

# HEALTH RELATED QUALITY OF LIFE IN PATIENTS UNDERGOING TRANSARTERIAL CHEMOEMBOLIZATION FOR UNRESECTABLE HEPATOCELLULAR CARCINOMA

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## ABSTRACT

**OBJECTIVE:** To determine the health related quality of life (HRQOL) in patients undergoing transarterial chemoembolization (TACE) for hepatocellular carcinoma (HCC). **METHODS:** A before and after survey was conducted from February 2014 till December 2015 and all patients who underwent TACE irrespective of age and gender with at least one follow up after 06 weeks of TACE were included. Patients who lost to follow up were excluded. Short form 12 (SF-12) questionnaires were used to assess HRQOL before and after TACE. These information along with demographic of the patients like age, gender, duration of follow-up, bilirubin level, tumor size, and child score was calculated. **RESULTS:** Out of total 53 patients, male preponderance was found to be higher 42 (79.2%) than that of females 11 (20.8%). Majority of the patients presented with hepatitis C (n=47, 88.7%) whereas hepatitis B infection was found in 6 (11.3%) patients. Child-Pugh Score "B" was found in majority (n=34, 64.2%) of the patients, followed by Child-Pugh Score "A" in 17 (32.1%) whereas only 2 (3.8%) patients were presented with Child-Pugh Score "C". A significant difference was observed in the physical and mental quality of life (QOL) before and after TACE, i.e. 45.3 (42.2-47) vs. 46.2 (44.2-47.2), p-value <0.001 and 52.3 (48.9-54) vs. 56.3 (53.4-58.9), p-value <0.001 respectively. **CONCLUSION:** A significant improvement in physical and mental HRQOL was observed in patients suffering from HCC undergoing TACE.

## Introduction

Hepatocellular carcinoma (HCC) is the most common primary malignancy of the liver, sixth most common malignancy worldwide and is the third leading cause of cancer mortality.<sup>1</sup> It is most common in Asia and Africa but its incidence is increasing in developed countries.<sup>2</sup> It is a major cause of cancer related mortality particularly with a male predominance.<sup>3</sup> Prevalence of Hepatitis C virus (HCV) related and Hepatitis B virus (HBV) related HCC is 66% and 34% respectively.<sup>4</sup> Almost greater than 90% of the cases of HCC occur after liver cirrhosis<sup>5</sup> and patients with HCV are likely to develop HCC at an advanced stage.<sup>4</sup> Curative treatment options available for HCC include

surgical resection and liver transplantation.<sup>6</sup> Although advances have been made in many aspects of HCC diagnosis and treatment, but in routine practice most patients still present with an advance stage disease, usually at an inoperable stage and are thought to have limited treatment options and poor prognosis.<sup>7,8</sup> Local radiofrequency ablation (RFA) and Transarterial chemoembolization (TACE) are the palliative treatment options for such patients with low morbidity and high oncological efficacy.<sup>9,10,11</sup>

TACE is most widely used as a palliative treatment option for management of patients with an advance staged HCC. It combines the injection of antineoplastic drugs [the usual drugs include (doxorubicin, cisplatin, mytomyacin-c, epirubicin) and embolizing agents

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(gel foam), Poly vinyl Alcohol (PVA) particles] with selective or super selective catheterization of arteries nourishing the tumor while preserving normal liver parenchyma.<sup>12</sup> Majority of the patients undergoing TACE have a terminal stage disease, so it is important to maintain an acceptable QOL and prevent decompensated liver failure in such patients along with improving survival. This study was carried out to determine the impact of TACE on QOL of patients undergoing TACE in comparison with their pre-procedure state.

## Materials and Methods

Patient diagnosed with un-resectable HCC and referred to Vascular Interventional Radiology (VIR) from February 2014 till December 2015 was considered for this study. Child Pugh scoring system was used to assess the severity of chronic liver disease.

The inclusion criteria were as follows; (1) All patients with surgically un-resectable HCC, with or without portal vein thrombosis. (2) Patients who underwent TACE for the first time or have undergone TACE sessions previously. (3) Patients with Child-Pugh class A or B without extrahepatic disease. Whereas exclusion criteria were; (1) Patients who did not present for follow up after TACE. (2) Patients with extrahepatic metastasis. (3) Patients with renal failure or allergic to contrast medium.

All participants were evaluated by hepatobiliary team comprising of physicians, surgeons and interventional radiologists prior to the treatment. HCC was diagnosed by its characteristic appearance on triple phase CT scan. In ambiguous cases, the diagnosis was established by a percutaneous biopsy of the liver lesion. Laboratory investigations such as serum bilirubin, albumin, prothrombin time, Hepatitis B or C status, and radiological investigations such as ultrasounds, CT scans were reviewed before and after the procedure at the first follow up. QOL questionnaires were also filled before the procedure and at the time of first follow up examination, i.e. 6 weeks after TACE. All patients underwent triple phase (arterial, venous and delayed phase) multidetector CT scan within a month before TACE. CT scans were performed on a 16-slice scanner (GE Brightspeed / Siemens Somatom Emotion). Pre-procedure evaluation of all patients

was conducted. At least 6 hours fasting was required for all patients with a minimum of one night hospital stay after the procedure. Intravenous fluid hydration and antibiotic prophylaxis with ceftriaxone was done before the arterial puncture. Deranged coagulation state was managed by transfusion of platelets / fresh frozen plasma (FFP), if needed at any stage. TACE was performed by experienced interventional radiologists. Femoral artery was punctured under local anesthesia and was cannulated. Angiography was performed and arterial supply to the liver was assessed. Catheterization of celiac artery and superior mesenteric artery was done followed by their angiograms to locate the tumor blood supply. Selective catheterization, if needed super-selective catheterization, of tumor vessels was carried out. Injection Doxorubicin was injected along with PVA particles. Gel foam was also used in some patients along with PVA particles for embolization.

Patients were requested to complete the short form 12 (SF-12) questionnaire of HRQOL.

SPSS version 21 was used for the purpose of statistical analyses. All quantitative variables were presented in the form of median and interquartile range. Wilcoxon sign rank test was applied to see the difference before and after TACE. P-value <0.05 was taken as significant.

## Results

Out of total 53 patients, male preponderance was found to be higher 42 (79.2%) than that of females 11 (20.8%) [median age 55 (49-60) years]. Majority of the patients were presented with hepatitis C infection 47 (88.7%) whereas hepatitis B infection was found in 6 (11.3%) patients. Median bilirubin and largest tumor size of the patients was 1.8 (1.48-2.20) and 6.2 (5.8-7.3) respectively. Majority of the patients were presented with child score B 34 (64.2%) followed by child score A 17 (32.1%) whereas only 2 (3.8%) patients were presented with child score C. Baseline characteristics of the patients are shown in detailed in (Tab. 1). Median follow-up period was 8 (6.5-10) weeks. Significant difference was observed in the physical and mental QOL score before and after TACE, i.e. 45.3 (42.2-47) vs. 46.2 (44.2-47.2), p-value <0.001 and 52.3 (48.9-54) vs. 56.3 (53.4-58.9),

p-value <0.001 respectively. (Tab. 2) Stratification of pre and post TACE physical and mental QOL score on the basis of general characteristics also showed significant difference (p-value <0.05).

	n	%
Age, years	55 (49-60)*	
≤ 55	33	62.3
> 55	20	37.7
Gender		
Male	42	79.2
Female	11	20.8
Cause		
HBV	6	11.3
HCV	47	88.7
Child score		
A	17	32.1
B	34	64.2
C	2	3.8
Bilirubin	1.8 (1.48-2.20)*	
Largest tumor size	6.2 (5.8-7.3)*	
*median (IQR), n: number		

**Table 1:** Baseline characteristics of the patients (n=53)

	Pre		Post		p-value
	Median	IQR	Median	IQR	
Physical score	45.3	42.2-47	46.2	44.2-47.2	<0.001*
Mental score	52.3	48.9-54	56.3	53.4-58.9	<0.001*
Wilcoxon sign rank test applied, p-value <0.05 taken as significant					

**Table 2:** Median difference of physical and mental score pre and post TACE

## Discussion

This study determines the QOL of patients undergoing TACE for un-resectable HCC among Pakistani population. Initially, TACE was described by Kato et al. in the year 1981.<sup>13</sup> TACE is used widely for treatment of patients with HCC that are not surgical candidates.<sup>14</sup> However, the studies on variation of QOL among South Asian population are very scarce and no longitudinal study from Pakistan has been done to evaluate the QOL following TACE. The finding of this study has shown significant improvement in the physical and mental QOL before

and after TACE. Similar findings were observed in several other studies as well.<sup>15,16</sup> Stratification of pre and post TACE physical and mental QOL score on the basis of general characteristics like age, gender, child pugh score, and cause also showed significant differences. Similar findings were also reported by Shun et al as well.<sup>15</sup>

In comparison with other studies,<sup>16,17</sup> findings of our study also reported that the majority of patients were able to tolerate several TACE sessions without significant deterioration of their QOL. A study reported that HCC patients who were at the greatest risk for a lower QOL were those who were older, male, and had higher levels of depression and anxiety after discharge from hospital.<sup>15</sup>

A significant number of literature has reported improvement in QOL among patients undergoing TACE that are not surgical candidates,<sup>18,19</sup> but only few studies have been conducted prospectively that demonstrated the QOL in such patients.<sup>20,21</sup> The providers of quality health care have been assessing the QOL of cancer treatment for the past decade. Several studies have shown that for the patients suffering from terminal illness, maintaining a good level of functional status is important rather than survival.<sup>22,23</sup> Therefore, QOL has a major role in circumstances when the cure rate is low, such as in cases of advanced HCC.<sup>20</sup>

Our current study should be considered in light of some limitations. First, this study was carried out on a small sample size. Another limitation was that of a single short follow up. Our study utilized the QOL only on a first follow up having duration of 6 weeks. Another limitation of our study was that limited variables were assessed. Clinical parameters were not completely assessed in the current study. A recent study investigated the use of first TACE session for HCC and its impact on QOL<sup>24</sup> by testing clinical parameters such as Eastern Cooperative Oncology Group (ECOG) status and Model for End Stage Liver Disease (MELD) score. By using these scores to predict HRQOL, the study showed comparable results to our study, that the first TACE session for HCC does not had a major loss of QOL.<sup>24</sup>

Despite these limitations, we believe that this is the first kind of study from a developing country like Pakistan which has reported the QOL of patients who underwent TACE. Further studies should be conducted with a larger sample size and follow up of longer

duration including variables like performance status, ECOG status, different types of liver staging scores and other scales such as symptom distress scale along with anxiety and depression status to get more insight to QOL of patients undergoing TACE.

## Conclusion

Significant improvement in physical and mental HRQOL was observed in patients suffering from HCC undergoing TACE.

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