consent form. The procedures of this research were approved by the hospital ethics committee (No. 3 Provincial People's Hospital of Henan Province, Zhengzhou, Henan, China).

Electrocardiogram examination

Before receiving the examination, the patients in two groups were instructed to temporarily stop using relevant drugs for three days according to medical advice to guarantee the accuracy of the examination results. During the examination process, the procedures that cared for the patient's needs in a timely manner, patiently solved their related problems, assisted them in completing the examination, and soothed their emotions through verbal communication or eye contact were taken by the medical staffs. During the diagnosis, special attention was paid to maintaining a distance between the hospital bed and the wall. For the patients of research group, the Kaiwo TH-12 24-ECG instrument (Kaiwo Electronics Co., Ltd, Shenzhen, Guangdong, China) was used to obtain the dynamic electrocardiogram with standard 12 leads electrocardiogram electrodes connection. The limb leads were connected clockwise from the right upper limb to the right lower limb. The chest leads were v1, v2, v3, v4, v5, and v6, respectively [12]. During the examination, the patient laid flat on the hospital bed. After proofreading, the recorder was put in a shoulder bag and placed on the patient's waist. After recording 24 hours of daily activities, the recorder was removed and checked for the start and end times of myocardial ischemia. Throughout the entire diagnostic process, the indoor temperature was adjusted to an appropriate and stable level. The indoor environment was kept as quiet as possible to avoid any noise. Meanwhile, medical staff would actively communicate with the patient to alleviate their nervousness and remind the patient and the family members of relevant precautions. During the instrument wearing process, the patient should rest more and reduce the frequency and amplitude of activities. All patients in the research group were kept in the hospital and their electrocardiogram changes were continuously recorded. For control group, the patients underwent routine electrocardiogram diagnosis using KF-B12 electrocardiogram instrument (Kefu Medical Technology Development Co., Ltd., Changsha, Hunan, China). The diagnostic environment of the CG was in accordance with that of the RG. The study adopted the standard electrocardiogram lead method, which was the potential difference between the left leg and the right hand. The patient was tested three times within 24 hours including morning, noon, and evening with each test lasting approximately 30 s. The patient was in a flat position and had stable breathing before the test. The resting heart rate was then recorded as a diagnostic basis.

Observation of indicators

1. General information

The general information was collected from all participating patients including age, gender, course of disease (the number of months from the diagnosis to enrollment), ethnic, smoking history (current smoking, previous smoking, and non-smoking), drinking history, combined basic diseases including diabetes, hypertension, *etc*.

and treatment medications, and body mass index (BMI).

2. Arrhythmia detection

The diagnosis of arrhythmia and myocardial ischemia was compared between the RG and the CG. The different categories of arrhythmia included sinus arrhythmias, atrial arrhythmias, atrioventricular block, and paroxysmal arrhythmias. The positive detection rate was the sum of the proportions of various types of arrhythmias mentioned above.

3. Myocardial ischemia detection

The diagnostic criteria for myocardial ischemia were as follows. In dynamic electrocardiogram, ST segment depression exceeded 0.2 mV. The ST segment continued to move down for more than 1 minute. The interval between two ischemia times was greater than 5 minutes. In traditional electrocardiogram, ST segment underwent a downward shift greater than 0.05 mV. T segment wavelength was less than 1/10 R segment wavelength in the same lead. Arrhythmia was mainly judged based on the onset time and clinical symptoms of CHD. The onset time of myocardial ischemia and the distribution of ST low segment pressure onset time were compared between two groups.

4. 24-hour heart rate variability

The 24-hour heart rate variability frequency (HRV) of two groups was compared, including high-frequency power (HF), low-frequency power (LF), very low-frequency power (VLF), and ultra-low-frequency power (ULF).

5. Satisfaction comparison

A comprehensive evaluation method was adopted to evaluate patient satisfaction. A score greater than 80 was considered satisfactory. A score between 60 and 80 was considered average. A score below 60 was considered unsatisfactory.

Statistical analysis

The software SPSS 22.0 (IBM, Armonk, New York, USA) was applied to process the collected data. The data was represented by the cases (n) and percentage (%). The t-test and chi square test were applied to compare the data. The data was expressed as $\bar{x} \pm s$. P value less than 0.05 indicated a significant difference.

Results

Basic information of two groups

The general information of the two groups including patients' age, gender, course of disease, ethnicity, smoking history, drinking history, and underlying diseases was listed in Table 1. Among 64 CHD patients, 20 males and 12 females were placed in RG. The average age was (58.32 ± 2.84) years old. The course of disease ranged from 0.5 to 6 years with an average of 2.94 ± 0.45 years. 61 patients were Han, and the other 3 were ethnic minorities. There were 5 and 3 individuals who had smoked for more than 10 years, and 11 and 9 individuals with underlying diseases in RG and CG groups, respectively. The BMI indices of the two groups were 23.38 ± 4.51 and 23.74 ± 3.98, respectively. The statistical analysis indicated that there was no difference in the basic information between the patients of two groups (P > 0.05).

Comparison of arrhythmia detection rates

A significant difference in the arrhythmia detection rates between the RG and the CG was observed. The total detection rate of arrhythmia in the RG was 84.375%, which significantly exceeded the total detection rate of CG (P < 0.05). The detection rate of symptomatic arrhythmia in the RG was 46.875%, also exceeding the CG (P < 0.05), while the detection rate of asymptomatic arrhythmia in the RG was 37.5%, which was 16.75% higher than the CG (P < 0.05) (Table 2).

Detection rates of different arrhythmias

A significant difference in the diagnostic rates of sinus arrhythmias, atrial arrhythmias, atrioventricular block, and paroxysmal arrhythmias between the RG and CG was demonstrated (P < 0.05) (Table 3).

Table 1. Basic information.

Contents	Attributes	Values		t/χ^2	*P*
		Research group	Control group		
Age (years)	18-40	4	4	0.089	0.860
	40-60	8	10		
	≥60	20	18		
Gender	Male	20	21	0.056	0.924
	Female	12	11		
Course of disease (year)	0.5-1	8	7	0.142	0.825
	1-3	14	15		
	3-6	10	10		
Ethnic	Han	30	31	0.042	0.937
	Others	2	1		
Smoking history (year)	0-1	12	11	0.181	0.756
	1-5	8	10		
	5-10	7	8		
	≥10	5	3		
Drinking	Yes	11	13	0.105	0.349
	No	21	19	0.144	0.297
Underlying disease	Hypertension	6	5	0.192	0.761
	diabetes	4	3	0.280	0.438
	Chronic obstructive pulmonary disease	1	1	0.083	0.395
BMI (kg/m^2)	-	23.38±4.51	23.74±3.98	0.462	0.914

Table 2. Detection rate of arrhythmia in symptomatic and asymptomatic coronary heart disease patients.

Groups	Symptomatic		Asymptomatic		Total detection n (%)
	Detected n (%)	Not detected n (%)	Detected n (%)	Not detected n (%)	
Research group	15 (46.875)	2 (6.250)	12 (37.500)	3 (9.375)	27 (84.375)
Control group	9 (28.125)	9 (28.125)	6 (18.750)	8 (25.000)	15 (46.875)
χ^2	5.385	6.742	4.964	4.642	15.361
P	0.032	0.026	0.035	0.041	0.000

Table 3. Detection rate of different types of arrhythmias.

Types	Research group n (%)	Control group n (%)	χ^2	*P*
Sinus arrhythmia	19 (59.375)	8 (25.000)	13.145	0.003
Atrial arrhythmia	10 (31.250)	7 (21.875)	6.246	0.031
Atrioventricular block	5 (15.625)	3 (9.375)	4.329	0.044
Paroxysmal arrhythmia	7 (21.875)	5 (15.625)	4.521	0.042

Detection rates of myocardial ischemia

The detection rates of myocardial ischemia in the RG and the CG were 90.625% and 59.375%, respectively, with the RG outperforming the CG ($P < 0.05$). The detection rate of symptomatic myocardial ischemia in the RG was 50%, exceeding the CG (34.375%) ($P < 0.05$), while the detection rate of asymptomatic myocardial

Table 4. Detection rate of myocardial ischemia with symptomatic and asymptomatic CHD.

Groups	Symptomatic		Asymptomatic		Total detection n (%)
	Detected n (%)	Not detected n (%)	Detected n (%)	Not detected n (%)	
Research group	16 (50.000)	1 (3.125)	13 (40.625)	2 (6.250)	29 (90.625)
Control group	11 (34.375)	7 (21.875)	8 (25.000)	6 (18.750)	19 (59.375)
χ^2	4.875	5.462	4.386	4.136	14.698
P	0.040	0.038	0.042	0.044	0.000

Table 5. Comparison of ST downward shift amplitude and maintenance time ($\bar{x} \pm s$).

Types	Research group	Control group	*t*	*P*
ST downshift amplitude (mV)	0.31 ± 0.05	0.18 ± 0.02	13.813	0.003
Maintenance time (min)	29.18 ± 5.13	12.26 ± 4.01	15.239	0.000

Table 6. Comparison of myocardial ischemic onset time ($\bar{x} \pm s$).

Groups	Cases	The onset time of ST low segment pressure in myocardial ischemia (min)			
		00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00
Research group	32	54	167	194	67
Control group	32	47	135	159	34
t	-	3.649			
P	-	0.005			

ischemia in the RG was 40.625%, which was 15.625% higher than that of the CG ($P < 0.05$) (Table 4).

Comparison of ST downward shift amplitude and maintenance time

The ST downshift amplitude and maintenance time of arrhythmia in both groups were shown in Table 5. The ST downshift amplitude of the RG was 0.31 ± 0.05 mV, which was significantly greater than that of the CG ($P < 0.05$). Meanwhile, the maintenance time of the RG was 29.18 ± 5.13 minutes, which was significantly longer than that of the CG ($P < 0.05$).

The onset time of myocardial ischemia

The onset time of myocardial ischemia was displayed in Table 6. In four different time periods, the duration of myocardial ischemia and low segment pressure attacks in the RG patients were 54, 167, 194, and 67 minutes, respectively, which exceeded that in CG ($P < 0.05$).

The rates of agreement, missed diagnosis, and misdiagnosis of the tests

The RG rates of agreement, missed diagnosis, and misdiagnosis were 90.625, 6.250, and 3.125%, respectively, while the CG rates of agreement, missed diagnosis, and misdiagnosis were 68.750, 18.750, and 12.500, respectively (Table 7). The agreement rate of the RG outperformed that of CG ($P < 0.05$).

Comparison of heart rate variability frequency between two groups

The comparison of 24-hour heart rate variability frequency between the two examination schemes was shown in Table 8. The HF, LF, VLF, and ULF of dynamic electrocardiogram examination were 654.02 ± 110.45, 539.12 ± 119.67, 756.52 ± 133.06, and 629.16 ± 175.89, respectively, which were higher than those of conventional electrocardiogram examination ($P < 0.05$), indicating that the detection method used

Table 7. The rates of agreement, missed diagnosis, and misdiagnosis of the examination.

Groups	Agreement rate n (%)	Missed diagnosis rate n (%)	Misdiagnosis rate n (%)
Research group	29 (90.625)	2 (6.250)	1 (3.125)
Control group	22 (68.750)	6 (18.750)	4 (12.500)
χ^2	4.312	3.563	2.097
P	0.016	0.008	0.009

Table 8. Comparison of heart rate variability frequencies (Hz) among patients ($\bar{x} \pm s$).

Groups	Cases	HF	LF	VLF	ULF
Research group	32	654.02 ± 110.45	539.12 ± 119.67	756.52 ± 133.06	629.16 ± 175.89
Control group	32	826.73 ± 99.72	897.66 ± 203.18	1469.63 ± 245.71	1106.48 ± 209.52
χ^2	-	5.236	4.965	4.371	6.095
P	-	0.009	0.001	0.002	0.004

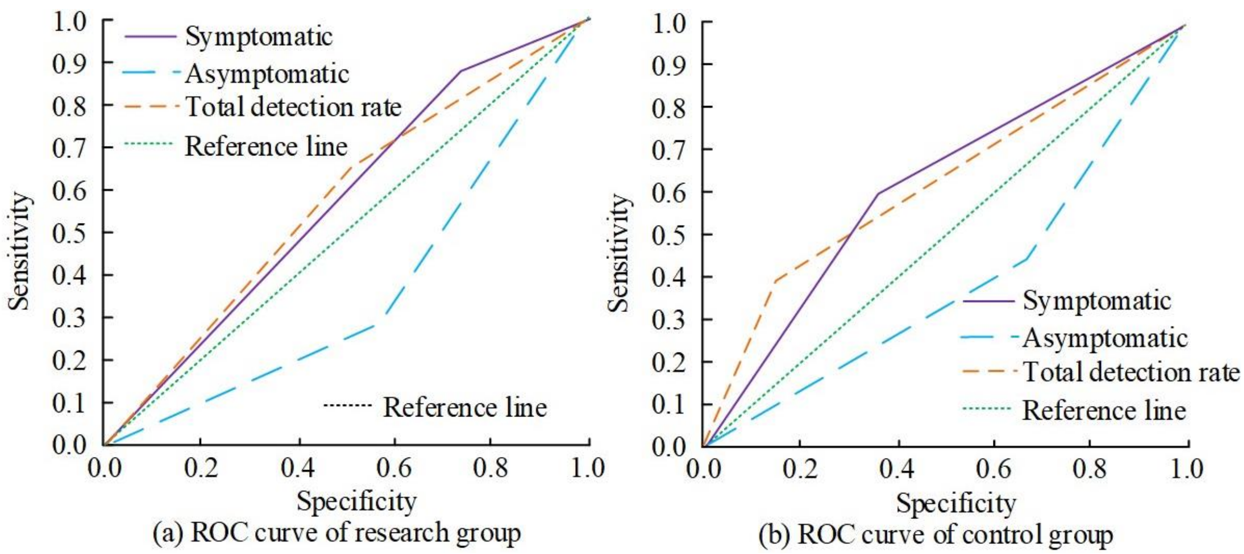

Figure 1. ROC curves of arrhythmia and myocardial ischemia detected.

by the RG could obtain more accurate heart rate variability frequency.

ROC curves of arrhythmia and myocardial ischemia detected in two groups

The ROC curves of arrhythmia and myocardial ischemia detected in two groups were shown in Figure 1. 24-ECG demonstrated higher accuracy in detecting heart rate abnormalities and myocardial ischemia. The differences between two groups were significant ($P < 0.05$).

Inspection satisfaction comparison

The satisfaction rate of the RG accounted for 84.375%, which was significantly higher than that of CG. The proportion of people in the RG who were basically satisfied was 12.5%, while the proportion of dissatisfied individuals in the RG was 3.125%. The total satisfaction rate was 96.875%, significantly higher than that in CG (87.500%) ($P < 0.05$) (Table 9).

Table 9. Comparison of satisfaction.

Contents	Research group n (%)	Control group n (%)	χ^2	*P*
Satisfied (cases)	27 (84.375)	23 (71.875)	8.326	0.015
Basically satisfied (cases)	4 (12.500)	5 (15.625)	5.164	0.041
Dissatisfied (cases)	1 (3.125)	4 (12.500)	9.135	0.012
Satisfaction rate (%)	96.875	87.500	6.482	0.023

Discussion

In CHD patients, common symptoms include arrhythmia and myocardial ischemia, which can easily lead to myocardial infarction and heart failure, accelerating patient death. Fully understanding the development of CHD can provide effective support for optimizing treatment plans, reducing mortality rates, and improving treatment effectiveness. In the diagnosis of CHD, routine electrocardiogram testing is commonly used, which is relatively simple, non-invasive, and cost-effective, making it a gold standard for non-invasive detection of paroxysmal arrhythmia. However, this method cannot accurately detect arrhythmia and myocardial ischemia with high misdiagnosis and missed diagnosis rates, making it difficult to provide timely and effective treatment for patients [13]. Dynamic electrocardiogram has been widely used and the application effect is relatively ideal. This method can record the patient's heart condition in detail within 24 hours to obtain more detailed and effective examination data, effectively detecting problems such as arrhythmia and myocardial ischemia. CHD is relatively secretive in the early stages with less obvious symptoms, which is often overlooked. CHD is initially caused by coronary atherosclerosis, which leads to vascular stenosis, myocardial ischemia, and arrhythmia. Smoking, obesity, and other factors have a certain impact on CHD. Meanwhile, CHD patients are often accompanied by hypertension, hyperlipidemia, diabetes, and other symptoms [14]. Therefore, early diagnosis and treatment is significant. With the advancement of medical technology, the diagnostic methods for CHD are becoming increasingly diverse. The electrocardiogram examination technology is also constantly improving. Electrocardiogram reflects the biological changes in human myocardial cells. When human myocardial cells are in an excited state, the bioelectric state also changes. The diagnosis can be made through electrocardiogram [15]. Compared with conventional electrocardiograms, dynamic electrocardiograms have better flexibility and not only examine patients during rest, but also diagnose patients during appropriate exercise. In terms of accuracy, dynamic electrocardiogram has a higher accuracy rate than conventional electrocardiogram. It can effectively detect related symptoms in patients with CHD through 24-hour detection in different states [16, 17]. In clinical diagnosis, myocardial ischemia and hypoxia usually manifest as a decrease in the ST segment. The decrease magnitude and duration are also influenced by the diagnostic method [18]. Shen *et al*. applied a new wearable three lead H3 electrocardiogram device, which had a remote cloud-based electrocardiogram platform and expert support system. The results showed that there was no significant difference between the two groups in 24-hour total heart rate (HR), average HR, maximum HR, minimum HR, atrial premature beat complexes, and ventricular premature beat complexes, and was basically consistent with the diagnostic results of traditional methods [19]. Kamozawa *et al*. proposed a method for detecting atrial fibrillation (AF) using convolutional neural networks (CNN) from electrocardiogram measured by a 24-ECG. The proposed method exhibited sufficient performance in detecting AF with an accuracy of approximately 90% [20]. In this study, the diagnostic results showed a significant decrease of the ST segment on the 24-

ECG compared with the conventional electrocardiogram ($P < 0.05$). There was also a significant difference in maintenance time ($P < 0.05$). When diagnosing myocardial ischemia in CHD patients, the diagnostic effect of dynamic electrocardiogram was better. Meanwhile, when the ST segment displacement amplitude significantly increased, it indicated that the patient had a higher possibility of myocardial ischemia, providing important basis for further treatment. The results of this study showed that there were differences in the detection rates of arrhythmia and myocardial ischemia between 24-ECG and conventional electrocardiogram ($P < 0.05$). The detection rate of 24-ECG exceeded the conventional electrocardiogram ($P < 0.05$). In addition, the detection rate of 24-ECG outperformed the conventional electrocardiogram in the diagnosis of different types of arrhythmias ($P < 0.05$). In clinical practice, some CHD patients often exhibit chest pain and palpitations. Therefore, when diagnosing patients with or without accompanying clinical symptoms, their electrocardiograms may also have some differences [21]. In this research, CHD patients accompanied by clinical symptoms had more significant changes in heart rate and electrocardiogram abnormalities, so their detection rate was higher than those without clinical symptoms. In the diagnosis of ST segment downshift amplitude and maintenance time, both 24-ECG and routine electrocardiogram could conveniently and quickly record changes in the ST band. However, the recording time of conventional electrocardiograms was relatively short, making it difficult to evaluate the dynamic changes of the ST band after arrhythmia comprehensively and accurately. However, there may be misdiagnosis [22]. The dynamic electrocardiogram used in this study could record changes in the ST band for 24 hours. It could also quantitatively evaluate the frequency and degree of arrhythmia occurrence, effectively identifying hidden arrhythmia and improving the detection rate. In four different time periods, the duration of myocardial ischemia and low segment pressure attacks in the RG patients was 54, 167, 194, and 67 minutes, respectively, which exceeded that in the CG ($P < 0.05$). This may be because the 24-ECG detection method used in the research has better accuracy and efficiency. In addition to significant differences in detection rates, the total satisfaction rate in the RG accounted for 96.8%, significantly higher than that of 87.5% in the CG ($P < 0.05$), which indicated that CHD patients had higher satisfaction with 24-ECG diagnosis compared with conventional electrocardiogram diagnostic methods. This monitoring method can more accurately monitor the arrhythmia and minor changes in myocardial ischemia symptoms in CHD patients. The potential risk factors of patients can be identified timely, so that effective intervention measures can be taken.

In the diagnosis of arrhythmia and myocardial ischemia in CHD patients, the diagnostic effect of 24-ECG is better than that of conventional electrocardiogram. 24-ECG can provide 24-hour diagnosis for patients. The detection rate of different arrhythmias and myocardial ischemia in patients is significantly superior to conventional electrocardiogram detection methods. This method can effectively compensate for the false positives and missed detections caused by conventional electrocardiogram detection methods. The implementation of 24-ECG detection for CHD patients has high applicability. Meanwhile, this detection method is relatively simple and flexible to operate. There are fewer restrictions on the patient's activity status. Therefore, it has high application value in the clinical diagnosis of CHD, which can enhance the treatment effect of CHD. The good diagnostic performance of 24-ECG plays an important role in early detection and treatment of CHD. It is worth promoting and applying.

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