**Supplementary Table 1.** Different criteria of tumor burden

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tumor burden | | |
|  | Low | Intermediate | High |
| Up-to-7 criteria | Number of tumors + the largest tumor (cm) ≤7 |  | Number of tumors + the largest tumor (cm) >7 |
| Up-to-11 criteria | Number of tumors + the largest tumor (cm) ≤11 |  | Number of tumors + the largest tumor (cm) >11 |
| 5-7 criteria | 2 or 3 lesions (any size)  4-7 lesion <5 cm |  | 4-7 lesions ≥5 cm  >7 lesions (any size) |
| Seven lesions criteria | ≤7 lesions (any size) |  | >7 lesions (any size) |
| 7-11 criteria | Number of tumors + the largest tumor (cm) ≤7 | 7< Number of tumors + the largest tumor (cm)≤11 | Number of tumors + the largest tumor (cm) >11 |

**Supplementary Table 2**. Univariate and multivariate analyses of factors associated with objective radiologic response after TACE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Univariate | | Multivariate | |
|  |  | OR (95% CI) | P | OR (95 % CI) | P |
| Age | >60/≤60 | 1.544 (1.042-2.287) | 0.030 |  | NS |
| Sex | Male/Female | 1.033 (0.695-1.536) | 0.872 |  |  |
| Alcohol | Yes/No | 0.909 (0.553-1.493) | 0.705 |  |  |
| HBsAg | Positive/Negative | 0.726 (0.518-1.018) | 0.064 |  | NS |
| Anti-HCV | Positive/Negative | 1.258 (0.884-1.791) | 0.201 |  |  |
| AFP (ng/mL) | >200/≤200 | 0.688 (0.482-0.982) | 0.039 |  | NS |
| ALT (U/L) | >40/≤40 | 0.774 (0.554-1.081) | 0.133 |  |  |
| AST (U/L) | >40/≤40 | 0.596 (0.420-0.845) | 0.004 |  | NS |
| Creatinine (mg/dL) | >2/≤2 | 0.460 (0.180-1.171) | 0.103 |  |  |
| Platelet (109/L) | >150/≤150 | 0.706 (0.505-0.987) | 0.042 |  | NS |
| ECOG status | ≥1/0 | 1.029 (0.433-2.448) | 0.948 |  |  |
| ALBI grade | 2-3/1 | 0.667 (0.468-0.949) | 0.025 | 0.613 (0.424-0.886) | 0.009 |
| Use of CBCT | Yes/No | 1.115 (0.786-1.583) | 0.542 |  |  |
| 5-7 criteria | in/out | 1.841 (1.242-2.729) | 0.002 |  | NS |
| Seven lesions criteria | in/out | 1.674 (1.095-2.558) | 0.017 |  | NS |
| 7-11 criteria | high | 1 |  | 1 |  |
|  | intermediate | 2.987 (1.953-4.567) | <0.001 | 3.108 (2.024-4.775) | <0.001 |
|  | low | 3.182 (2.048-4.944) | <0.001 | 3.290 (2.109-5.133) | <0.001 |

Abbreviations: CBCT, cone beam computed tomography; OR, odds ratio; CI, confidence interval; NS, not significant.

**Supplementary Table 3**. Univariate and multivariate analyses of factors associated with progressive disease after TACE

Abbreviations: CBCT, cone beam computed tomography; OR, odds ratio; CI, confidence interval; NS, not significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Univariate | | Multivariate | |
|  |  | OR (95% CI) | P | OR (95 % CI) | P |
| Age | >60/≤60 | 0.823 (0.554-1.223) | 0.335 |  | NS |
| Sex | Male/Female | 0.743 (0.494-1.117) | 0.153 |  |  |
| Alcohol | Yes/No | 1.018 (0.606-1.712) | 0.945 |  | NS |
| HBsAg | Positive/Negative | 1.050 (0.737-1.497) | 0.787 |  | NS |
| Anti-HCV | Positive/Negative | 0.953 (0.655-1.387) | 0.803 |  |  |
| AFP (ng/mL) | >200/≤200 | 0.712 (0.495-1.024) | 0.067 |  | NS |
| ALT (U/L) | >40/≤40 | 1.162 (0.814-1.658) | 0.409 |  | NS |
| AST (U/L) | >40/≤40 | 1.398 (0.954-2.050) | 0.086 |  | NS |
| Creatinine (mg/dL) | >2/≤2 | 1.022 (0.432-2.417) | 0.961 |  |  |
| Platelet (109/L) | >150/≤150 | 1.364 (0.960-1.937) | 0.083 |  | NS |
| ECOG status | ≥1/0 | 0.822 (0.316-2.136) | 0.687 |  |  |
| ALBI grade | 2-3/1 | 1.280 (0.871-1.879) | 0.208 |  |  |
| Use of CBCT | Yes/No | 0.976 (0.673-1.415) | 0.896 |  |  |
| 5-7 criteria | in/out | 0.610 (0.416-0.897) | 0.012 |  | NS |
| Seven lesions criteria | in/out | 0.600 (0.398-0.906) | 0.015 |  | NS |
| 7-11 criteria | high | 1 |  | 1 |  |
|  | intermediate | 0.525 (0.346-0.797) | 0.002 | 0.525 (0.346-0.797) | 0.002 |
|  | low | 0.535 (0.346-0.829) | 0.005 | 0.535 (0.346-0.829) | 0.005 |

**Supplementary Table 4.** Univariate and multivariate analyses of factors associated with recurrence-free survival in 67 patients with complete response after TACE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Univariate | | Multivariate | |
|  |  | HR (95% CI) | P | HR (95% CI) | P |
| Age | >60/≤60 | 1.845 (0.774-4.395) | 0.167 |  |  |
| Sex | Male/Female | 0.901 (0.487-1.670) | 0.741 |  |  |
| Alcohol | Yes/No | 0.945 (0.338-2.640) | 0.914 |  |  |
| HBsAg | Positive/Negative | 0.902 (0.503-1.618) | 0.729 |  |  |
| Anti-HCV | Positive/Negative | 0.636 (0.353-1.144) | 0.131 |  |  |
| AFP (ng/mL) | >200/≤200 | 0.827 (0.388-1.760) | 0.622 |  |  |
| ALT (U/L) | >40/≤40 | 1.192 (0.690-2.059) | 0.528 |  |  |
| AST (U/L) | >40/≤40 | 1.208 (0.701-2.081) | 0.496 |  |  |
| Creatinine (mg/dL) | >2/≤2 | 4.675 (0.603-36.222) | 0.140 |  |  |
| Platelet (109/L) | >150/≤150 | 1.552 (0.893-2.697) | 0.119 |  |  |
| ECOG status | ≥1/0 | 1.612 (0.496-5.237) | 0.427 |  |  |
| ALBI grade | 2-3/1 | 1.701 (0.954-3.034) | 0.072 | 1.969 (1.088-3.566) | 0.025 |
| Use of CBCT | Yes/No | 0.846 (0.468-1.528) | 0.579 |  |  |
| 5-7 criteria | in/out | 0.367 (0.171-0.788) | 0.010 |  | NS |
| Seven lesions criteria | in/out | 0.420 (0.188-0.940) | 0.035 |  | NS |
| 7-11 criteria | high | 1 |  | 1 |  |
|  | intermediate  low | 0.184 (0.057-0.602)  0.106 (0.032-0.349) | 0.005  <0.001 | 0.168 (0.051-0.547)  0.087 (0.026-0.293) | 0.003  <0.001 |

Abbreviations: CBCT, cone beam computed tomography; CI, confidence interval; HR, hazard ratio; NS, not significant.

**Supplementary Table 5.** Incidence of liver function deterioration and additional treatment after initial TACE by 7-11 criteria

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Tumor burden | | |  |
|  | Low  (n=185) | Intermediate  (n=224) | High  (n=223) | P |
| Migration from Child-Pugh class A to B or C, n (%)\* | 22 (14.9%) | 25 (14.4%) | 44 (24.4%) | 0.021 |
| Transition to curative treatment, n (%) | 35 (18.9%) | 34 (15.2%) | 22 (9.9%) | 0.011 |
| Transition to systemic therapies, n (%) | 39 (21.1%) | 50 (22.3%) | 55 (24.7%) | 0.408 |

\*148, 174 and 180 patients with low, intermediate and high tumor burden, respectively, were in Child-Pugh class A before first TACE.