World Journal of
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ABOUT COVER

Editorial board member of *World Journal of Clinical Cases*, Dr. Kvolik is a Professor in the School of Medicine, Osijek University, Croatia. She obtained her MD degree, with specialization in the field of anesthesiology, resuscitation and intensive care from the Zagreb Medical School, Croatia. Afterwards, she undertook postgraduate training in Clinical Pharmacology at the same institution, defending both a Master's thesis and PhD thesis. In 2006, she joined the Osijek University Medical Faculty as a lecturer and was promoted to Professor in 2009. In 2012, she was elected Head of the Department of Anesthesiology, Resuscitation, Intensive Care and Pain Therapy, a position she occupies to this day. She is also the current Head of the Intensive Care Unit at the Osijek University Hospital, Croatia. (L-Editor: Filipodia)

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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The *WJCC* is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for *WJCC* as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3.

RESPONSIBLE EDITORS FOR THIS ISSUE

ORIGINAL ARTICLE

Retrospective Study

Value of miR-1271 and glypican-3 in evaluating the prognosis of patients with hepatocellular carcinoma after transcatheter arterial chemoembolization

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Institutional review board statement: This study was reviewed and approved by the Ethics Committee of the First Hospital of Lanzhou University.

Informed consent statement: Patients were not required to give informed consent to the study because the analysis used anonymous clinical data that were obtained after each patient agreed to treatment by written consent. For full disclosure, the details of the study are published on the home page of Lanzhou University.

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Abstract

BACKGROUND

Hepatocellular carcinoma (HCC) is the third leading cause of cancer death, causing about 750000 deaths worldwide every year. Patients with advanced hepatocellular carcinoma will often only receive transcatheter arterial chemoembolization (TACE). Glypican-3 (GPC3) is one of the most promising serum markers for HCC. Abnormal expression of miRNAs may be involved in the occurrence and development of tumor.

AIM

To explore the value of miR-1271 and GPC3 in evaluating the prognosis of patients with HCC after TACE.

METHODS

From January 2016 to December 2018, 162 patients with advanced HCC who received TACE in our hospital were selected into the cancer group, and 162 patients who underwent physical examination during the same period were selected into the health group. The patients in the HCC group were treated with TACE. The changes of serum GPC3 and circulating miR-1271 in the HCC before and after TACE were analyzed. The expression of serum GPC3 was detected by enzyme-linked immunosorbent assay, and the expression of circulating miR-1271 was detected by real-time quantitative polymerase chain reaction. The methodological results of sensitivity, specificity, and accuracy of miR-1271 and GPC3 alone and joint detection of HCC were also evaluated.

RESULTS

The level of serum GPC3 in patients with HCC was significantly higher than that in healthy controls. GPC3 levels were increased in both HCC patients and those treated with TACE compared with healthy controls. After TACE, the level of serum GPC3 was significantly lower than that before treatment ($P < 0.05$), and the level of circulating miR-1271 was significantly higher than that before treatment ($P < 0.05$). There were 112 cases (69.14%) with remission (complete remission + complete remission + stable disease) and 50 cases (30.86%) with relapse disease progression in HCC patients. After TACE, the miR-1271 level in patients with remission and relapse was lower than that in the healthy group, and the GPC3 level was higher than that in the healthy group, the differences were statistically significant ($P < 0.05$). The miR-1271 of relapsed patients was lower than that of remission patients, and the level of GPC3 was higher than that of remission patients, and the difference was statistically significant ($P < 0.05$). The sensitivity of combined detection of miR-1271 and GPC3 was significantly higher than that of single detection, and the difference was statistically significant ($P < 0.05$); while the specificity of the two combined detections was lower than that of the single detection; and the accuracy was slightly higher than that of single detection, but the difference was not statistically significant.

CONCLUSION
The level of miR-1271 in patients with HCC was significantly increased and the level of GPC3 was decreased after TACE. Monitoring the levels of serum GPC3 and circulating miR-1271 has important clinical reference value for evaluating the prognosis of patients with HCC. The levels of serum GPC3 and circulating miR-1271 may help to determine tumor recurrence, evaluate survival status, and guide the next step of treatment.

Core tip: The results of this study show that the serum glypican-3 (GPC3) level in patients with hepatocellular carcinoma recurrence after transcatheter arterial chemoembolization is significantly higher than that in the remission group, and miR-1271 is significantly lower. The combined detection of serum GPC3 and miR-1271 has an important clinical reference value for evaluating the prognosis of hepatocellular carcinoma. Serum GPC3 and miR-1271 levels can help determine tumor recurrence and prognosis evaluation.

INTRODUCTION
Primary liver cancer is one of the most common malignant tumors and consists mainly of hepatocellular carcinoma (HCC)[1]. Common causes of HCC include viral infections (hepatitis B virus, hepatitis C virus), alcoholism, metabolic disorders or carcinogens, biliary diseases, and genetic metabolic defects[2,3]. In recent years, the incidence of HCC has gradually increased, and it is ranked third in the incidence of cancer, second only to lung cancer and gastric cancer[2]. If not actively treated, HCC develops rapidly because of the abundant blood supply. Due to the occult onset of HCC, patients have often missed the best opportunity of complete resection when they are diagnosed[4,5]. Transarterial chemoembolization (TACE) has a good curative effect on patients with advanced HCC, and it can improve the condition and prolong survival time. Its technology is well-established and used more and more widely[6,7]. However, some patients have recurrence after TACE or liver function deterioration becomes more

obvious, so it is important to be able to detect recurrence of HCC earlier. Monitoring the levels of serum glypican-3 (GPC3) and circulating miR-1271 has important clinical reference value for evaluating the recurrence of patients with HCC.

In recent years, studies on the molecular biological level of HCC have shown that many genes are involved in the occurrence of HCC, and *GPC3* is one of the many important genes[8]. GPC3 is a kind of carcinoembryonic protein with regulatory effect, and it is one of the earliest transcripts in the process of malignant hepatocyte transformation[9].

In patients with HCC, GPC3 was overexpressed in tumor liver tissues, and the level of GPC3 in serum was increased[10]. GPC3 is a secreted heparin sulfate proteoglycan that regulates the signal pathway by controlling the interaction of growth factors or cell surface receptors[11]. It has been reported that the expression level of GPC3 is increased in advanced HCC[12].

miRNAs are small noncoding RNAs that regulate gene expression by modulating stability and/or translation of messenger RNA (mRNA)[13], through interactions with specific sequences located in either the coding or untranslated regions[14,15]. miRNAs play a key role in driving organ and tissue differentiation during embryogenesis and in fine-tuning basic biological processes (such as proliferation and apoptosis)[16,17]. More and more evidence shows that miRNAs acting as oncogenes or tumor suppressor genes play an important role in the occurrence and development of cancer[18-20]. miR-96, miR-129-1-3p, miR-1271, miR-1291, and miR-1303 have different effects on the expression of GPC3 in HCC cells[21]. Among them, miR-1271 inhibits the growth of HCC cells and induces apoptosis in a GPC3-dependent manner[21].

miR-1271 promotes the carcinogenesis of HCC by negatively regulating the expression of GPC3[21]. Our study combined examined the expression levels of miR-1271 and GPC3 to evaluate the prognosis of patients with HCC after TACE.

MATERIALS AND METHODS

Study design and grouping

A total of 162 patients with advanced HCC who received TACE at the First Hospital of Lanzhou University from January 2016 to December 2018 were assigned to the Cancer group, and 162 healthy people who underwent physical examination in the same period were assigned to the healthy group, they did not have any history of liver disease. Selection criteria: (1) Preoperative percutaneous liver biopsy diagnosed as HCC; (2) HCC patients received TACE; (3) Complete clinical data; and (4) The patient knew about the study and gave consent. Exclusion criteria: (1) Any preoperative treatment of the liver, such as surgery, chemotherapy; (2) Patients with major organ diseases such as liver and kidney; (3) Patients with other malignant tumors; (4) Those who had not signed the informed consent form; (5) Patients with other malignant tumors; (6) Patients with a history of radiotherapy and chemotherapy; and (7) Patients with poor compliance. All the above patients were diagnosed by abdominal color ultrasound, computed tomography, magnetic resonance imaging, blood alpha fetoprotein (AFP) detection, and clinical manifestations. Informed consent was obtained from all subjects. The ethics committee of the First Hospital of Lanzhou University approved this research plan. All participants underwent a complete medical history and clinical examinations.

All patients in the HCC group received TACE and postoperative combined chemotherapy (mainly platinum), 3 wk per course with a total of 6 to 8 courses of treatment. Routine examination was performed before chemotherapy. All people included were reexamined 1 year after the end of chemotherapy, and this exam mainly included physical examination, imaging examination, and miR-1271 and GPC3 level detection. The expression of serum GPC3 was detected by enzyme-linked immunosorbent assay (ELISA), and the expression of circulating miR-1271 was detected by real-time quantitative polymerase chain reaction.

The patient was prepared for routine surgery. The femoral artery was punctured by the "Seldinger" method. The catheter technique was used to intubate the blood supply artery of the tumor. Contrast confirmed that there was no normal tissue blood vessel branch. The blood supply of the tumor artery was evaluated, location of liver tumor was determined and embolization was performed. First embolize capillaries with appropriate amount of lipiodol and the chemotherapeutic drug fluorourea glycoside + oxaliplatin + 0.1 mg mixed emulsion, then embolize the small arteries with polyvinyl alcohol, and "sandwich" embolization if necessary Embolization until the tumor staining completely disappeared. After treatment, the patient was treated with liver

protection for 1 wk.

Sample collection

Blood samples were collected from patients with HCC before treatment and after TACE. The time of blood collection in the healthy group was compared with that in the HCC and Patients after TACE. Collect 5 mL of venous blood of all subjects, 2 mL in EDTA tube with RNA detection, and 3 mL in gel tube for GPC3 expression and biochemical detection. All test tubes were centrifuged at 4000 rpm for 10 min. Extract serum and plasma fractions and store at -80°C until use.

Glypican-3 measurements

The serum GPC3 level was detected by ELISA kit (Intron Biotechnology, Seongnam, South Korea) according to the manufacturer's instructions. Detection of miRNA-1271 was performed using RNA extraction, cDNA synthesis, and amplification and quantification of miRNA 1271.

Separation and collection of serum: 5 mL of venous blood was collected from patients with HCC on an empty stomach 1-5 d before TACE, 3 mo after operation, and 1 year after operation, and the sample was placed at room temperature for 1 h. Then, it was centrifuged at 4°C for 15 min at 3000 r/min, and the supernatant (serum) was collected and stored at -80°C for determination. Extraction of serum RNA: The total RNA in serum was extracted by the Trizol one-step method. The RNA was concentrated by precipitation with the isopropanol method, and the RNA precipitate was washed with 75% ethanol. RNA was quantified using a DU-730 ultraviolet spectrophotometer, and RNA quality was detected by 1.5% formaldehyde denaturing agarose gel electrophoresis. The extracted RNA samples were stored at -80°C. Reverse transcription: TaqMan microRNA assay was performed as described in the manufacturer's instructions. A 25 µL reverse transcription reaction mixture was prepared containing total RNA 5 µL/conc, 100 mmol/L dNTPs (with dTTP) 0.25 µL, Multiscribe reverse transcriptase (50 U/µL) 1.67 µL, 10 × reverse transcriptase buffer 2.5 µL, RNA hydrolase inhibitor (20 U/µL) 0.32 µL, water without RNA enzyme 2.46 µL, and reverse transcriptase primer 12.8 µL. RT reaction was performed using GeneAmpPCRSystem9700. The reaction conditions were as follows: 16°C, 30 min, 37°C, 60 min, 90°C, 5 min. For real-time fluorescence quantitative reaction, 32 µL reaction system was established with U6 as internal reference gene: TaqMan Universal PCR Master Mix 16 µL, 20 × Taq Man Micro RNA Assaymixer 12.8 µL, reverse transcription product 2.5 µL, and water without RNA enzyme 0.7 µL. The reaction was carried out by ABIPRISM7900 real-time fluorescence quantitative polymerase chain reaction (PCR). The reaction conditions were as follows: 90°C, 5 min, 40 PCR cycles (95°C, 30 s, 60°C, 20 s, 75°C, 20 s). The expression of miR-1271 was analyzed by $2^{-\Delta\Delta CT}$ method.

Trizol reagent, RNAiso™ Plus, and PCR kit were purchased from Takara Bio, Inc. (Kusatsu, Japan); Taq Man MicroRNA Assay and miR Vana™ miRNA Isolation Kit purchased from Ambion, Inc. (Austin, TX, United States). MiR-1271 and its primer sequence were purchased from Shanghai Jikai Genochemical Technology Co. Ltd (Shanghai, China); electrophoresis apparatus, ultraviolet spectrophotometer, and ABI PRISM 7900PCR instrument is purchased from Applied Biosystems (Foster City, CA, United States).

Observation of curative effect

Curative effect was evaluated according to the American mRECIST standard[22]. Based on different curative effects, patients were divided into complete remission, partial remission, stable disease, and disease progression. The remission group was complete remission + partial remission + stable disease and the relapse group was disease progression.

Follow-up

All selected people were followed for up to 1 year and asked to go to the hospital to complete the miR-1271 and glypican-3 test and whether the patient relapsed, survived, *etc.* was recorded. The follow-up deadline was December 2019.

Statistical analysis

SPSS 25.0 statistical software (Armonk, NY, United States) was used to analyze the data. Clinical data (measurement data) are expressed as mean ± standard deviation (x ± SD), and single-factor analysis of variance was used for comparison between groups. Paired *t*-test was used for comparison within the group, and independent sample *t*-test

was used for comparison between groups. The count data are expressed as a rate (%). The comparison was performed using χ^2 test, with $P < 0.05$ being considered statistically significant.

RESULTS

Patient characteristics

One-hundred and sixty-two patients with HCC, aged 28-71 years, with an average age of 43 years, with 104 males and 58 females, were included in this study. There were 71 cases of giant type, 80 cases of nodular type, and 11 cases of diffuse type. The main clinical symptoms were pain in the liver area, loss of appetite, fatigue, weight loss, abdominal distension, jaundice, poor mental health, weight loss, *etc*. Serum AFP levels > 400 ng/mL in 124 cases, < 20 ng/mL in 10 cases, and 20-400 ng / mL in 28 cases. Among them, 128 cases were positive for hepatitis B surface antigen, 30 cases had cirrhosis, 147 tumors were located in the right lobe of the liver, 10 tumors were located in the left lobe of the liver, and 12 tumors were located in the left and right lobe of the liver. We used Tumor, Node Metastasis 7th staging systems to stage HCC. Clinical staging: 97 cases in stage II and 65 cases in stage III. According to the liver function classification of the Child-Pugh scoring system, there were 42 cases of Child A grade, 88 cases of Child B grade, and 32 cases of Child C grade. See Table 1 for efficacy of TACE in different types of HCC.

Regarding the comparison of baseline data between the HCC group and the healthy group, there was no statistically significant difference in baseline data between the two groups (Table 2). In the third month of follow-up after TACE, the recurrence of patients with HCC after TACE has statistically significant differences in HCC classification, HCC stage, and liver function classification ($P < 0.05$). There was no obvious relationship with the level of AFP before treatment (Table 3).

In the third month of follow-up after TACE, the level of serum GPC3 in patients with HCC was significantly higher than that in healthy controls, and the difference was statistically significant ($P < 0.05$). After TACE, the serum GPC3 level was significantly lower than that before treatment ($P < 0.05$); miR-1271 levels were significantly higher than that before treatment ($P < 0.05$). After TACE, miR-1271 in relapsed patients was lower than that in remission patients, and GPC3 levels were higher than that in remission patients, and the difference was statistically significant ($P < 0.05$). Table 4 for details.

The sensitivity of combined detection of miR-1271 and GPC3 was significantly higher than that of HCC alone, and the difference was statistically significant ($P < 0.05$); while the specificity of the two combined detections was lower than that of single detection. The accuracy of the combined detection was slightly higher than the accuracy of the single detection, but the difference was not statistically significant (Table 5).

DISCUSSION

Our results show that the level of serum GPC3 in patients with HCC was significantly higher than that in healthy controls. GPC3 levels were increased in both HCC patients and those treated with TACE compared with healthy controls. The recurrence of HCC patients after TACE was related to HCC classification, HCC stage, and liver function classification. There was no obvious relationship with the level of AFP before treatment. After TACE treatment, the serum GPC3 level was significantly reduced; miR-1271 level was significantly increased. After TACE, miR-1271 in relapsed patients was lower than that in remission patients, and GPC3 levels were higher than that in remission patients. We concluded that the sensitivity of combined detection of miR-1271 and GPC3 for HCC detection was significantly higher than that of single detection; the specificity of the combined detection was lower than that of single detection; the accuracy was slightly higher than the accuracy of the single detection.

HCC is a common tumor in various countries around the world, and the third most common cause of cancer-related deaths, with about 600000 new cases every year[23]. HCC has an insidious onset, rapid progress, and high mortality. The current diagnosis of HCC relies mainly on liver ultrasound to measuring AFP levels[24]. It is a huge challenge for clinicians. The onset of HCC is occult, the early clinical symptoms are not obvious, and most patients are in the middle and late stages at the time of diagnosis.

Table 1 Efficacy of transcatheter arterial chemoembolization in different types of hepatocellular carcinoma, *n* **(%)**

Group	*n*	CR (%)	PR (%)	SD (%)	PD (%)
Massive type	71	0	17 (23.94)	41 (57.75)	13 (18.31)
Nodular type	80	0	13 (16.25)	34 (42.50)	33 (41.25)
Diffuse type	11	0	0	7 (63.64)	4 (36.36)

CR: Complete remission; PR: Partial remission; SD: Stable disease; PD: Disease progression.

Table 2 Comparison of baseline data between hepatocellular carcinoma group and healthy group

Group	Number of cases	Age	BMI
Cancer group	162	51.31 ± 4.21	26.04 ± 2.54
Health group	162	52.30 ± 5.28	25.73 ± 2.55
t	1.87		0.31
P value	0.06		0.27

BMI: Body mass index.

Table 3 Remission and recurrence of hepatic cancer patients undergoing hepatic artery embolization chemotherapy (transcatheter arterial chemoembolization)

Group	Remission	Relapse	χ^2	*P* value
Classification of HCC			9.44	< 0.05
Massive type, *n* = 71	58	13		
Nodular type, *n* = 80	47	33		
Diffuse type, *n* = 11	7	4		
Preoperative staging			30.59	< 0.05
II stage, *n* = 97	83	14		
III stage, *n* = 65	29	36		
Child-Pugh			60.08	< 0.05
Child A, *n* = 42	34	8		
Child B, *n* = 88	74	14		
Child C, *n* = 32	4	28		
AFP level			0.87	> 0.05
> 400 ng/mL, *n* = 124	86	38		
20-400 ng/mL, *n* = 10	8	2		
< 20 ng/mL, *n* = 28	18	10		

HCC: Hepatocellular carcinoma; AFP: Alpha fetoprotein.

The 5-year survival rate of patients with advanced HCC is significantly lower than that of early patients. Radiotherapy and systemic chemotherapy are basically ineffective for this disease, and surgical resection is one of the few effective treatments. However, only 10%-20% of primary HCCs can be resected at the time of diagnosis[12], so TACE is often used clinically[25].

GPC3 are proteoglycans that interact with growth factors and regulate their activity; therefore, they play a vital role in cell growth, differentiation, and migration[26,27]. In recent years, GPC3 has been considered as a sensitive and specific marker for HCC

Table 4 Comparison of serum glypican-3 and miR-1271 levels in patients with hepatocellular carcinoma

Group	Number of cases	Glypican-3	t	P value	miR-1271	t	P value
Group 1			7.41	< 0.05		18.06	< 0.05
Health group	162	0.74 ± 0.29			5.48 ± 1.79		
Cancer group	162	8.87 ± 3.73			1.25 ± 0.68		
Group 2			18.06	< 0.05		18.06	< 0.05
Before treatment	162	8.87 ± 3.73			1.25 ± 0.68		
After treatment	162	2.46 ± 1.69			4.64 ± 2.13		
Group 3			7.6	< 0.05		4.17	< 0.05
Remission group	112	6.79 ± 5.32			4.96 ± 2.28		
Recurrent group	50	8.74 ± 2.40			3.41 ± 1.96		

Table 5 Comparison of sensitivity, specificity, and accuracy of miR-1271 and glypican-3 alone and jointly for detection of hepatocellular carcinoma (%)

Items	Sensitivity	Specificity	Accuracy	RR (95%CI)
GPC3	68.9	86.0	75.3	0.926 (0.561-1.471)
miR-1271	76.0	72.8	76.5	0.925 (0.374-1.482)
GPC3 + miR-1271	94.7	65.0	80.3	0.931 (0.537-1.312)

GPC3: Glypican-3.

and hepatoblastoma, and serum GPC3 levels in patients with HCC are significantly higher. Studies[28] have shown that GPC3 is expressed in small tumors, indicating its potential as a diagnostic marker for early HCC. Serum GPC3 has been introduced as a non-invasive biomarker for HCC, and the expression of GPC-3 can be used as a molecular marker for early diagnosis of HCC, especially in poorly differentiated or small HCC[29]. Liu *et al*[30] pointed out that GPC3 may be a component of AFP and has a high sensitivity for the diagnosis of HCC.

At present, molecular research of miRNA has become a hot field[31,32]. It has been found that miRNA is closely related to tumor occurrence, development, recurrence, metastasis, and prognosis[33-35], that is, miRNA shows good potential in early diagnosis and treatment of tumors[36,37]. Therefore, scientists speculate that miRNA may be an ideal tumor detection molecular marker and therapeutic target[38,39]. Maurel *et al*[21] reported that the expression of miR-1271 was down-regulated in HCC tumor samples and was negatively correlated with the expression of GPC3 mRNA in a specific subgroup of HCC. It was also reported that miR-1271 inhibits the growth of HCC cells and induces cell death in a GPC3-dependent manner. Research by Jensen *et al*[40] showed that miR-1271 is expressed in a variety of human tissues, including the liver, suggesting that it has a unique function in the body. Blocking the effect induced by miR-1271 caused a slight increase in GPC3 protein expression. The effect of miR-1271 on GPC3 expression was also observed at the mRNA level[21]. GPC3 promotes the growth of HCC cells[41], and overexpression of miR-1271 strongly inhibits the growth of Huh7 cells by reducing the content of triphosphate, an indicator of cell proliferation and cell metabolic activity[21]. miR-1271 inhibited the growth of HCC cells and promoted their apoptosis by reducing the expression of GPC3 at least to some extent. The specific down-regulation of miR-1271 in HCC tumors leads to the overexpression of GPC3 and the expansion of HCC cells[21].

Based on tumor stage, liver function, and performance status, patients were stratified and assigned for treatment. Hepatic artery embolization chemotherapy is an effective treatment for advanced HCC. According to the Barcelona Clinical hepatocellular carcinoma staging system, TACE is the first-line treatment for patients with intermediate-term HCC, including those with large or multiple nodules. Liver function is well preserved and there are no symptoms or evidence of vascular invasion or extrahepatic spread. Since 2004, two TACE technologies have been used. Traditional TACE and drug-eluting microbead TACE have been proven to treat patients with mid-

term HCC. It combines lipiodol-based emulsion and embolization agent with catheter chemotherapy to achieve strong cytotoxicity and ischemic effects. Drug-eluting microspheres were developed to release slowly chemotherapeutic drugs and increase the intensity and duration of ischemia. Recent advances have allowed TACE to treat patients at an early stage. Two drug-eluting microspheres were developed to release slowly chemotherapeutic drugs and increase the intensity and duration of ischemia. TACE is the most widely used palliative treatment for unresectable HCC. However, the prognosis of patients receiving TACE varies greatly. Patients after TACE also have some adverse reactions, such as fever, nausea, vomiting, upper abdominal pain, backache, *etc*. Some patients may also have elevated serum bilirubin and transaminase, but they generally return to normal levels within 24 h after surgery. Due to local recurrence and distant metastasis, the long-term survival rate is still very low. Nowadays, TACE is widely used clinically, so it is necessary to evaluate the prognosis of TACE. After TACE, the serum miR-1271 expression level increased significantly and GPC3 level decreased significantly, suggesting that miR-1271 and GPC3 participated in the regulation process of HCC occurrence and development. These findings also suggested that these measures can be used as a prognosis indicator for HCC. However, the specific mechanism by which miR-1271 and GPC3 regulate HCC process needs further study. This study needs more large-scale research to verify its findings; correlation research is also very necessary.

ARTICLE HIGHLIGHTS

Research background

Hepatocellular carcinoma (HCC) is the third leading cause of cancer death, causing about 750000 deaths worldwide each year. Patients with advanced liver cancer will almost only receive transcatheter arterial chemoembolization (TACE). It is particularly important to study related indicators to determine the prognosis of patients after TACE. Therefore, it is of far-reaching significance to explore the value of miR-1271 and glypican-3 (GPC3) in evaluating the prognosis of patients with liver cancer after TACE.

Research motivation

At present, there are different criteria for evaluating the prognosis of patients after TACE. Therefore, we expect to find a way to judge accurately the prognosis of patients after TACE.

Research objectives

The purpose of this study was to investigate the value of miR-1271 and GPC3 in evaluating the prognosis of patients with HCC after TACE.

Research methods

From January 2016 to December 2018, 162 patients with advanced HCC who received TACE in our hospital were selected into the cancer group, and 162 patients who underwent physical examination during the same period were selected into the health group. The patients in the HCC group were treated with TACE. The changes of serum GPC3 and circulating miR-1271 in the HCC before and after TACE were analyzed.

Research results

The level of serum GPC3 in patients with HCC was significantly higher than that in healthy controls. GPC3 levels were increased in both HCC patients and those treated with TACE compared with healthy controls. After TACE, the level of serum GPC3 was significantly lower than that before treatment ($P < 0.05$), and the level of circulating miR-1271 was significantly higher than that before treatment ($P < 0.05$). There were 112 cases (69.14%) with remission (complete remission + partial remission + stable disease) and 50 cases (30.86%) with relapse disease progression in HCC patients. After TACE, the miR-1271 level in patients with remission and relapse was lower than that in the healthy group, and the GPC3 level was higher than that in the healthy group; the differences were statistically significant ($P < 0.05$). The miR-1271 of relapsed patients was lower than that of remission patients, and the level of GPC3 was higher than that of remission patients, and the difference was statistically significant ($P < 0.05$). The sensitivity of combined detection of miR-1271 and GPC3 was significantly higher than that of single detection, and the difference was statistically significant ($P < 0.05$); while

the specificity of the two combined detections was lower than that of the single detection. The accuracy was slightly higher than that of single detection, but the difference was not statistically significant.

Research conclusions

The level of miR-1271 in patients with HCC is significantly increased and the level of GPC3 is decreased after TACE. Monitoring the levels of serum GPC3 and circulating miR-1271 has important clinical reference value for evaluating the prognosis of patients with HCC.

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