**Comparison of circulating immune cells profiles and kinetics between COVID-19 and bacterial sepsis**

**Supplementary Material**

# **Flow-Chart.**

****

# **Supplementary Table 1. Baseline characteristics of the whole cohort.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| variable | Severe COVID-19(n=94) | Non-severe COVID-19(n=153) | Bacterial sepsis(n=108) | p |
| Age, median [IQR] | 60 [52 - 68] | 56.3 [40 - 73] | 70.57 [57 - 85] | <0.01 |
| Male sex, n (%) |  75 (79.8)  |  89 (58.2)  |  69 (63.9)  | <0.01 |

p<0.05 considered statistically significant

# **Supplementary Table 2. Baseline characteristics and outcome of severe Covid-19 patients, comparison between men and women**

|  |  |  |  |
| --- | --- | --- | --- |
| variable | Femalen = 19 | Malen = 75 | p value |
| Age, median [IQR] |  60.27 [58.86, 70.20] |  60.18 [50.77, 67.37] | 0.27 |
| Hypertension, n (%) |  12 (63.2)  |  35 (46.7)  | 0.30 |
| Diabetes melitus, n (%) |  11 (57.9)  |  21 (28.0)  | 0.03 |
| Tobacco use, n (%) |  0 (0)  |  9 (12.0)  | 0.17 |
| Chronic cardiac failure, n (%) |  1 (5.3)  |  9 (12.0)  | 0.66 |
| Chronic kidney failure, n (%) |  2 (10.5)  |  7 (9.3)  | 1 |
| Obstructive pulmonary disease, n (%) |  6 (31.6)  |  9 (12.0)  | 0.08 |
| Immunodepression, n (%) |  2 (10.5)  |  4 (5.3)  | 0.76 |
| Time from onset of symptoms, median [IQR] |  7.00 [5.00, 10.00] |  6.50 [4.00, 9.75] | 0.71 |
| SAPS 2 on admission, median [IQR] |  36.00 [25.00, 52.00] |  36.00 [27.00, 46.50] | 0.93 |
| SOFA on admission, median [IQR] |  7.00 [3.00, 11.50] |  7.00 [3.00, 9.50] | 0.58 |
| Charlson score, median [IQR] |  3.00 [2.00, 4.00] |  2.00 [1.00, 4.00] | 0.06 |
| Mechanical ventilation on day 1, n (%) |  13 (68.4)  |  60 (80.0)  | 0.44 |
| Vasopressor on day 1, n (%) |  13 (68.4)  |  48 (64.9)  | 0.98 |
| **Immune phenotyping on admission** |
|  mHLADR, median [IQR] | 6969 [4199-9632] | 6008 [3898-8632] | 0.71 |
|  Monocyte count, median [IQR] | 53.0 [35.5-76.0] | 34.0 [22.0-70.0] | 0.28 |
|  Basophil count, median [IQR] | 5.00 [2.50-6.00] | 5.00 [3.00-7.00] | 0.68 |
|  Eosinophils, median [IQR] | 2.00 [2.00-15.00] | 3.00 [2.00-9.50] | 0.85 |
|  Neutrophil count, median [IQR] | 103.0 [37.0-308] | 256.0 [71.50-359.0] | 0.37 |
|  CD3+ T Cells, median [IQR] | 247.0 [89.5-322.5] | 285.0 [208.0-372.0] | 0.04 |
|  CD4+ T Cells, median [IQR] | 171.0 [94.0-290.0] | 214.0 [148.5-288.5] | 0.36 |
|  CD8+ T Cells, median [IQR] | 252.0 [130.5-290.0] | 145.0 [76.5-322.5] | 0.3 |
|  CD19+ B Cells, median [IQR] | 142.0 [45.0-188.5] | 102.0 [48.5-206.5] | 0.72 |
|  NK Cells, median [IQR] | 172.0 [107.5-220.5] | 160.0 [58.5-222.5] | 0.87 |
| **Outcomes** |
|  Secondary infection, n (%) |  11 (57.9)  |  54 (72.0)  | 0.36 |
|  Length of stay, median [IQR] |  13.00 [10.50, 18.00] |  19.00 [8.50, 34.00] | 0.13 |
|  ICU-death, n (%) |  5 (26.3)  |  28 (37.3)  | 0.53 |

IQR: interquartile rage, ICU : Intensive Care Unit, SAPS : Simplified Acute Physiology Score, SOFA : Sequential Organ Failure Assessment. mHLA-DR: monocytic human leukocyte antigen. p<0.05 considered statistically significant

# **Supplementary Table 3. Baseline characteristics, immune phenotype and outcome of severe Covid-19 patients, comparison between co-infected and non co-infected patients**

|  |  |  |  |
| --- | --- | --- | --- |
| variable | No co-infectionn = 79 | Co-infected patientsn = 15 | p value |
| Age, median [IQR] | 60 [53 - 68] | 60 [51-66] | 0.56 |
| Male sex, n (%) | 61 (77.2)  | 14 (93.3)  | 0.28 |
| Hypertension, n (%) | 42 (53.2)  |  5 (33.3)  | 0.26 |
| Diabetes melitus, n (%) | 28 (35.4)  |  4 (26.7)  | 0.72 |
| Tobacco use, n (%) | 6 ( 7.6)  |  3 (20)  | 0.28 |
| Chronic cardiac failure, n (%) | 9 (11.4)  | 1 (6.7)  | 0.93 |
| Chronic kidney disease, n (%) | 7 ( 8.9)  | 2 (13.3)  | 0.95 |
| Obstructive pulmonary disease, n (%) | 13 (16.5)  | 2 (13.3)  | 1 |
| Immunodepression, n (%) | 5 ( 6.3)  | 1 (6.7)  | 1 |
| SAPS 2 on admission, median [IQR] | 36 [26-45] | 47 [28-61] | 0.19 |
| SOFA on admission, median [IQR] | 7 [3-10] | 6 [3-11] | 0.98 |
| Charlson score, median [IQR] | 2 [1-4] | 2 [1-4] | 0.64 |
| Mechanical ventilation on day 1, n (%) | 61 (77.2)  | 12 (80.0)  | 1 |
| Vasopressor on day 1, n (%) | 47 (59.5)  | 14 (93.3)  | 0.04 |
| **Immune phenotyping on admission** |
|  mHLADR, median [IQR] | 6285 [4036-9432] | 3964 [2983-6003] | 0.02 |
|  Monocyte count, median [IQR]  | 0.47 [0.31-0.83] | 0.55 [0.40-0.76] | 0.47 |
|  Basophil count, median [IQR]  | 0.04 [0.02-0.06] | 0.02 [0.02-0.04] | 0.15 |
|  Eosinophils, median [IQR]  | 0.02 [0-0.12] | 0.02 [0.01-0.04] | 0.38 |
|  Neutrophil count, median [IQR]  | 7.84 [6.12-11.20] | 10.6 [7.8-12.9] | 0.27 |
|  CD3+ T Cells, median [IQR] | 520 [353-889] | 602 [363-723] | 0.86 |
|  CD4+ T Cells, median [IQR]  | 371 [239-531] | 359 [245-442] | 0.73 |
|  CD8+ T Cells, median [IQR]  | 160 [83- 278] | 189 [136-247] | 0.44 |
|  CD19+ B Cells, median [IQR | 158 [111-295] |  170 [144-299] | 0.39 |
|  NK Cells, median [IQR] | 81 [54-144] | 116 [63-153] | 0.38 |
| **Outcomes** |  |  |  |
|  Secondary infection, n (%) | 55 (69.6)  | 10 (66.7)  | 1 |
|  Length of stay, median [IQR] | 17 [10-34] | 13 [7-20] | 0.08 |
|  ICU-death, n (%) | 24 (30.4)  | 9 (60)  | 0.06 |

IQR: interquartile rage, ICU : Intensive Care Unit, SAPS : Simplified Acute Physiology Score, SOFA : Sequential Organ Failure Assessment. mHLA-DR: monocytic human leukocyte antigen. p<0.05 considered statistically significant

# **Supplementary Table 4. Baseline characteristics, immune phenotype and outcome of severe Covid-19 patients, comparison between old and young patients (age > or < to 60 years)**

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Age > 60n = 49 | Age < 60n = 45 | p value |
| Age, median [IQR] | 67 [64-72] | 51 [45-58] | <0.01 |
| Male sex, n (%) | 38 (77.6)  | 37 (82.2)  | 0.76 |
| Hypertension, n (%) | 30 (61.2)  | 17 (37.8)  | 0.04 |
| Diabetes melitus, n (%) | 22 (44.9)  | 10 (22.2)  | 0.04 |
| Tobacco use, n (%) | 5 (10.2) | 4 (8.9) | 0.98 |
| Chronic cardiac failure, n (%) | 8 (16.3)  | 2 (4.4)  | 0.13 |
| Chronic kidney disease, n (%) | 7 (14.3)  | 2 (4.4)  | 0.20 |
| Obstructive pulmonary disease, n (%) | 11 (22.4)  | 4 (8.9)  | 0.13 |
| Immunodepression, n (%) | 3 (6.1)  | 3 (6.7)  | 1 |
| Time from onset of symptoms, median [IQR] | 6 [4-10] | 7 [5-10] | 0.24 |
| SAPS 2 on admission, median [IQR] | 42 [31-53] | 29 [22-38] | <0.01 |
| SOFA on admission, median [IQR] | 7 [4-11] | 6 [2-9] | 0.32 |
| Charlson score, median [IQR] | 4 [2-4] | 1 [0-2] | <0.01 |
| Mechanical ventilation on day 1, n (%) | 40 (81.6)  | 33 (73.3)  | 0.47 |
| Vasopressor on day 1, n (%) | 35 (71.4)  | 26 (59.1)  | 0.30 |
| **Immune phenotyping on admission** |  |  |  |
|  mHLADR, median [IQR] | 4310 [3612-6120] | 7789 [6019-11212] | <0.01 |
|  Basophil count, median [IQR] | 0.04 [0.02-0.05] | 0.04 [0.02-0.06] | 0.93 |
|  Eosinophils, median [IQR] | 0.02 [0.00-0.10] | 0.04 [0.01-0.12] | 0.20 |
|  Neutrophil count, median [IQR] | 8.99 [7.26-12.87] | 6.69 [5.25-9.71] | 0.04 |
|  CD3+ T Cells, median [IQR] | 427.00 [278.0-684.0] | 644.0 [457.0-1280.0] | <0.01 |
|  CD4+ T Cells, median [IQR] | 312.00 [211.0-450.0] | 421.0 [303.0-676.0] | 0.01 |
|  CD8+ T Cells, median [IQR] | 122.00 [75.0-199.0] | 208.0 [116.0-342.0] | <0.01 |
|  CD19+ B Cells, median [IQR] | 152.50 [105.5-215.5] | 183.5 [131.0-329.5] | 0.06 |
|  NK Cells, median [IQR] | 67.00 [48.0-119.0] | 115.0 [74.0-197.8] | <0.01 |
| **Outcomes** |  |  |  |
|  Secondary infection, n (%) | 36 (73.5)  | 29 (64.4)  | 0.47 |
|  Length of stay, median [IQR] | 17.00 [7-28] | 17.00 [10-34] | 0.62 |
|  ICU-death, n (%) | 23 (46.9)  | 10 (22.2)  | 0.02 |

IQR: interquartile rage, ICU : Intensive Care Unit, SAPS : Simplified Acute Physiology Score, SOFA : Sequential Organ Failure Assessment. mHLA-DR: monocytic human leukocyte antigen. p<0.05 considered statistically significant

****

**Supplementary Figure 1. Survival analysis of severe Covid-19 patients, comparison with bacterial sepsis.** Kaplan Meyer test, p<0.05 considered statistically significant



Supplementary figure 2. **Kinetic analysis of immune profile according to outcome in patients with septic shock .** Unless stated otherwise, results are expressed in x103 cells/mm3. mHLA-DR expression is given in antibody per cell (AB/C). Data are compared using the Mann-Whitney U-tests; \*p<0.05, \*\*p<0.01, \*\*\*p<0.001, \*\*\*\*p<0.0001.



Supplementary Figure 3. **Kinetic analysis of immune profile according to secondary infection occurence in patients with severe COVID-19.** Unless stated otherwise, results are expressed in x103 cells/mm3. mHLA-DR expression is given in antibody per cell (AB/C). Data are compared using the Mann-Whitney U-tests; \*p<0.05, \*\*p<0.01, \*\*\*p<0.001, \*\*\*\*p<0.0001.



**Supplementary Figure 4**. **Kinetic analysis of immune profile according to secondary infection occurence in patients with septic shock.** Unless stated otherwise, results are expressed in x103 cells/mm3. mHLA-DR expression is given in antibody per cell (AB/C). Data are compared using the Mann-Whitney U-tests; \*p<0.05, \*\*p<0.01, \*\*\*p<0.001, \*\*\*\*p<0.0001.