

The Efficacy and Safety of Concurrent Chemoradiotherapy in Patients with Unresectable Hepatocellular Carcinoma

Hyun Woong Lee, Sunghwan Yoo, Sukhyeon Jeong, Jung Il Lee, Kwan Sik Lee, Eun Seo Lee, In Jung Kim
Yonsei University College of Medicine, Department of Internal Medicine, Gangnam Severance Hospital

INTRODUCTION

Role of Chemoradiotherapy (CCRT)

- CCRT is usually indicated for intermediate- or advanced-stage HCC patients who are **poor candidates for TACE** because of massive tumors, bilobar disease, or **portal vein thrombosis(PVT)**
- Indication
 1. Advanced HCC patients with PVT
 2. Patients who are **slightly above the criteria** for curative treatments and who **require tumor down-staging**

AIM

- To evaluation the **efficacy and safety of CCRT** for unresectable HCC
- To analyze **prognostic factors** affecting overall survival

METHOD

STUDY DESIGN	• Retrospective study
PATIENTS	• 74 Patients with unresectable HCC, with CTP scores of 5-8, underwent CCRT (January 2009-October 2018)
Method	• CCRT (5-fluorouracil 500mg/m ² via intraarterial chemoport at Day 1 to 5 and Day 20 to 25, plus radiotherapy 6,250 cGy/25 times at Day 1 to 25) • Statistics method : Cox regression analysis Kaplan-Meier plots for overall survival
OUTCOMES	• Primary outcome : Overall survival (OS), Time to progression (TTP) • Secondary outcome : Major complication study

RESULTS

Table 1. Baseline characteristics (n=74)

Variables	Subgroups	N=74 (%)
Age, years	<65	38 (51.4)
	≥65	36 (48.6)
Sex	Male	60 (81.1)
	Female	14 (18.9)
Etiology	Hepatitis B	48 (64.8)
	Hepatitis C	3 (4.1)
	Alcohol	13 (17.6)
	Unknown	10 (13.5)
Performance status	0	34 (45.9)
	1	35 (47.3)
	2	5 (6.8)
Cirrhosis on imaging	Present	67 (90.5)
	Absent	7 (9.5)
Tumor morphology	Nodular	46 (62.1)
	Diffuse	28 (37.9)
Tumor distribution	Unilobar	55 (74.3)
	Bilobar	19 (25.7)
Portal vein invasion	None	14 (18.9)
	Subsegmental	8 (10.8)
	Segmental	14 (18.9)
	Lobar	15 (20.3)
	Main	9 (12.2)
Bilateral		14 (18.9)
Variables	Subgroups	N=74 (%)
Bile duct invasion	None	66 (89.2)
	Present	8 (10.8)
Index lesion size (cm)	<5	11 (14.9)
	5-10	30 (40.5)
	>10	33 (44.6)
Alpha-fetoprotein	<100	31 (41.9)
	≥100	43 (58.1)
Albumin (mg/dL)	>3.5	83 (85.6)
	2.8-3.5	12 (12.4)
	<2.8	2 (2.1)
Child-Pugh class	A	53 (71.6)
	B	21 (28.4)
	C	0 (0)
	D	0 (0)
BCLC ^a stage	A	0 (0)
	B	10 (13.5)
	C	64 (86.5)
	D	0 (0)

CONCLUSIONS

- **For managing unresectable HCC, CCRT may be a valuable and safe treatment modality**

Table 2. Significant predictors for Survival and HCC progression (Cox regression analysis) (N=74, p value)

Variables	Survival		Variables	Survival	
	Univariate analysis	Multivariate analysis		Univariate analysis	Multivariate analysis
Operation	0.014	0.028	Operation	0.014	0.028
ECOG	0.005	0.043	ECOG	0.005	0.043
Child-Pugh score	0.024	-	Child-Pugh score	0.024	-
Diffuse type (morphology)	0.029	0.037	Diffuse type (morphology)	0.029	0.037
Main portal vein invasion	0.012	-	Main portal vein invasion	0.012	-
Bile duct invasion	0.008	0.058	Bile duct invasion	0.008	0.058
Albumin	0.017	-	Albumin	0.017	-
PT	<0.001	-	PT	<0.001	-
HBV DNA	0.023	-	HBV DNA	0.023	-

Table 3. Major complications during CCRT

Complications	Values (n=39)
Hyperbilirubinemia	12 (30%)
ALT elevation	10 (25.6%)
Ascites	7 (17.9%)
Gastric ulcer	5 (12.8%)
Catheter-related complications	3 (7.6%)
Radiation pneumonitis	2 (5.1%)

REFERENCES

Ik Jae Lee. Concurrent Chemoradiotherapy Shows Long-Term Survival after Conversion from Locally Advanced to Resectable Hepatocellular Carcinoma. *Yonsei Med J* 55(6):1489-1497, 2014

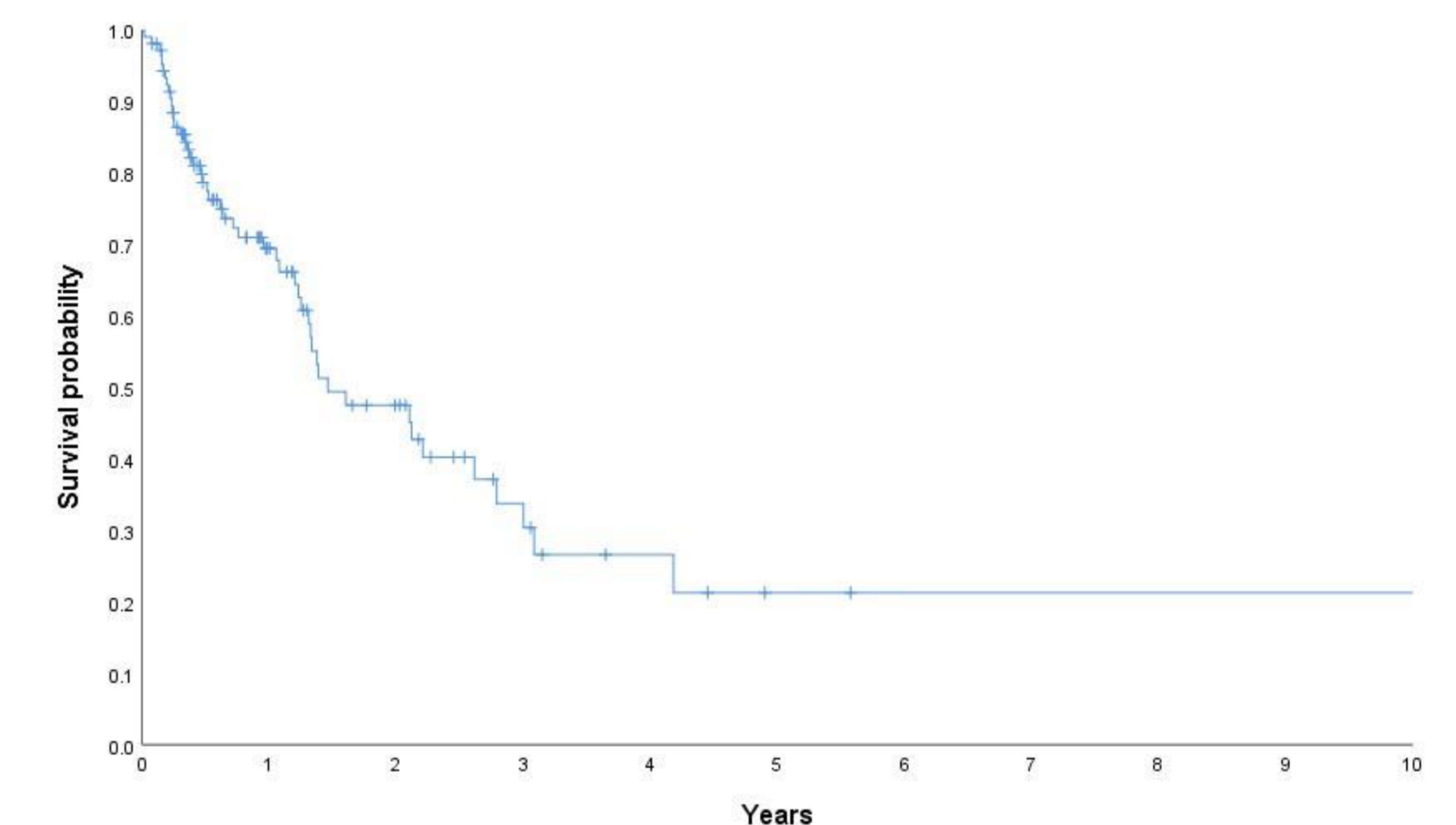
Yu et al. Predictive Index for PVTT in Patients with HCC treated with RTx (PITH). *JKMS* 2011

Jeong Eun Song. Transarterial Radioembolization Versus Concurrent Chemoradiation Therapy for Locally Advanced Hepatocellular Carcinoma: A Propensity Score Matching Analysis. *International Journal of Radiation Oncology*Biophysics*Physics* Volume 99, Issue 2, 1 October 2017, Pages 396-406

Jae Uk Chong. Downstaging with Localized Concurrent Chemoradiotherapy Can Identify Optimal Surgical Candidates in Hepatocellular Carcinoma with Portal Vein Tumor Thrombus. *Annals of Surgical Oncology* volume 25, pages3308-3315(2018)

Figure 1. Kaplan-Meier plots for overall survival

The median overall survival (OS) and time to progression (TTP) were **13 months** and **8 months** in the CCRT group, independently



ACKNOWLEDGEMENTS

I would like to thank my advisor Dr. Hyung Woong Lee, who has been an invaluable friend and mentor. His gift for conceptualization, his enduring encouragement and practical advice have been an inestimable source of support for me during this process.

I would also like to thank Dr. Jung Ill Lee and Dr. Kwan Sik Lee for their advice and feedback. Their varied perspectives have helped me to strengthen my work.

CONTACT INFORMATION

Hyun Woong Lee, M.D, Ph D.
Department of Internal Medicine, Yonsei University College of Medicine,
211, Eonju-ro, Gangnam-gu, Seoul 06273, Republic of Korea.
Tel: +82-2-2019-3315, Fax: +82-2-3463-3882 E-mail: lhwdoc@yuhs.ac