**Supplementary Table 6. Comparison of the baseline characteristics of first infections between positive and negative cultures**

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| --- | --- | --- | --- |
| **Characteristics** | **positive (n=620)** | **negative (n=568)** | ***P* *value*** |
| **Age (y)** | 63.0 (52.0-72.0) | 61.0 (53.0-71.0) | 0.599 |
| **Sex, n (%)** | | | 0.004 |
| Male | 372 (60.0) | 386 (68.0) |  |
| Female | 248 (40.0) | 182 (32.0) |  |
| **Diabetes mellitus, n (%)** | 181 (29.2) | 125 (22.0) | 0.005 |
| **Hypertension, n (%)** | 150 (24.2) | 163 (28.7) | 0.078 |
| **Etiology, n (%)** | | | 0.072 |
| HBV | 268 (43.2) | 245 (43.1) | > 0.05 |
| Alcohol | 99 (16.0) | 114 (20.1) | > 0.05 |
| MASLD | 43 (6.9) | 27 (4.8) | > 0.05 |
| Cryptogenic | 69 (11.1) | 45 (7.9) | > 0.05 |
| Others | 141 (22.7) | 137 (24.1) | > 0.05 |
| **Recent\* infection, n (%)** | 259 (41.8) | 195 (34.3) | 0.008 |
| **History of TIPS, n (%)** | 22 (3.5) | 21 (3.7) | 0.891 |
| **Recent\* medications, n (%)** | | | |
| Rifaximin | 12 (1.9) | 5 (0.9) | 0.126 |
| β-blockers | 28 (4.5) | 26 (4.6) | 0.960 |
| PPIs | 120 (19.4) | 107 (18.8) | 0.821 |
| Quinolone prophylaxis | 37 (6.0) | 21 (3.7) | 0.070 |
| **Recent\* antibiotic use, n (%)** | 163 (26.3) | 117 (20.6) | 0.021 |
| **Invasive procedures, n (%)** | 116 (18.7) | 83 (14.6) | 0.059 |
| **Recent ICU admission, n (%)** | 15 (2.4) | 9 (1.6) | 0.307 |
| **Length of hospital stay (day)** | 13.0 (8.0-19.0) | 11.0 (8.0-16.0) | 0.003 |
| **MAP (mmHg)** | 80.2 (72.0-90.3) | 82.2 (73.3-92.3) | 0.038 |
| **HR (bpm)** | 95.0 (84.0-109.0) | 92.0 (82.0-105.0) | 0.002 |
| **Body temperature (°C )** | 37.8 (37.2-38.8) | 37.9 (37.2-38.6) | 0.205 |
| **RR (breath/min)** | 20.0 (19.0-22.0) | 20.0 (19.0-21.0) | 0.005 |
| **SpO2** | 96.0 (95.0-98.0) | 97.0 (95.0-98.0) | 0.440 |
| **Leukocytes (109/L)** | 6.4 (3.8-11.0) | 6.2 (3.5-10.3) | 0.091 |
| **NLR** | 6.1 (2.1-13.9) | 4.4 (1.5-9.5) | < 0.001 |
| **C-reactive protein (mg/L)** | 33.9 (10.2-75.9) | 30.6 (12.4-68.4) | 0.928 |
| **Albumin (g/L)** | 28.2 (24.6-32.0) | 28.4 (24.8-32.8) | 0.415 |
| **TB (µmol/L)** | 42.7 (21.8-113.7) | 40.1 (18.4-87.6) | 0.115 |
| **Cr (µmol/L)** | 83.0 (62.5-122.9) | 76.3 (60.0-105.3) | 0.001 |
| **Serum sodium (mmol/L)** | 136.4 (132.0-139.7) | 136.7 (133.0-139.4) | 0.377 |
| **INR** | 1.5 (1.3-1.8) | 1.4 (1.2-1.7) | 0.004 |
| **Ascites, n (%)** | 275 (44.4) | 280 (49.3) | 0.140 |
| **Hepatic encephalopathy, n (%)** | | | 0.041 |
| Grades 1/2 | 61 (9.8) | 60 (10.6) | < 0.05 |
| Grades 3/4 | 78 (12.6) | 46 (8.1) | < 0.05 |
| **Use of vasopressors, n (%)** | 102 (16.5) | 43 (7.6) | < 0.001 |
| **Transfer to ICU, n (%)** | 87 (14.0) | 41 (7.2) | < 0.001 |
| **Mechanical ventilation, n (%)** | 58 (9.4) | 22 (3.9) | < 0.001 |
| **Renal replacement therapy, n (%)** | 27 (4.4) | 10 (1.8) | 0.010 |
| **ACLF, n (%)** | 159 (25.7) | 89 (15.8) | < 0.001 |
| **MELD score** | 15.0 (10.4-20.3) | 13.0 (9.0-18.0) | < 0.001 |
| **MELD-Na score** | 17.0 (11.0-25.0) | 15.0 (9.4-21.0) | < 0.001 |
| **Second infection, n (%)** | 55 (8.9) | 35 (6.2) | 0.078 |
| **In-hospital mortality, n (%)** | 16 (2.6) | 4 (0.7) | 0.012 |
| **28-day mortality, n (%)** | 80 (12.9) | 42 (7.4) | 0.002 |
| **90-day mortality, n (%)** | 127 (20.5) | 71 (12.5) | < 0.001 |

Data were presented as mean ± standard deviation (SD), median (IQR) or number (percent).

Statistical analysis was performed by Chi-square test or Fisher exact test and the Mann—Whitney U test.

Abbreviations: HBV, hepatitis B virus; PBC, primary biliary cirrhosis; AIH, autoimmune hepatitis; TIPS, transjugular intrahepatic portosystemic shunt; PPI, proton pump inhibitor; ICU, intensive care unit; MAP, mean arterial pressure; HR, heart rate; RR, respiratory rate; SpO2, percutaneous arterial oxygen saturation; NLR, Neutrophil to Lymphocyte ratio; TB, total bilirubin; Cr, creatinine; INR, international normalized ratio; ACLF, acute-on-chronic liver failure; MELD, model for end-stage liver disease; MELD-Na, model for end-stage liver disease combined with serum sodium concentration.

Definition of recent: recent infection, the history of infections; recent medications, in the previous month; recent antibiotic use, in the previous 3 months; Recent ICU admission, in the previous week.