**Supplementary Table 1. Baseline characteristics of patients.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Kuala Lumpur cohort**  **N=196** | **Wenzhou**  **cohort**  **N=440** | **Wenzhou cohort**  **without LSM**  **N=276** | **Wenzhou cohort**  **with LSM**  **N=164** | ***P* value†** | ***P* value‡** |
| **Demographics** |  |  |  |  |  |  |
| Age, years | 49.8 ± 11.3 | 41.4 ± 11.8 | 42.3 ± 11.8 | 39.8 ± 11.6 | <0.001 | 0.031 |
| Male sex, n (%) | 98 (50.0%) | 328 (74.5%) | 206 (74.6%) | 122 (74.4%) | <0.001 | 0.954 |
| **Metabolic factors** |  |  |  |  |  |  |
| BMI, kg/m2 | 29.8 ± 4.5 | 26.6 ± 3.5 | 26.9 ± 3.7 | 26.2 ± 3.3 | <0.001 | 0.047 |
| Waist circumference, cm | 97.8 ± 10.2 | 91.2 ± 9.2 | 92.0 ± 9.5 | 89.9 ± 8.6 | <0.001 | 0.021 |
| Central obesity, n (%) | 188 (95.9%) | 296 (67.3%) | 193 (69.9%) | 103 (62.8%) | <0.001 | 0.124 |
| Type 2 diabetes, n (%) | 90 (45.9%) | 142 (32.3%) | 92 (33.3%) | 50 (30.5%) | <0.001 | 0.537 |
| Hypertension, n (%) | 113 (57.7%) | 98 (22.3%) | 67 (24.3%) | 31 (18.9%) | <0.001 | 0.190 |
| Metabolic syndrome, n (%) | 174 (88.8%) | 215 (48.9%) | 141 (51.1%) | 74 (45.1%) | <0.001 | 0.226 |
| **Laboratory parameters** |  |  |  |  |  |  |
| ALT, IU/L | 67 (44-104) | 53 (32-94) | 53 (32-94) | 53 (32-94) | <0.001 | 0.820 |
| AST, IU/L | 39 (29-60) | 34 (25-54) | 35 (25-53) | 34 (26-55) | 0.009 | 0.828 |
| γ-GT, IU/L | 77 (41-124) | 53 (32-85) | 53 (32-84) | 53 (34-86) | <0.001 | 0.751 |
| Albumin, g/L | 4.3 ± 0.3 | 4.6 ± 0.4 | 4.6 ± 0.3 | 4.7 ± 0.4 | <0.001 | 0.033 |
| Bilirubin, μmol/L | 12.7 ± 6.8 | 14.4 ± 8.8 | 14.3 ± 7.1 | 14.5 ± 11.1 | 0.017 | 0.775 |
| Fasting glucose, mmol/L | 6.3 ± 2.0 | 5.6 ± 1.5 | 5.7 ± 1.4 | 5.6 ± 1.6 | <0.001 | 0.902 |
| Fasting insulin, mIU/L | 21.0 (15.6-32.5) | 14.7 (9.8-21.5) | 14.3 (9.5-21.3) | 15.0 (10.4-22.0) | <0.001 | 0.565 |
| HbA1c, % | 6.4 ± 1.4 | 6.1 ± 1.4 | 6.1 ± 1.4 | 6.0 ± 1.4 | 0.013 | 0.490 |
| HOMA-IR | 6.1 (3.9-9.4) | 3.4 (2.3-5.2) | 3.4 (2.3-5.1) | 3.6 (2.3-5.3) | <0.001 | 0.568 |
| Prothrombin time, s | 10.5 ± 0.6 | 12.8 ± 0.7 | 12.8 ± 0.6 | 12.8 ± 0.7 | <0.001 | 0.494 |
| Platelet count, ×109/L | 275 ± 67 | 246 ± 61 | 245 ± 63 | 248 ± 58 | <0.001 | 0.649 |
| TG, mmol/L | 1.7 ± 0.7 | 2.3 ± 1.4 | 2.2 ± 1.3 | 2.4 ± 1.6 | <0.001 | 0.105 |
| TC, mmol/L | 5.0 ± 1.1 | 5.1 ± 1.2 | 5.2 ± 1.2 | 5.0 ± 1.1 | 0.248 | 0.205 |
| HDL-C, mmol/L | 1.2 ± 0.3 | 1.0 ± 0.2 | 1.0 ± 0.3 | 1.0 ± 0.2 | <0.001 | 0.005 |
| LDL-C, mmol/L | 2.0 ± 10.3 | 3.1 ± 0.9 | 3.1 ± 0.9 | 3.0 ± 0.9 | 0.032 | 0.558 |
| CK18-M30, IU/L | 348 (247-579) | 144 (72-331) | 138 (68-305) | 165 (77-353) | <0.001 | 0.084 |
| **Scoring systems** |  |  |  |  |  |  |
| Nomogram | 151 ± 32 | 125 ± 42 | 126 ± 42 | 123 ± 42 | <0.001 | 0.469 |
| MACK-3 | 0.41 (0.17-0.71) | 0.14 (0.05-0.45) | 0.13 (0.04-0.41) | 0.15 (0.05-0.50) | <0.001 | 0.349 |
| NAFLD fibrosis score | -2.18 ± 1.37 | -2.73 ± 1.43 | -2.63 ± 1.42 | -2.90 ± 1.42 | <0.001 | 0.058 |
| Fibrosis-4 index | 0.90 (0.60-1.29) | 0.83 (0.63-1.19) | 0.84 (0.64-1.22) | 0.81 (0.62-1.16) | 0.228 | 0.288 |
| **Liver histology** |  |  |  |  |  |  |
| Fibrosis stage, n (%) |  |  |  |  | <0.001 | 0.119 |
| F0 | 68 (34.7%) | 190 (43.2%) | 127 (46.0%) | 63 (38.4%) |  |  |
| F1 | 82 (41.8%) | 172 (39.1%) | 102 (37.0%) | 70 (42.7%) |  |  |
| F2 | 15 (7.7%) | 60 (13.6%) | 38 (13.8%) | 22 (13.4%) |  |  |
| F3 | 25 (12.8%) | 15 (3.4%) | 6 (2.1%) | 9 (5.5%) |  |  |
| F4 | 6 (3.1%) | 3 (0.7%) | 3 (1.1%) | 0 (0.0%) |  |  |
| Steatosis grade, n (%) |  |  |  |  | <0.001 | 0.473 |
| S1 | 49 (25.0%) | 202 (45.9%) | 133 (48.2%) | 69 (42.1%) |  |  |
| S2 | 102 (52.0%) | 155 (35.2%) | 91 (33.0%) | 64 (39.0%) |  |  |
| S3 | 45 (23.0%) | 83 (18.8%) | 52 (18.8%) | 31 (18.9%) |  |  |
| Ballooning grade, n (%) |  |  |  |  | 0.004 | 0.353 |
| B0 | 61 (31.1%) | 87 (19.8%) | 49 (17.8%) | 38 (23.2%) |  |  |
| B1 | 89 (45.4%) | 261 (59.3%) | 164 (59.4%) | 97 (59.1%) |  |  |
| B2 | 46 (23.5%) | 92 (20.9%) | 63 (22.8%) | 29 (17.7%) |  |  |
| Lobular inflammation grade, n (%) |  |  |  |  | <0.001 | 0.579 |
| L0 | 3 (1.5%) | 58 (13.2%) | 35 (12.7%) | 23 (14.0%) |  |  |
| L1 | 107 (54.6%) | 274 (62.3%) | 177 (64.1%) | 97 (59.2%) |  |  |
| L2 | 83 (42.3%) | 101 (23.0%) | 61 (22.1%) | 40 (24.4%) |  |  |
| L3 | 3 (1.5%) | 7 (1.6%) | 3 (1.1%) | 4 (2.4%) |  |  |
| NAS score | 4 (3-5) | 4 (3-5) | 4 (3-5) | 4 (3-5) | <0.001 | 0.669 |
| **NASH** | 134 (68.4%) | 311 (70.7%) | 203 (73.6%) | 108 (65.9%) | 0.557 | 0.086 |
| **Active NASH** | 120 (61.2%) | 236 (53.6%) | 150 (54.3%) | 86 (52.4%) | 0.075 | 0.698 |
| **Fibrotic NASH** | 42 (21.4%) | 61 (13.9%) | 37 (13.4%) | 24 (14.6%) | 0.017 | 0.718 |

**†**Comparison of baseline characteristics in the Kuala Lumpur cohort vs. the Wenzhou cohort, respectively.

**‡**Comparison of baseline characteristics in patients with LSM vs. patients without LSM, in the Wenzhou cohort.

**Supplementary Table 2. Univariable and multivariable logistic regression analyses in the training set.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Univariate analysis | | | Multivariate analysis | | |
| Variables | Odds ratio | 95%CI | *P* value | Odds ratio | 95%CI | *P* value |
| Age | 1.01 | 0.99-1.03 | 0.325 | 1.01 | 0.98-1.04 | 0.461 |
| Sex |  |  |  |  |  |  |
| Male | Ref | Ref | Ref | Ref | Ref | Ref |
| Female | 1.51 | 0.90-2.52 | 0.116 | 1.17 | 0.60-2.27 | 0.641 |
| MetS† |  |  |  |  |  |  |
| No obesity | Ref | Ref | Ref | Ref | Ref | Ref |
| Obesity but not meet the criteria of MetS | 9.33 | 1.20-72.34 | 0.033 | 7.42 | 0.92-60.23 | 0.060 |
| **Obesity and MetS** | **22.03** | **3.01-161.48** | **0.002** | **14.01** | **1.82-107.86** | **0.011** |
| ALT | 1.01 | 1.00-1.01 | 0.001 | 1.00 | 0.99- 1.01 | 0.691 |
| γ-GT | 1.00 | 1.00-1.01 | 0.119 | 1.00 | 1.00-1.00 | 0.894 |
| Albumin | 0.99 | 0.93-1.06 | 0.766 | 1.03 | 0.94-1.13 | 0.482 |
| Bilirubin | 0.98 | 0.94-1.02 | 0.364 | 0.96 | 0.91-1.01 | 0.072 |
| **Platelet count, ×109/L** | **1.00** | **0.99-1.00** | **0.123** | **0.99** | **0.99-1.00** | **0.018** |
| Prothrombin time, s | 0.91 | 0.75-1.11 | 0.361 | 1.11 | 0.87-1.41 | 0.402 |
| **MACK-3**§ | **18.73** | **7.97- 44.04** | **<0.001** | **24.45** | **6.56-91.16** | **<0.001** |

†MetS (metabolic syndrome): combination of waist circumference, BMI, dyslipidaemia, hyperglycaemia or hypertension.

‡Obesity: including obesity (BMI ≥25 kg/m2) and central obesity (waist circumference ≥ 90 cm for male; ≥ 80 cm for female).

§MACK-3: combination of HOMA-IR, serum AST and CK18-M30 levels.

**Supplementary Table 3. Subgroup analyses. Area under receiver operating characteristic curves (AUROC) with 95% confidence intervals of the nomogram and MACK-3, stratified either by presence of type 2 diabetes mellitus or by type of hypoglycemic treatment.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **AUROC (95% CI)** | | ***P* value†** |
|  | ***Patients without diabetes*** | ***Patients with diabetes*** |  |
| Nomogram | 0.789 (0.719-0.859) | 0.767 (0.698-0.835) | 0.989 |
| MACK-3 | 0.751 (0.674-0.828) | 0.729 (0.655-0.804) | 0.686 |
| *P* value‡ | 0.026 | 0.049 |  |
|  | ***Patients without insulin or insulin sensitizers*** | ***Patients with insulin or insulin sensitizers*** |  |
| Nomogram | 0.802 (0.754-0.850) | 0.759 (0.636-0.883) | 0.515 |
| MACK-3 | 0.760 (0.705-0.815) | 0.727 (0.580-0.874) | 0.761 |
| *P* value‡ | 0.002 | 0.491 |  |

†Comparing patients with diabetes vs. patients without diabetes or patients with diabetes on insulin or insulin sensitizers vs. no insulin or insulin sensitizers.

‡Comparing the nomogram vs. MACK-3