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RELATED RISK ANALYSIS OF SERUM TRF AND LGP2 AND THE CARDIAC FUNCTION IN PATIENTS WITH CORONARY HEART DISEASE

ANALIZA POVEZANOSTI RIZIKA POVEZANOG SA SERUMSKIM TRF I LGP2 I SRČANE FUNKCIJE KOD PACIJENATA SA KORONARNOM BOLEŠĆU SRCA

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Summary

Background: To explore the correlation between serum T cell replacing factor (TRF) and liver glutathione peroxidase 2 (LGP2) levels in patients with coronary heart disease (CHD) and cardiac function.
Methods: From October 2023 to October 2025, 252 patients with CHD who visited our hospital were selected for the disease group, among whom 72 had NYHA cardiac function grade II, 124 grade III, and 56 grade IV. The control group consisted of an additional 240 healthy patients who had physical examinations at our institution over the same time period. Baseline data for CHD patients were gathered. Enzyme-linked immunosorbent assays were used to evaluate the blood levels of TRF, LGP2, brain natriuretic peptide (BNP), and creatine kinase isoenzyme (CK-MB) in each patient group. A colour scale was used to quantify the left ventricular ejection fraction (LVEF), left ventricular end-systolic diameter (LVESD), left ventricular end-diastolic diameter (LVEDD), cardiac output (CO), interventricular septal thickness (IVS), and left ventricular mass (LV mass) of the CHD patients. Doppler ultrasound diagnostic apparatus. The relationship between blood TRF and LGP2 levels and cardiac function markers in CHD patients was examined using Pearson correlation analysis.
Results: The disease group's systolic blood pressure and LDL-C levels were significantly higher than those of the control group, whereas serum TRF, LGP2, and HDL-C (high-density lipoprotein cholesterol) levels were signifi-

Kratak sadržaj

Uvod: Cilj je bio da se ispita povezanost nivoa serumskog TRF i jetrene glutation-peroksidaze 2 (LGP2) sa srčanom funkcijom kod pacijenata sa koronarnom bolešću srca (KBS).
Metode: U periodu od oktobra 2023. do oktobra 2025. godine, u grupu obolelih je uključeno 252 pacijenta sa KBS koji su se javili u našu ustanovu, od čega je 72 imalo NYHA klasu II, 124 klasu III, a 56 klasu IV srčane insuficijencije. Kontrolnu grupu je činilo 240 zdravih ispitanika koji su u istom periodu obavili sistematski pregled u našoj ustanovi. Prikupljeni su osnovni podaci o pacijentima sa KBS. Nivoi TRF, LGP2, moždanog natriuretskog peptida (BNP) i kreatin-kinaze MB izoenzima (CK-MB) su određivani metodom enzimski vezanog imunoeseja (ELISA). Parametri srčane funkcije, uključujuć i ejekcionu frakciju leve komore (LVEF), krajnji sistolni prečnik leve komore (LVESD), krajnji dijastolni prečnik leve komore (LVEDD), minutni volumen (CO), debljinu interventrikularnog septuma (IVS) i masu leve komore (LV mass), su mereni dopler ehokardiografijom. Pirsonovom korelacionom analizom je ispitana povezanost nivoa TRF i LGP2 sa parametrima srčane funkcije kod pacijenata sa KBS.
Rezultati: Vrednosti sistolnog krvnog pritiska i LDL-holesterola bile su značajno više u grupi obolelih nego u kontrolnoj grupi, dok su nivoi TRF, LGP2 i HDL-holesterola bili značajno niži (P<0,05). Nivoi BNP i CK-

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cantly lower in the disease group (P<0.05). Serum BNP and CK-MB levels were significantly higher in the illness group than in the control group, and LVESD, LVEDD, LV mass, and IVS were also significantly higher. At the same time, the LVEF and CO were significantly lower than those of the control group (P<0.05). NYHA-related cardiac function grade IV CHD patients had significantly lower LVEF, CO, and serum TRF and LGP2 levels than grade III and II patients did. The LVEF, CO, and serum TRF and LGP2 levels of grade III CHD patients were significantly lower than those of grade II patients were, and the differences were statistically significant (P<0.05); NYHA-related cardiac function grade IV patients had significantly greater LVESD, LVEDD, LV mass, and IVS than grade III and II patients were, and the serum BNP and CK-MB levels were significantly greater than those of grade III and II patients were (P<0.05). The LVESD, LVEDD, LV mass, and IVS of grade III CHD patients were significantly greater than those of grade II patients, and the serum BNP and CK-MB levels were significantly greater in grade III CHD patients than in grade II patients (P<0.05). Serum TRF and LGP2 levels in patients with CHD were negatively correlated with BNP, CK-MB, LVESD, LVEDD, LV mass, and IVS (P<0.05) and positively correlated with LVEF and CO (P<0.05).

Conclusion: The serum levels of TRF and LGP2 in patients with CHD were significantly decreased, and both were closely related to cardiac function indicators.

Keywords: coronary heart disease, T cell replacing factor, liver glutathione peroxidase 2, cardiac function

MB su bili značajno viši u grupi obolelih, kao i vrednosti LVESD, LVEDD, mase leve komore i IVS. Istovremeno, LVEF i CO bili su značajno niži u odnosu na kontrolnu grupu (P<0,05). Pacijenti sa KBS NYHA klase IV imali su značajno niže vrednosti LVEF, CO, TRF i LGP2 u odnosu na pacijente klase III i II. Takođe, kod pacijenata klase III ove vrednosti su bile značajno niže nego kod pacijenata klase II (P<0,05). Nasuprot tome, LVESD, LVEDD, masa leve komore i IVS, kao i nivoi BNP i CK-MB, su bili značajno viši kod pacijenata klase IV u odnosu na klase III i II, a kod pacijenata klase III viši nego kod klase II (P<0,05). Nivoi TRF i LGP2 bili su u negativnoj korelaciji sa BNP, CK-MB, LVESD, LVEDD, masom leve komore i IVS (P<0,05), a u pozitivnoj korelaciji sa LVEF i CO (P<0,05).

Zaključak: Nivoi TRF i LGP2 u serumu kod pacijenata sa KBS su značajno sniženi i u tesnoj su vezi sa parametrima srčane funkcije.

Ključne reči: koronarna bolest srca, TRF, jetrena glutation-peroksidaza 2, srčana funkcija

Introduction

Coronary heart disease (CHD) is an atherosclerotic disorder characterized by lipid-driven, chronic immune inflammation and fibrous hyperplasia as its core pathological features. It can lead to major clinical events such as myocardial ischemia, myocardial infarction, arrhythmia, and cardiogenic shock, posing serious threats to patients' lives and health (1, 2). Abnormalities in the structure and function of the heart may occur in CHD patients, and associated heart dysfunction-related consequences have a significant death rate (3, 4). To aid early diagnosis, it is necessary to identify sensitive markers closely associated with heart function, and urgent treatment of CHD is needed in clinical practice. T lymphocytes, mast cells, macrophages, and eosinophils are among the inflammatory cells that predominantly release the anti-inflammatory cytokine T cell replacing factor (TRF), which is essential for the development of coronary artery disease (5, 6). Liver glutathione peroxidase 2 (LGP2) is the main redox enzyme that eliminates the lipid peroxidation products of glutathione and significantly affects the process of ferroptosis, which is strongly associated with the incidence of CHD (7, 8).

At present, few studies have investigated the correlation between serum TRF and LGP2 levels and cardiac function in CHD patients. Therefore, in this study, the serum TRF and LGP2 levels of CHD patients were detected, and their correlation with cardiac function was analysed, to provide a reference for the diagnosis and treatment of CHD.

Materials and Methods

General information

A total of 252 patients with CHD hospitalized at our hospital from October 2023 to October 2025 were selected as the disease group. The control group consisted of 240 additional healthy adults who had physical tests over the same time period. The disease group consisted of 130 males and 122 females; their ages ranged from 42 to 72 years, with an average of 57.68±12.11 years; their body mass index (BMI) ranged from 16 to 26 kg/m^2, with an average of 23.16±2.45 kg/m^2; there were 92 cases of acute myocardial infarction, 98 cases of unstable angina pectoris, and 72 cases had NYHA cardiac function grade II, 124 cases had grade IV. There were 134 men and 106 women in the control group; their ages varied from 42 to 72 years, with an average of 58.15±12.26 years; their BMIs ranged from 18 to 26 kg/m^2, with an average of 23.11±2.40 kg/m^2.

Inclusion criteria: (1) met the relevant diagnostic criteria for CHD (9); coronary angiography revealed that at least one of the right coronary artery and its main branches, left main trunk, circumflex branch, or anterior descending branch was stenotic, with a diameter reduction of ≥ 50%; (2) the first onset did not receive interventional treatment.

Exclusion criteria: (1) had congenital heart diseases; (2) had missing clinical data; (3) had received treatment for heart-related diseases in recent months; and (4) had severe infectious diseases and other malignant tumours.

The hospital's medical ethics committee approved this study, and each participant or a family member signed the informed consent form [No. HKYS-2026-A0299].

Biochemical indicator testing

This study conducted a systematic examination of the biochemical indicators of all the participants. For healthy individuals undergoing routine physical examinations, fasting venous blood was collected during the examination. Fasting blood glucose (FBG) was measured by the enzyme colorimetric method, and low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) were determined using an automatic biochemical analyser. Blood pressure was measured with a standard mercury-column sphygmomanometer. After the subjects sat and rested for 5 minutes, the right upper arm blood pressure was measured, and the values were averaged over 3 consecutive measurements. The systolic blood pressure (SBP) and diastolic blood pressure (DBP) were recorded. For patients with coronary heart disease, all the above indicators were tested within 24 hours of admission to ensure the timeliness and accuracy of the data.

Blood sample collection

For patients with coronary heart disease, 5 millilitres of venous blood were collected in the fasting state in the morning on the day of admission; for the healthy control group, the same amount of venous blood was collected in the fasting state during routine physical examinations. All samples were collected by professional nursing staff using sterile, disposable blood-collection needles. Before blood collection, it was confirmed that the subjects had not eaten or drunk for at least 8 hours. After collection, the blood samples were immediately placed in vacuum blood collection tubes containing EDTA anticoagulant, and gently mixed 8–10 times to ensure adequate anticoagulation. After the sample collection was completed, it was sent to the laboratory within 2 hours. At 4 °C, the samples were centrifuged at 3000 revolutions per minute for 20 minutes to separate the supernatant. Then, using sterile pipettes, the supernatant was carefully aspirated and aliquoted into sterile cryovials, labelled with the sample number and collection date, and immediately stored at -80 °C in an ultra-low-temperature refrigerator until subsequent serum TRF and LGP2 levels were detected and cardiac function-related indices were analysed.

Measurement of serum TRF and LGP2 levels

The serum levels of TRF and LGP2 of all the study participants were precisely determined using the enzyme-linked immunosorbent assay (ELISA) method. The LGP2 ELISA kit used in the experiment was purchased from Shanghai Merui Biotechnology Co., Ltd., with the product number EKU04482. This kit uses the double-antibody sandwich method and has high specificity and sensitivity. The TRF ELISA kit was provided by Beijing Pulige Gene Technology Co., Ltd., with the product number AZ0011. It also uses advanced immunological detection technology. The experimental operation was carried out strictly in accordance with the requirements of each kit manual, including the preparation of standard solutions, sample dilution, sample addition, incubation, washing, addition of enzyme-labelled antibodies, colour reaction, and termination steps. Each ELISA plate was set up with a standard curve, a blank control, and a quality control sample to ensure the accuracy and reliability of the experimental results. All samples were measured in duplicate in parallel, and the average value was taken as the final result. During the experiment, the reaction time, temperature, humidity, and other environmental factors were strictly controlled to avoid batch-to-batch differences.

Cardiac function testing

ELISA was used to measure the blood levels of creatine kinase isoenzyme (CK-MB) and brain natriuretic peptide (BNP) in each research participant using reserve serum. Shanghai Bibo Biotechnology Co., Ltd. supplied the human BNP ELISA kit (item number: BB-D-00218), while Shanghai Xuanya Biotechnology Co., Ltd. supplied the human CK-MB ELISA kit (item number: XY1128A). On the day of admission for CHD patients and on the day of physical examination for healthy individuals, all the subjects were in a resting state and underwent colour Doppler ultrasound (Kangda Zongji Medical Equipment Co., Ltd., model: Apsaras US-10Pro) to measure the left ventricular ejection fraction (LVEF), left ventricular end-systolic diameter (LVESD), left ventricular end-diastolic diameter (LVEDD), cardiac output (CO), interventricular septum thickness (IVS), and left ventricular mass. Each index was measured

continuously for 3 cardiac cycles, and the average value was taken.

Statistical analysis

Data processing and analysis were conducted using SPSS 21.0. Normally distributed data are expressed as $\bar{x}\pm s$. The independent-samples t-test was used to compare two groups, whereas the one-way analysis of variance was used to compare many groups. The SNK-q test was used for further pairwise comparisons. Count data are presented as counts or percentages, and comparisons between groups were conducted using the χ^2 test. Pearson correlation analysis was used to investigate the correlation between serum TRF and LGP2 levels and cardiac function indicators in CHD patients. A difference was considered to be statistically significant when $P<0.05$.

Results

Comparison of baseline data and serum levels of TRF and LGP2 between the disease group and the control group

The percentages of those with a history of smoking did not change statistically significantly, nor did those with a history of alcohol abuse, those with diastolic blood pressure, or those with fasting blood glucose levels between the two groups ($P>0.05$). Compared with those in the control group, the disease group showed significantly higher systolic blood pressure and LDL-C levels, while serum levels of TRF, LGP2, and HDL-C were significantly lower ($P<0.05$), see *Table I*.

Comparison of cardiac function indicators between the disease group and the control group

The disease group's LVESD, LVEDD, LV mass, and IVS were significantly higher than those in the control group, while the disease group's serum BNP and CK-MB levels were significantly higher than those in the control group. Moreover, the LVEF and CO were significantly lower in the disease group than in the control group. Each of these variations was statistically significant ($P<0.05$), see *Table II*.

Comparison of serum TRF and LGP2 levels and cardiac function indicators in patients with different cardiac function grades of CHD

Patients with CHD and NYHA cardiac function grade IV had significantly lower LVEF, CO, and serum TRF and LGP2 levels than patients with CHD and NYHA grade III or II disease. Additionally, grade III patients had significantly lower LVEF, CO, serum TRF, and LGP2 than grade II patients ($P<0.05$).

In addition to having significantly higher LVESD, LVEDD, LV mass, and IVS than patients with NYHA cardiac function grade III or II, patients with NYHA cardiac function grade IV also had sig-

Table I Comparison of Other Baseline Data and Serum TRF, LGP2 Levels Between the Disease Group and the Control Group [n(%), or x±s].

Group	n	History of smoking	Has a history of alcoholism	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)	Fasting blood glucose (mmol/L)
Disease Group	252	132 (52.38)	166 (65.87)	139.15±18.29	75.34±8.29	5.46±1.38
Control group	240	128 (53.33)	156 (65.00)	129.45±15.31	75.17±9.21	5.28±1.22
x^2/t		0.025	0.024	4.498	0.158	1.061
P		0.884	0.889	<0.001	0.875	0.289
Group	N	HDL-C (mmol/L)		LDL-C (mmol/L)	TRF (ng/L)	LGP2 (ng/mL)
Disease Group	252	1.07±0.24		3.35±0.48	63.01±13.48	46.86±13.54
Control group	240	1.11±0.28		2.41±0.55	85.42±15.21	62.18±12.89
x^2/t		-4.767		13.560	-12.228	-9.104
P		<0.001		<0.001	<0.001	<0.001

Table II Comparison of cardiac function indicators between disease group and control group ($\bar{x}\pm s$).

Group	n	BNP (pg/mL)	CK-MB (U/L)	LVESD (mm)	LVEDD (mm)
Disease Group	252	256.61±75.48	27.88±8.35	44.76±12.89	73.01±15.26
Control group	240	33.48±9.20	7.16±1.35	31.96±6.58	49.51±7.26
t		32.170	26.950	9.766	15.339
P		<0.001	<0.001	<0.001	<0.001
Group	n	LVE F(%)	CO (L/min)	LV mass (g/m^2)	IVS (mm)
Disease Group	252	47.09±5.10	5.49±1.19	52.74±13.58	11.53±3.22
Control group	240	57.28±8.29	7.47±0.94	43.38±6.86	9.15±1.37
t		-11.650	-14.774	6.793	7.367
P		<0.001	<0.001	<0.001	<0.001

Table III Comparison of serum TRF, LGP2 levels, and cardiac function indicators in CHD patients with different concentric functional grades ($\bar{x}\pm s$).

Cardiac function classification	n	TRF (ng/L)	LGP2 (ng/mL)	BNP (pg/mL)	CK-MB (U/L)	LVESD (mm)
Level II	72	72.34±10.18	59.85±7.15	217.38±34.59	20.88±2.40	39.68±5.15
Level III	124	63.08±8.27	45.71±6.38	263.41±41.75	28.46±3.29	45.35±6.21
Level IV	56	51.20±7.59	32.458±4.21	292.11±35.45	35.50±4.05	49.90±7.19
F		46.157	155.204	31.739	163.619	22.466
P		<0.001	<0.001	<0.001	<0.001	<0.001
Cardiac function classification	N	LVEDD (mm)	LVEF (%)	CO (L/min)	LV mass (g/m^2)	IVS (mm)
Level II	72	68.28±7.51	51.00±6.24	6.34±1.26	48.55±5.54	9.86±1.29
Level III	124	73.49±8.29	46.58±5.41	5.31±1.38	52.48±5.26	11.50±1.30
Level IV	56	78.469±9.15	43.06±5.35	4.59±1.23	58.61±6.75	13.54±1.89
F		12.124	16.365	14.873	25.444	49.915
P		<0.001	<0.001	<0.001	<0.001	<0.001

nificantly higher serum BNP and CK-MB levels than patients with grades III or II (P<0.05).

Those with grade III CHD had substantially higher LVESD, LVEDD, LV mass, and IVS than those with grade II CHD. Patients with grade III CHD had substantially higher serum BNP and CK-MB levels than those with grade II CHD (P<0.05), see *Table III*.

Correlation analysis of serum TRF and LGP2 levels in CHD patients and cardiac function indicators

Pearson correlation analysis revealed that the serum TRF and LGP2 levels of CHD patients were negatively correlated with BNP, CK-MB, LVESD, LVEDD, LV mass, and IVS (P<0.05) and positively correlated with LVEF and CO (P<0.05), see *Table IV*.

Table IV Correlation between serum TRF, LGP2 levels, and cardiac function indicators in CHD patients.

Item	TRF		LGP2	
	r	P	r	P
BNP	-0.544	<0.001	-0.480	<0.001
CK-MB	-0.535	<0.001	-0.548	<0.001
LVESD	-0.435	<0.001	-0.504	<0.001
LVEDD	-0.482	<0.001	-0.562	<0.001
LVEF	0.529	<0.001	0.418	<0.001
CO	0.571	<0.001	0.421	<0.001
LV mass	-0.635	<0.001	-0.540	<0.001
IVS	-0.608	<0.001	-0.586	<0.001

Discussion

CHD is among the common cardiovascular diseases in clinical practice and is caused by coronary artery atherosclerosis, which can progress to conditions such as myocardial infarction and heart failure (10, 11). Atherosclerosis is a multistage and gradual process. After endothelial damage, lipoproteins accumulate in the intima, triggering chronic inflammation and eventually forming a fibrous cap. Within the arterial wall, reactive oxygen/nitrogen species generated by leukocyte-derived myeloperoxidase and vascular peroxidase-1 can oxidize low-density lipoprotein into oxidized low-density lipoprotein, accelerating plaque progression and triggering CHD (12, 13). Research has demonstrated a strong correlation between cardiac dysfunction and the emergence and progression of CHD problems (14).

TRF was originally referred to as a T-cell substitute factor and is the main factor that promotes the growth, maturation, and release of eosinophils from the bone marrow. Studies have shown that in cardiovascular conditions such as atherosclerosis and myocardial ischemia, TRF levels are aberrant and contribute to their development (15, 16). Studies have demonstrated that individuals with coronary artery disease have considerably higher levels of high-sensitivity C-reactive protein (hs-CRP) and eosinophil counts. After treatment, the absolute eosinophil count returns to normal, and the hs-CRP level decreases; moreover, TRF can prolong eosinophil survival and play a key role in coordinating and amplifying the allergic reactions of patients with high eosinophil syndrome (17). The combined detection of TRF and common inflammatory markers can accurately reflect the progression of coronary artery disease. The level of TRF in patients with CHD is significantly higher than that in healthy individuals. It is associated with disease severity, suggesting that TRF plays a proinflammatory role in CHD and may influence its occurrence, unlike the results of this study (18). Patients with coronary artery disease had considerably lower serum TRF levels than those without, and patients with acute myocardial infarction, unstable angina pectoris, and stable angina pectoris have progressively lower serum TRF levels. These findings indicate that serum TRF levels are valuable for evaluating the progression of coronary artery disease and may be related to the occurrence and progression of CHD (19).

The results of this study revealed that serum TRF levels were significantly lower in patients with CHD than in healthy individuals. Moreover, serum TRF levels were significantly lower in patients with grade IV CHD than in patients with grades III and II CHD. These findings suggest that serum TRF levels are related to cardiac dysfunction in CHD patients. This might be because TRF is released by type 2 natural lymphocytes, which stimulate B1 cells to secrete natural immunoglobulin M antibodies. These antibodies can recognize and bind to specific oxidized epitopes on damaged cells and lipoproteins, exerting anti-inflammatory and tissue-protective effects, inhibiting the formation and progression of atherosclerotic plaques, and providing a certain protective effect on cardiac function in CHD patients (20). In patients with myocardial infarction, eosinophils are detected, and TRF can mediate their development. Eosinophils are crucial for tissue repair after injury, and further research has shown that TRF promotes eosinophil accumulation through the IL-4/STAT6 axis, thereby facilitating recovery of cardiac function after myocardial infarction, indicating that elevated TRF levels have a protective effect on cardiac function (21). In this study, compared with healthy individuals, patients with CHD had increased LVESD, LVEDD, and LV mass, and elevated IVS, as well as elevated serum BNP and CK-MB levels, whereas LVEF and CO decreased significantly. Moreover, the changes in each

indicator became more obvious as the cardiac function grade increased. The serum TRF level of CHD patients was negatively associated with LVEF and CO and positively correlated with serum BNP and CK-MB levels, as well as with LVESD, LVEDD, LV mass, and IVS. Serum TRF is closely associated with cardiac function indicators, possibly because low TRF expression promotes eosinophil development and subsequently affects cardiac function.

LGP2 belongs to the CPX superfamily. The cysteine at the catalytic site can serve as a redox-active residue, reducing phospholipids, organic hydrogen peroxides, and other substrates, thereby protecting cells from oxidative damage. It can also mediate CHD by inducing cardiomyocyte ferroptosis (22–24). Following cardiac surgery, patients with atrial fibrillation had significantly higher levels of LGP2, which is linked to the development of atrial fibrillation, suggesting that LGP2 may be a predictive factor for atrial fibrillation after cardiac surgery. High LGP2 expression may promote CHD development, contradicting this study's findings. This may be due to the heterogeneity of the pathological physiological state of the study population, the detection timing, and the mechanism, as well as the fact that cardiac surgery is an acute trauma, which can trigger acute oxidative stress and inflammatory response outbreaks, and during the surgical process, myocardial cells experience transient ischemia-reperfusion and oxidative damage caused by extracorporeal circulation, which activates the body's antioxidant defence compensation mechanism, regulating the upregulation of LGP2 gene expression, and increasing the synthesis of LGP2 in liver and myocardial tissues and releasing it into the serum to counteract the excessive reactive oxygen species after surgery. Therefore, the serum LGP2 level shows a compensatory increase (25, 26). However, this study focuses on CHD patients who have not undergone surgery. Long-term myocardial ischemia leads to continuous oxidative stress, resulting in increased consumption of LGP2 and decreased synthesis, and the serum level tends to decrease over time.

In this study, serum BNP levels, CK-MB levels, LVESD, LVEDD, LV mass, and IVS were significantly greater in CHD patients than in healthy individuals. However, compared with those of healthy individuals, the LVEF and CO were significantly lower. Moreover, the levels of each indicator changed significantly as the cardiac function grade increased. In CHD patients, blood LGP2 levels were found to be positively connected with serum BNP, CK-MB, LVESD, LVEDD, LV mass, and IVS and negatively correlated with LVEF and CO. These findings imply that serum LGP2 levels are strongly correlated with markers of cardiac function, and that the effects on CHD patients' cardiac function may be attained by inducing ferroptosis in cardiomyocytes.

Conclusion

Patients with CHD had considerably lower blood levels of LGP2 and TRF, both of which were strongly correlated with markers of cardiac function. However, the results may be skewed due to the small sample size used in this investigation. The sample size should be increased in the future to confirm the findings of this study and to further illustrate the connection between serum TRF and LGP2 levels in CHD patients and cardiac function.

Conflict of interest statement

All the authors declare that they have no conflict of interest in this work.

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