

*Research Article***Do radiofrequency and TACE influence HCC patient's quality of life and laboratory parameter?****Weal M. Abd Elghany, Ahmed A. Alela, Wafaa A. Elhamid and M. Essawy , and Yasser M. Fouad.**

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Abstract

Background: the aim of this study to assess the effect of radiofrequency and TACE on laboratory profile and quality of life on patient with HCC. **Material and Methods :** 99 patient included in this study (CBC, Cr, RBS, AFP, PC, SGPT, SGOT, ALB, BIL) and one validated questionnaire (SF-36) taken before the procedure and two months after. **Results:** there is significant increase in patient quality of life in all domains and improvement in HB, SGOT, AFP in patients lab profile . **Conclusion:** due to psychological impact of HCC cure and pain control there is marked improvement in all patient quality of life.

Keywords: radiofrequency, TACE, HCC patient's, laboratory parameter**Introduction**

Liver cancer is the fifth most common cancer and the second most frequent cause of cancer-related death globally, with 854,000 new cases and 810,000 deaths per year, accounting for 7% of all cancers⁽¹⁾. Hepatocellular carcinoma (HCC) represents about 90% of primary liver cancers and constitutes a major global health problem. The incidence of HCC increases progressively with advancing age in all populations, reaching a peak at 70 years⁽²⁾.

Surgical resection of HCC is standard form of curative therapy; however, it is possible only in a small subgroup of patients. Liver transplantation is another treatment option, reserved for end stage patients but limited option due to lack of donors and socioeconomic causes especially in developing countries⁽³⁾. Therapies based on radiological intervention such as radiofrequency or transarterial chemoembolization are widely used for especially for unresectable HCC and considered as palliative treatment with potential positive impact on prolonging survival and improving quality of life.⁽⁴⁻⁸⁾

The HRQOL has been considered as a relevant measure of prognosis in patients undergoing palliative measures for cancer. Recent studies have suggested using HRQOL as an independent prognostic factor for treatment

response and progression in patients with advanced HCC^(9,10)

This study aimed at assessment of HRQOL after radiofrequency or TACE for patients with unresectable HCC.

Materials and methods

Study design: This is a prospective non randomized study at two tertiary center (Minia university hospital and Minia oncology center). Any decision for treatment of HCC was taken by hepatoma team including hepatologist, surgeon, radiologist, pathologist and oncologist. The treatment decision was based on clinical fact, imaging , comorbidities and BCLC classifications. In general smaller tumor without PVT treated by radiofrequency and larger multinodular lesions without PVT treated by TACE. informed consent obtained in every case.

Patients: This study recruited 183 patients with HCC on top of hepatitis C virus or hepatitis B virus related cirrhosis at the time period June 2017 February 2019. All patients asked for informed consent. Only 99 patients included in the study after exclusion of many patients who refused to participate, had complications or lost follow up.

Every participant was subjected to full history taking with special emphasis on age, sex,

smoking, exposure risk to viral hepatitis, history of diabetes or hypertension. Thorough clinical examination was done for every participant with special emphasis on the presence or absence of fever, jaundice, organomegaly, lower limb edema and abdominal tenderness or presence of ascites. Abdominal ultrasonography was performed by using a Hitachi machine with a 3.5 MHz linear transducer commenting on the liver, spleen, portal vein diameter, kidneys, hepatic focal lesions and comment on ascites (internal echoes or adhesions).

The laboratory investigations included complete blood picture, total serum proteins level, serum albumin level, total and direct bilirubin, serum alanine transaminase, serum aspartate transaminase, alkaline phosphatase, prothrombin time and concentration, serum creatinine and blood urea.

HRQOL: was assessed by validated SF-36 questionnaire. Every participant filled out the questionnaire before and 3 months after treatment. Scores were compared before and after treatment. The SF-36 questionnaire is used internationally to measure 8 domains of health: general health, bodily pain, social functioning, role-physical, physical functioning, vitality, role-emotional, and mental health. The raw scores of each questionnaire were converted to scores ranging from 0 to 100, with higher scores indicating higher levels of functioning or well-being⁽¹¹⁾

Imaging: Abdominal MDCT before the procedure and after the procedure with one month – another technique as MRI diffusion used in some cases. The imaging with contrast was done before and 3 months after the radiofrequency or TACE. Tumor response was evaluated using the size criteria Response Evaluation Criteria in Solid Tumors (RECIST) and World Health Organization criteria.

Radiofrequency or TACE: patient was kept in the hospital one day before the procedure and three days after for follow up general condition and laboratory investigation. Then follow up all lab CBC, LFTs, AFP, CT one and 3 months after procedure.

Principles of radiofrequency: in this procedure, the puncture probe has an insulated

shaft and a non-insulated tip, which is inserted into the lesion under ultrasound guidance.

The radio-frequency energy emitted from the needle tip induces ionic agitation and frictional heat. Thus, it is the surrounding tissue, rather than the electrode itself, that produces heat energy to destroy tumor cells. Because of its excellent necrotizing effect, RFA has become a highly effective, local ablative therapy for HCC⁽¹²⁾.

Radiofrequency has some limitations. For example, when the tumor nodule is close to major blood vessels, the radiofrequency energy will be carried away by the blood flow (the “heat-sink” effect), resulting in a suboptimal treatment response. Another drawback is that if the electrode tip becomes too hot during ablation, tissue charring may lead to increased tissue impedance and a smaller thermal-ablated area.

Transarterial chemoembolization : Hepatic artery obstruction is performed during an angiographic procedure and is known as transarterial, or trans-catheter arterial embolization (TAE). When TAE is combined with the prior injection into the hepatic artery of chemotherapeutic agents, usually mixed with lipiodol, the procedure is known as transarterial chemoembolization⁽¹³⁾.

Results

changes in laboratory profile in included patients as in table (1) we found that significant increase in HB after the procedure, white blood cells also increases after the procedure, platelet had significant increase in its level after the procedure, liver function tests (SGOT, SGPT, BIL) show significant decrease after 2 months of the procedure, but serum ALB shows significant increase after the procedure, prothrombin concentration also increases after the procedure, but serum creatinine shows no significant changes after the procedure.

Table no (2) shows the changes in HRQOL : there is significant changes in all 8 domains of quality of life (Physical functioning, Physical health limitation, Emotional problem limitation, Energy / fatigue, Emotional wellbeing, Social functioning, Pain, General health of p. value (<0.001*).

Discussion

In the present study, the QOL of HCC patients who were treated with TACE alone or with RFA was evaluated to gauge the benefit of these treatment strategies.

We found a significant decrease in AFP after the procedure with agreement of previous studies⁽¹⁴⁾. Our finding of significantly reduced serum AFP indicates that TACE may have significantly reduced tumour burden. The level of AFP attributed to extensive tumour necrosis has been reported to be correlated with tumour burden in previous studies. A hypervascular tumour may be successfully devascularised with a dramatic fall in AFP and change in imaging on arterial and venous phases, but the size of the tumour may remain unchanged.

The QoL is considered to be as important as overall survival and tumor-free survival for these patients⁽¹⁵⁾; i.e., there is now a focus on not only achieving long-term survival but also patients lives' in relation to their disease and treatment . Moreover, a linear relationship was found between overall HRQoL and survival; specifically, patients reporting the highest level of overall HRQoL were found to have the longest survival time, after follow up of quality

of life to our patients before the procedure and one month after to follow the 8 domains of life quality, we found a significant changes and increase in all domains of life quality and it is in agreement with Poon, et al., 2001 who noted that the clearance of tumors not only improves the physical well-being of patients but also enhances their social and emotional health statuses, and their improved relationships with physicians reflect their satisfaction with the surgical treatment⁽¹⁶⁾.

Anoter studies found that HRQOL scores of patients with HCC were more affected by the patients' level of liver function than by the presence of HCC⁽¹⁷⁾ The SF-36 scales that showed significant changes in the present study include mental health, bodily pain, and vitality. The improvement of mental health seen in our study was theorized to be related to decreased disease burden, perceived benefit of treatment, and improved sleep patterns. According to Ware and coworkers⁽¹⁸⁾, the bipolar mental health scale has been the most thoroughly studied of the eight SF-36 scales, in which a 20-point decrease in the mental health range of 60–80 represents tripling of the probability of suicidal ideation and doubling of the probability of depression

Table (1): shows laboratory data of included population pre and post the procedure

		Pre	Post	P value
		N=99	N=99	
HB	Range Mean ± SD Median	(8-16) 11.5±1.6 11	(8-15) 11.1±1.6 11	<0.001*
WBC	Range Mean ± SD Median	(2100-12800) 4832.5±1903.1 4320	(2000-11300) 4794.8±1743.2 4350	0.301
Platelets	Range Mean ± SD Median	(67-420) 146.5±62.1 129	(80-390) 174±65.5 165	<0.001*
SGPT	Range Mean ± SD Median	(15-164) 61±27.8 54	(10-86) 40.7±15.3 37	<0.001*
SGOT	Range Mean ± SD Median	(32-207) 78.7±34 75	(12-85) 40.2±15 35	<0.001*
ALB	Range Mean ± SD Median	(2.1-4.8) 3.5±0.7 3.4	(2.1-4.9) 3.4±0.6 3.4	<0.001*

BIL	Range Mean ± SD Median	(0.6-3.1) 1.3±0.5 1.1	(0.5-2.3) 1.1±0.4 1	<0.001*
AFP	Range Mean ± SD Median	(3-1000) 196.3±274.9 90	(1-109) 22.1±20.8 17	<0.001*
RBS	Range Mean ± SD	(76-310) 127.2±41.3 118	(80-285) 138.3±35.7 134	0.002*
Creatinine	Range Mean ± SD	(0.4-1.4) 0.9±0.2 0.9	(0.4-1.3) 0.8±0.2 0.8	0.062
PC	Range Mean ± SD	(51-80) 66.4±5.9 67	(55-83) 68.7±5.9 70	<0.001*

Table (2): Shows the effect of procedure on quality of life in The included population

	Pre	Post	P value
	N=99	N=99	

Physical functioning	Range Mean ± SD Median	(10-100) 57.6±22 .7 60	(20-100) 66.1±19 .8 70	<0.00 1*
Physical health limitation	Range Mean ± SD Median	(0-100) 38.6±38 50	(0-100) 61.9±32 .8 75	<0.00 1*
Emotional problem limitation	Range Mean ± SD Median	(0-100) 19.5±29 .7 0	(0-100) 85.2±21 .9 100	<0.00 1*
Energy / fatigue	Range Mean ± SD Median	(0-75) 29.4±17 .7 30	(25-95) 61.7±16 65	<0.00 1*
Emotional wellbeing	Range Mean ± SD Median	(4-84) 32.2±13 .5 32	(44-92) 68.4±10 .7 68	<0.00 1*

Social functioning	Range Mean ± SD Median	(0-100) 40.9±24 .4 50	(37.5-100) 75.8±15 75	<0.00 1*
Pain	Range Mean ± SD Median	(0-100) 46.4±28 .6 45	(45-100) 81.6±13 .2 77.5	<0.00 1*
General health	Range Mean ± SD Median	(0-85) 29.9±21 .8 30	(10-100) 54.8±16 .4 60	<0.00 1*
Total score	Range Mean ± SD Median	(13-84.3) 41.2±18 .7 42.1	(24.8-96.3) 65±15.7 67.3	<0.00 1*

There is significant good changes in all domains of quality of life in included patient after one month of the procedure

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