**ONLINE SUPPLEMENT**

**Title:** Predictors of intubation in COVID-19 patients treated with out-of-ICU continuous positive airway pressure

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**Table 1s** Clinical characteristics and treatments stratified by centre

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Alessandria *n* = 93 | Borgomanero *n* = 36 | Biella *n* = 67 | Domodossola *n* =42 | Novara *n* = 90 | Vercelli *n* = 39 |
| Demographic and clinical characteristics |  |  |  |  |  |  |
| Age, years | 64(56-72) | 70 (63-75) | 66 (56-70) | 69 (61-78) | 63 (54-69) | 69 (61-72) |
| Males, *n* (%) | 66 (71) | 23 (64) | 54 (81) | 30 (71) | 66 (73) | 29 (74) |
| Charlson Comorbidity index | 1 (0-2) | 0.5 (0-1.5) | 0 (0-1) | 1 (0-2) | 0 (0-1) | 0 (0-1) |
| Aspartate-aminotransferase, U/L | 32 (23-52) | 29 (20-50) | 31 (19-50) | 31 (23-47) | 34 (25-52) | 42 (30-65) |
| Alanine-aminotransferase, U/L | 40 (29-52) | 40 (29-61) | 47 (27-87) | 40.5 (31-70) | 43 (32-53) | 46 (25-66) |
| Lactate dehydrogenase, U/L | 717 (579-938) | 455 (321-512) | 400 (292-475) | 505 (404-629) | 727 (592-926) | 378 (310-578) |
| C-reactive protein, mg/dL | 12 (5-16) | 13 (8-21) | 12 (4-19) | 12 (7-19) | 9 (4-16) | 13 (9-17) |
| Creatinine, mg/dL | 0.91 (0.73-1.12) | 1.00 (0.8-1.28) | 1.07 (0.86-1.25) | 1.1 (0.75-1.28) | 0.86 (0.73-1.09) | 0.80 (0.66-0.95) |
| White blood cell count, x103/µL | 6.65 (4.66-8.50) | 7.75 (5.40-9.40) | 6.53 (5.08-8.53) | 8.14 (6.50-11.23) | 6.29 (4.98-8.89) | 8.15 (5.63-9.90) |
| Lymphocyte count, x103/µL | 0.81 (0.62-1.11) | 0.66 (0.50-0.80) | 0.93 (0.7-1.18) | 0.75 (0.49-1.07) | 0.96 (0.72-1.27) | 0.70 (0.30-0.90) |
| Ferritin, ng/mL | 1003 (511-1539) | NA | 1918.5 (808-3032) | 1067 (748-1418) | 1269 (748-1988) | 1012 (568-1585) |
| D-Dimer, gFEU/L | NA | 592 (487-629) | 893 (567.5-1565.5) | 699 (426-1642) | 1029 (581-2044) | 482.5 (278-677) |
| Treatments, n (%) |  |  |  |  |  |  |
| CPAP device |  |  |  |  |  |  |
| Helmet | 87 (98) | 13 (41) | 66 (100) | 19 (48) | 87 (98) | 9 (25) |
| Mask | 2 (2) | 19 (59) | 0 (0) | 21 (53) | 2 (2) | 27 (75) |
| CPAP duration, days | 5 (3-10) | 3.5 (2-10) | 7 (5-11) | 4.5 (2-10) | 5 (4-8) | 9 (6-16) |
| Pharmacological treatments |  |  |  |  |  |  |
| Hydroxychloroquine | 85 (91) | 27 (75) | 46 (69) | 42 (100) | 86 (96) | 31 (80) |
| Anti-retroviral | 78 (84) | 26 (72) | 26 (39) | NA | 74 (82) | 10 (26) |
| Tocilizumab | 8 (9) | 0 (0) | 2 (3) | NA | 6 (7) | 2 (5) |
| Enoxaparin | 78 (84) | 26 (72) | 29 (43) | 42 (100.00) | 78 (87) | 34 (87) |
| Corticosteroids | 31 (33) | 10 (28) | 28 (42) | NA | 42 (47) | 33 (85) |

Values are reported as median (interquartile range) or number (percentage).

*n* number*, FEU* fibrinogen-equivalent unit, *NA* not available, *CPAP* continuous positive airway pressure.

**Table 2s** Detailed arterial blood gas parameters before and during CPAP in patients stratified for centre

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Alessandria *n* = 93 | Borgomanero *n* = 36 | Biella *n* = 67 | Domodossola *n* =42 | Novara *n* = 90 | Vercelli *n* = 39 |
| ABG before CPAP |  |  |  |  |  |  |
| PaO2, mmHg | 73 (57-94) | 53 (45-60) | 61 (54-70) | 52 (47-56) | 60 (53-70) | 62 (54-86) |
| SpO2, % | 95 (92-98) | 89 (82-91) | 93 (88-95) | 87 (83-90) | 93 (89-95) | 93 (90-97) |
| FiO2, % | 85 (50-100) | 100 (50-100) | 100 (60-100) | 40 (28-60) | 50 (45-50) | 50 (40-60) |
| Lactate, mmol/L | 1.0 (0.8-1.5) | 1.3 (1-1.9) | 1.1 (0.9-1.4) | 2 (1.8-2.4) | 1.1 (0.95-1.45) | 1.3 (1.2-1.8) |
| Respiratory Rate, breaths/min | 22 (20-27) | 16 (16-16) | 32 (28-37) | 20 (18-22) | 27.5 (24-30) | 26 (21-30) |
| PaO2/FiO2, mmHg | 124 (8-166) | 74 (54-106) | 69 (60-94) | 159 (80-167) | 131 (113-160) | 124 (92-185) |
| SpO2/FiO2, % | 112 (97-192) | 95 (90-164) | 95 (93-144) | 240 (142-324) | 190 (180-204) | 178 (148-220) |
| ROX index | 5 (4-8) | 3 (3-3) | 3 (3-5) | 11 (8-13) | 7 (6-9) | 7 (5-9) |
| ABG during CPAP |  |  |  |  |  |  |
| PaO2, mmHg | 126 (86-193) | 60 (54-74) | 92 (71-157) | 56 (47-87) | 90 (71-128) | 76 (57-120) |
| SpO2, % | 98 (97-100) | 91 (83-96) | 98 (95-100) | 88 (82-96) | 96 (95-98) | 95 (93-97) |
| FiO2, % | 55 (50-60) | 60 (45-60) | 60 (50-60) | 60 (60-60) | 50 (50-50) | 50 (40-65) |
| Lactate, mmol/L | 1.0 (0.8-1.5) | 1.3 (1-1.9) | 1.1 (0.8-1.7) | 1.6 (1.15-2.1) | 1.0 (0.8-1.4) | 1.4 (1.2-2.1) |
| Respiratory Rate, breaths/min | 27 (20-33) | NA | 25 (20-30) | 20 (18-22) | 25 (20-26) | 25 (22-25) |
| PaO2/FiO2, mmHg | 215 (152-363) | 108 (90-136) | 176 (118-274) | 87 (79-151) | 181 (140-256) | 136 (94-284) |
| SpO2/FiO2, % | 167 (164-196) | 153 (136-186) | 165 (152-198) | 147 (133-160) | 194 (187-198) | 186 (149-235) |
| ROX index | 6 (5-9) | NA | 7 (5-9) | 7 (6-9) | 8 (7-10) | 8 (6-10) |

Values are reported as median (interquartile range) or number (percentage).

*CPAP* continuous positive airway pressure, *n* number, *ABG* arterial blood gas*, PaO2* partial pressure of oxygen, *SpO2* oxygen saturation, *FiO2* inspired oxygen fraction, *NA* not available.