# Bradycardia and Heart Rate Fluctuation are Associated with a Prolonged Intensive Care Unit Stay in Patients with Severe COVID-19

**Supplement Materials**

**Table S1** Multivariable analysis identifying bradycardia as a predictor of a prolonged ICU length of stay (≥ 7 days) in severe COVID-19 pneumonia subjects.

| Risk Factors | Risk Ratio | 95% CI | p-value |
|---|---|---|---|
| Model 1 | | | |
| Bradycardia | 3.02 | 1.19, 7.66 | 0.020 |
| Model 2 | | | |
| Bradycardia | 2.95 | 1.16, 7.54 | 0.023 |
| age | 1.00 | 0.98, 1.02 | 0.731 |
| Male | 0.86 | 0.46, 1.59 | 0.629 |
| Body mass index | 1.00 | 0.95, 1.05 | 0.980 |
| Model 3 | | | |
| Bradycardia | 2.84 | 1.11, 7.29 | 0.030 |
| age | 1.00 | 0.98, 1.02 | 0.832 |
| Male sex | 0.86 | 0.45, 1.62 | 0.631 |
| BMI | 0.99 | 0.94, 1.05 | 0.889 |
| C-reactive protein | 1.00 | 0.99, 1.00 | 0.875 |
| Model 4 | | | |
| Bradycardia | 2.67 | 1.02, 6.94 | 0.045 |
| age | 0.99 | 0.97, 1.02 | 0.865 |
| Male | 0.86 | 0.45, 1.62 | 0.632 |
| Body mass index | 0.99 | 0.94, 1.05 | 0.877 |
| C-reactive protien | 1.00 | 0.99, 1.00 | 0.937 |
| Mechanical ventilator used | 1.45 | 0.66, 3.16 | 0.351 |

**Note:** Model 1: Univariable analysis; Model 2: Multivariable analysis adjusted for pre-treatment covariates including age, sex, and BMI; Model 3: Multivariable analysis adjusted for pre-treatment covariates and laboratory results including age, sex, BMI, and CRP; Model 4: Multivariable analysis adjusted for pre-treatment covariates, laboratory results, and post-treatment including age, sex, BMI, CRP, and mechanical ventilator used.

**Table S2** Multivariable analysis identifying the high HR fluctuation during admission as a predictor of a prolonged ICU length of stay (≥ 7 days) in severe COVID-19 pneumonia subjects.

| Risk Factors | Adjusted risks ratio | 95% CI | p-value |
|---|---|---|---|
| Model 1 | | | |
| High HR fluctuation during admission | 3.13 | 1.39, 7.03 | 0.006 |
| Model 2 | | | |
| High HR fluctuation during admission | 3.25 | 1.43, 7.39 | 0.005 |
| Age | 1.00 | 0.99, 1.02 | 0.442 |
| Male | 0.93 | 0.50, 1.72 | 0.815 |
| Body mass index | 0.99 | 0.94, 1.05 | 0.940 |
| Model 3 | | | |
| High HR fluctuation during admission | 3.03 | 1.33, 6.89 | 0.008 |
| Age | 1.01 | 0.98, 1.03 | 0.442 |
| Male | 0.95 | 0.49, 1.79 | 0.867 |
| Body mass index | 0.99 | 0.94, 1.05 | 0.930 |
| C-reactive protein | 1.00 | 0.99, 1.00 | 0.760 |
| Model 4 | | | |
| High HR fluctuation during admission | 2.88 | 1.22, 6.78 | 0.016 |
| Age | 1.00 | 0.98, 1.03 | 0.639 |
| Male | 0.93 | 0.49, 1.77 | 0.833 |
| Body mass index | 0.99 | 0.94, 1.05 | 0.919 |
| C-reactive protein | 1.00 | 0.99, 1.00 | 0.801 |
| Mechanical ventilator used | 1.19 | 0.52, 2.74 | 0.668 |

**Note:** Model 1: Univariable analysis; Model 2: Multivariable analysis adjusted for pre-treatment covariates including age, sex, and BMI; Model 3: Multivariable analysis adjusted for pre-treatment covariates and laboratory results including age, sex, BMI, and CRP; Model 4: Multivariable analysis adjusted for pre-treatment covariates, laboratory results, and post-treatment including age, sex, BMI, CRP, and mechanical ventilator used.