

Optimal subclassification of BCLC stage B Hepatocellular Carcinoma

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Background and Aims :

Hepatocellular carcinoma (HCC) is one of the most common cancer and cause of cancer-related death in Taiwan. To be categorized as BCLC intermediate-stage (BCLC stage B), patients are asymptomatic (performance status score, 0) with multinodular tumors but without vascular invasion or extrahepatic spread. It is important to clarify the optimal sub-classification of BCLC stage B HCC based on the predictive factors for survival. This study aimed to establish an optimal sub-classification of intermediate-stage HCC based on the predictive factors for survival.

Methods:

1. A total of 229 patients with intermediate-stage HCC undergoing treatment were retrospectively included.
2. According to our previous study, we established a Renai sub-classification model:

Renai sub-classification	B1	B2	B3
Child-Pugh score	5-6-7	A	B
up-to-7 criteria	In	Out	Out
Received resection	Yes	No	No
AFP level	Any	≤400 ng/ml	>400 ng/ml

3. Comparison of different sub-classification models, including Bolondi model and Renai model, to predict long term survival of intermediate-stage HCC.

Characteristics	Survival (n=57)	Expired (n=172)	p-value
Bolondi sub-stage			0.045
B1	25(43.86)	59(34.3)	
B2	31(54.39)	87(50.58)	
B3	0(0)	9(5.23)	
B4	1(1.7)	17(9.88)	
Renai sub-stage			0.001
B1	25(43.86)	59(34.3)	
B2	26(45.61)	51(29.65)	
B3	6(10.53)	62(36.05)	
Age (yrs)			
Mean ± SD	63.33±11.17	61.71±11.69	0.359
≤60	24(42.11)	75(43.6)	0.843
>60	33(57.89)	97(56.4)	
Gender			0.075
Male	50(87.72)	132(76.74)	
Female	7(12.28)	40(23.26)	
Diabetes mellitus			0.739
No	44(77.19)	129(75)	
Yes	13(22.81)	43(25)	
Positive for HBV	30(52.63)	97(57.06)	0.56
Positive for HCV	23(40.35)	63(37.72)	0.725
Child-Pugh class			0.007
A	55(96.49)	141(81.98)	
B + C	2(3.51)	31(18.02)	
Mean Tumor size	5.43±2.31	6.15±3.44	0.077
Tumor size > 3	49(85.96)	142(84.52)	0.793
Method			0.002
Operation	21(36.84)	30(17.44)	
Others	36(63.16)	142(82.56)	
Biochemistries			
Albumin (g/dL)	3.89±0.43	3.56±0.51	<0.0001
Bilirubin (mg/dL)	1.03±0.78	1.3±1.11	0.046
AST (U/L)	65.37±40.48	104.9±216.1	0.024
ALT (U/L)	69.04±51.98	85.56±116.7	0.145
PT (second)	12.23±1.75	12.94±1.58	0.005
AFP < 400 (ng/ml)	48(84.21)	97(56.4)	0.0002

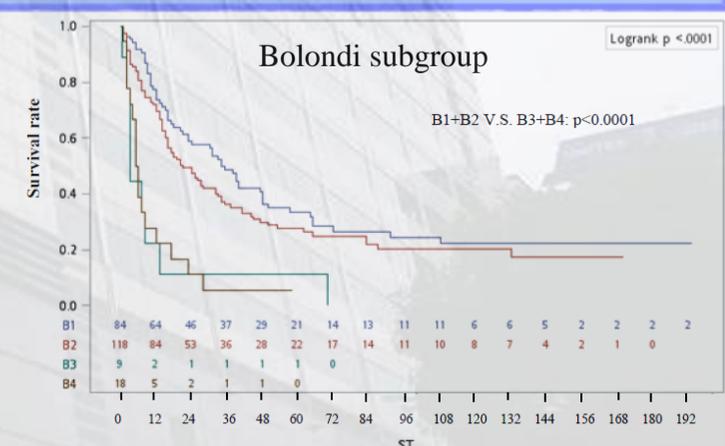
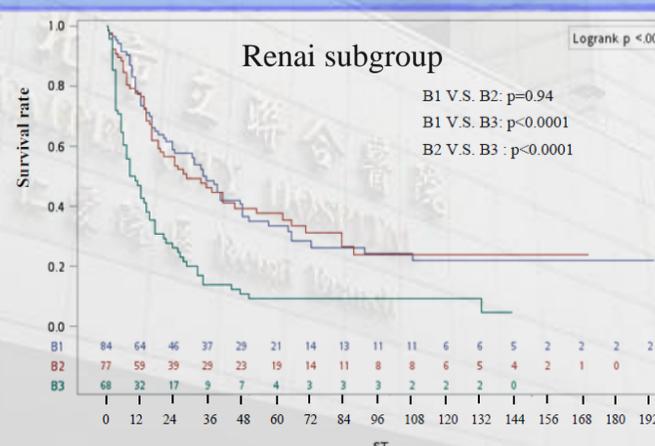
Results :

Table 1. Demographic and clinical characteristics of 229 patients with intermediate stage hepatocellular carcinoma (BCLC stage B) in survival status.

Based on the Renai sub-classification model, the 1-year to 5-year cumulative survival rates were 73.6%, 57.5%, 48.6%, 36.4%, 33.5% for B1 substage, 76.5%, 53.7%, 46.2%, 39.4%, 37.7% for B2 substage, 42.6%, 26.3%, 13.9%, 10.8%, 9.3% for B3 substage. Patients with Renai sub-classification B1/B2 substage HCC had significantly higher 5 years survival rates compared with those of B3 substage HCC(Fig.1). Based on the Bolondi sub-classification model, the 1-year to 5-year cumulative survival rates were 73.6%, 57.5%, 48.6%, 36.4%, 33.5% for B1 substage, 69.4%, 47.6%, 36.1%, 29.8%, 27.6% for B2 substage, 22.2%, 11.1% for B3 substage, 22.2%, 11.1%, 5.6% for B4 substage. Patients with Bolondi sub-classification B1/B2 substage HCC had significantly higher 5 years survival rates compared with those of B3/B4 substage HCC(Fig.2). The concordance index revealed Renai sub-classification model has better predictive value than Bolondi sub-classification model (AUROC 0.6408 vs. 0.5849) in predicting long term survival of BCLC stage B HCC.

Conclusions :

Our study indicated that Renai sub-classification model is better than Bolondi sub-classification model in predicting long term survival of intermediate-stage HCC.



Renai subgroup — B1 — B2 — B3 Fig.1

Bolondi subgroup — B1 — B2 — B3 — B4 Fig.2