**Associations of microvascular complications with death in patients with diabetes hospitalized for coronavirus disease-2019 (COVID-19): the CORONADO and** ABCD COVID-19 studies.

**Table 2. Clinical and biological characteristics of ABCD COVID-19 participants according to microvascular status**

|  | **Missing** | **All (n=7367)** | | **no MICRO (n=5567)** | **any MICRO (n=1800)** | ***P* value**  **(no MICRO vs. any MICRO)** |
| --- | --- | --- | --- | --- | --- | --- |
| Sex (male), n (%) | 0 | 4146 (56.28%) | | 3126/5567(56.17%) | 1020/1800(56.67%) | 0.70 |
| Age (years) | 0 | 67.7(14.24) | | 67.97(14.1) | 67.57(13.16) | =0.39 |
| Type of diabetes, n (%) | 0 |  | |  |  |  |
| type 1 |  | 0 | | 0 | 0 |  |
| type 2 |  | 7367 (100%) | | 6322/7367(85.82%) | 1045/7367(14.19%) | **<0.01** |
| Other |  |  | |  |  |  |
| BMI (kg/m2) | 2405 | 30.3(11.4) | | 29.5(7.4) | 29.0(6.9) | 0.07 |
| diabetes duration (years) | NA | NA | | NA | NA |  |
| HbA1c (%) | 2136 | 8.03(2.07) | | 7.4(4.5) | 7.7(4.5) | **<0.01** |
| HbA1c (mmol) | NA | NA | | NA | NA |  |
| Hypertension, n (%) | 0 | 6380(86.60%) | | 4461(80.13%) | 1719(95.5%) | **<0.001** |
| Tabacco Abuse, n(%) | 0 |  | |  |  | **<0.001** |
| never |  | 5954(80.82%) | | 4674(83.96%) | 646(61.81%) |  |
| former or current |  | 1413 (19.18%) | | 892(16.04%) | 399(38.18%) |  |
| Time between symptom onset and hospital admission (days) | NA | NA | | NA | NA |  |
| Dyspnea, n (%) | NA | NA | | NA | NA |  |
| Positive SARS-CoV-2 PCR, n (%) | 0 | 100% | | 5567/7367(75.57%) | 1800/7367(10.86%) | 0 |
| Admission plasma glucose (g/L) | 7 | | 201.57(126.92) | 200.26(123.94) | 209.55(143.38) | **0.03** | |
| Plasma creatinine (µmol/L)-**Creatine serum** | 7 | | 1.83[0.92,2.75] | 1.69[0.89,2.50] | 2.61[0.8,4.41] | **<0.001** | |
| eGFR (CKD-EPI) (ml/min/1.73 m²) | 0 | | 59.22 | 65.91 | 38.58 | **<0.001** | |
| AST (ULN) | NA | | NA | NA | NA |  | |
| ALT (ULN) | NA | | NA | NA | NA |  | |
| GGT (ULN) | NA | | NA | NA | NA |  | |
| Hemoglobin (g/dL) | 12 | | 12.08 | 12.59 | 11.58 | **<0.001** | |
| White blood cell count (103/mm3) | 10 | | 8.4 | 8.17 | 8.21 | =0.842 | |
| Lymphocyte count (103/mm3) | 97 | | 1.17 | 1.14 | 1.09 | =0.229 | |
| Platelet count (103/mm3) | 12 | | 228 | 226.97 | 231.82 | **=0.004** | |
| LDH (UI/L) | NA | | NA | NA | NA |  | |
| CPK (UI/L) | NA | | NA | NA | NA |  | |
| C-reactive protein (mg/L) | 1522 | | 38.4 | 39.19 | 28.77 | **<0.001** | |
| Fibrinogen (g/L) | NA | | NA | NA | NA |  | |
| Death | 0 | 1251(16.98%) | | 851(15.29%) | 400/1800(22.22%) | **<0.001** |

No Micro – patients with ascertained microvascular status and no severe diabetic retinopathy (DR) and no diabetes kidney disease (DKD) and no diabetic foot ulcer (DFU). Any Micro – patients having at least one complication from diabetic nephropathy/foot ulcer/retinopathy/peripheral neuropathy and/or eGFR<60 ml/min/1.73m2(see definitions in methods). Also applies to subsequent tables.

## AST/ALT: aspartate/alanine aminotransferase; GGT: gamma glutamyl transferase; LDH: lactodehydrogenase; CPK: creatine phosphokinase

**Table 4. Details of microvascular status in ABCD COVID-19 patient**

|  | **All (n=7367)** | **no MICRO (n = 5567)** | **any MICRO (n = 1800)** |
| --- | --- | --- | --- |
| Diabetic retinopathy, n (%) |  |  |  |
| No DR | 7250(98.41%) | 5567(100%) | 1683(93.5%) |
| DR | 117(1.59%) | 0 | 117(6.5%) |
| not ascertained | 0 | 0 | 0 |
| CKD 345 : n (%) |  |  |  |
| CKD,345 | 1121(15.2%) | 0 | 1121(62.28%) |
| no CKD345 | 6246(84.78%) | 5567(100%) | 679(37.72%) |
| not ascertained | 0 | 0 | 0 |
| Diabetic foot ulcer, n (%) |  |  |  |
| DFU | 336(4.56%) | 0 | 336(32.15%) |
| no DFU | 7031(95.44%) | 5567(100%) | 1464(41.94%) |
| not ascertained | 0 | 0 | 0 |
| Albuminuria, n (%) |  |  |  |
| normo- | NA | NA | NA |
| micro- | NA | NA | NA |
| macro- | NA | NA | NA |
| not available | NA | NA | NA |
| Altered renal function - eGFR < 60 ml/min/1.73 m2, n (%) |  |  |  |
| No | 3639(49.39%) | 3255(41.53%) | 384 (21.33%) |
| Yes | 3728 (50.60%) | 2312(58.46%) | 1416(78.66%) |
| not available | 0 | 0 | 0 |

## DR (Diabetic retinopathy) Non-severe DR, active or past mild or moderate non proliferative DR ; Severe DR, active or past severe non proliferative or proliferative DR. DKD, diabetic kidney disease, defined as proteinuria and/or eGFR below 60 ml/min. DFU, active or past diabetic foot ulcer (see definitions in Methods)

Within this cohort of patients diagnosed with both T2DM and COVID-19 positive, 1251/7367 (16.98%) patients had died within 28 days of admission. The incidence of death was higher in patients with any one of the microvascular complications than in those without (400/1800 (22.22%) vs. 851/5567 (15.29%), unadjusted OR: 1.21 (95% CI: 1.07-1.36, P =0.00189).

After adjustment for age and gender, patients with either of the microvascular complications had a 1.583-fold increased risk of death (95% CI: 1.386 -1.808, P = 0.00794) compared to those without.

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Age and sex adjusted odds ratio for death within 28 days admission

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OR. lower .95 upper .95

CKD only 1.684 (1.445 - 1.963 )

Diabetic.foot.ulcer Only 1.279 0.974 - 1.678)

diabet\_retino only 1.405 (0.905 - 2.182)

Foot ulcer and DR 1.277 (0.882 - 1.847)

CKD and DR 1.308 (0.991- 1.728)

CKD and foot ulcer 1.612 ( 1.077 - 2.414)

CKD & foot ulcer& DR 1.505 (0.901 - 2.516)

Any microvascular 1.583 (1.386 - 1.808)

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