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|  | **Supplementary Table 1:** Characteristics of patients with eosinophilic and eosinopenic AECOPD. |
| **Variables**  | **Eosinophilia (*n*=208）** |  **Eosinopenia (*n*=388)** | **Statistics** |  ***P* values**  |
| **Age (years)** | 76.57±8.16 |  76.20±8.42 | -0.517\* | 0.609 |
| **Sex**  |  |  | 0.107† | 0.600 |
|  Male  | 173 (83.2) | 316 (81.4) |  |  |
| Female  | 35 (16.8) |  72 (18.6) |  |  |
| **Smokers**  | 181 (87.0) | 305 (78.6) | 5.819† | 0.012 |
| **Smoking index** (pack•year) | 60 (60, 100) | 60 (30, 100) | -1.108‡ | 0.268 |
| **Clinical symptoms** |  |  |  |  |
| Purulent sputum | 71 (34.1) |  145 (37.4) | 0.482† | 0.433 |
| Wheezing | 60 (28.8) |  129 (33.2) | 1.017† | 0.271 |
| Fever  | 68 (32.7) |  138 (35.6) | 0.376† | 0.482 |
| Cough | 171 (82.2) | 345 (88.9) | 4.679† | 0.022 |
| **Comorbidities** |  |  |  |  |
| Diabetes | 32 (15.4) | 102 (26.3) | 8.623† | 0.002 |
| CAD | 42 (20.2) | 85 (21.9) | 0.146† | 0.626 |
| Hypertension | 89 (42.8) | 212 (54.6) | 7.141† | 0.006 |
| Cancer | 50 (24.0) | 69 (17.8) | 0.001† | 0.085 |
| **Lung function (%)** |  |  |  |  |
| FEV1 (% pred) | 60.7±28.2 | 49.9±24.4 | -2.664\* | 0.008 |
| FEV1/FVC | 61.8±13.6 | 56.9±16.0 | -1.885\* | 0.061 |
| FVC (% pred) | 65.2±26.4 | 66.6±22.4 | 0.335\* | 0.738 |
| FEF25% (% pred) | 29.1 (15.3, 67.1) | 28.0 (21.4, 74.3) | -0.446‡ | 0.656 |
| FEF50% (% pred) | 21.5 (9.7, 59.8) | 21.5 (12.6, 53.0) | -0.035‡ | 0.972 |
| FEF75% (% pred) | 22.4 (12.1, 74.8) | 22.0 (13.4, 74.5) | -0.037‡ | 0.971 |
| RV/TLC | 135.5±39.5 | 139.5±45.7 | 0.532\* | 0.615 |
| TLC (% pred)  | 89.1 (80.6, 103.3) | 95.4 (86.0, 114.9) | -1.262‡ | 0.207 |
| DLCO (% pred) | 34 (32, 43) | 32 (31, 37) | -1.159‡ | 0.246 |
| **Infection indexes** |  |  |  |  |
| CRP ≥20 mg/L | 51 (24.5) | 164 (42.3) | 17.736† | 0.004 |
| Germiculture positive  | 54 (26.0) | 90 (23.2) | 0.424† | 0.452 |
| Mixed bacterial infection | 12 (5.8) | 30 (7.7) | 0.525† | 0.372 |
| WBC (×109/L) | 7.07±2.43 | 8.55±3.49 | 5.447\* | <0.001 |
| NEUT (×109 /L) | 64.98±13.99 | 77.17±14.02 | 10.127\* | <0.001 |
| PCT (μg/L) | 0.07 (0.05, 0.22) | 0.13 (0.05, 0.27) | -2.558‡ | 0.010 |
| CRP (mg/L) | 14.95 (6.74, 23.76) | 25.70 (9.11, 64.14) | -2.737‡ | 0.006 |
| D-dimer (μg/L) | 0.27 (0.17, 0.57) | 0.33 (0.15, 0.56) | -0.031‡ | 0.975 |
| **Pathogens** |  |  |  |  |
| **Gram-negative bacteria** | 37 (17.8) | 98 (25.3) | 4.312† | 0.038 |
| *A. Baumannii* | 10 (4.8) | 25 (6.4) | 0.655† | 0.418 |
| *P. Aeruginosa* | 9 (4.3) | 9 (2.3) | 1.863† | 0.210 |
| *K. Pneumoniae* | 3 (1.4) | 4 (1.0) | 0.197† | 0.466 |
| *E.* [*coli*](file:///C%3A/Program%2520Files/WindowsApps/NeteaseYoudao.18692F27B7C6F_0.0.3.0_x86__7x355j7kq8bfj/vfs/users/containeradministrator/appdata/local/youdao/dict/application/8.3.1.0/resultui/html/index.html#/javascript:;) | 2 (1.0) | 6 (1.5) | 0.350† | 0.429 |
| Unclassified negative bacillus | 13 (6.3) | 54 (13.9) | 7.229† | 0.005 |
| **Gram-positive bacteria** | 15 (7.2) | 71 (18.3) | 12.589† | <0.001 |
| *Coagulase Negative Staphylococcus* | 11 (5.3) | 46 (11.9) | 6.014† | 0.006 |
| *S. Aureus* | 4 (1.9) | 15 (3.9) | 1.086† | 0.148 |
| *Enterococcus* | 0 (0) | 10 (2.6) | - | 0.013 |

Data are presented as mean ± standard deviation, median (Q1, Q3), or *n* (%). \**t* values; †*χ*2 values; ‡*U* values. *A. Baumannii*: *Acinetobacter Baumannii*; AECOPD: Acute exacerbation of chronic obstructive pulmonary disease; CAD: Cardiac artery disease; CRP: C-reactive protein; DLCO: Diffusing capacity of the lung for carbon monoxide; *E.*[*coli*](file:///C%3A/Program%2520Files/WindowsApps/NeteaseYoudao.18692F27B7C6F_0.0.3.0_x86__7x355j7kq8bfj/vfs/users/containeradministrator/appdata/local/youdao/dict/application/8.3.1.0/resultui/html/index.html#/javascript:;): *Escherichia coli*; FEF: Forced expiratory flow; FEV1: Forced expiratory volume in one second; FVC: Forced vital capacity; *K. Pneumoniae*: *Klebsiella Pneumoniae*; NEUT: Neutrophil; *P. Aeruginosa*: *Pseudomonas Aeruginosa*; PCT: Procalcitonin; % pred: Percentage of predicted value;RV: Residual volume; *S. Aureus: Staphylococcus Aureus;* TLC: Total lung capacity; WBC: White blood cell.