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Comorbidities are the most important risk factor for poor outcome of COVID-19 among HIV-positive patients: data from Euroguidelines in Central and Eastern Europe Network Group

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Purpose: To describe epidemiological characteristics of COVID-19 disease and factors associated with the risk of death and/or ICU admittance among HIV+ people living in Central and Eastern Europe (CEE).

Method: In November 2020 ECEE initiated a project on HIV and COVID-19. Sixteen of 24 (66.7%) countries submitted the data (eCRF) on 557 HIV+ patients (18 diagnosed with HIV during COVID-19 infection were excluded from analyses). Comorbidities included: cardiovascular, respiratory, kidney disease, diabetes and malignancy. Logistic regression models were used to identify factors associated with death and/or ICU admittance. Factors significant in univariate models (p<0.1) were included in multivariate model.
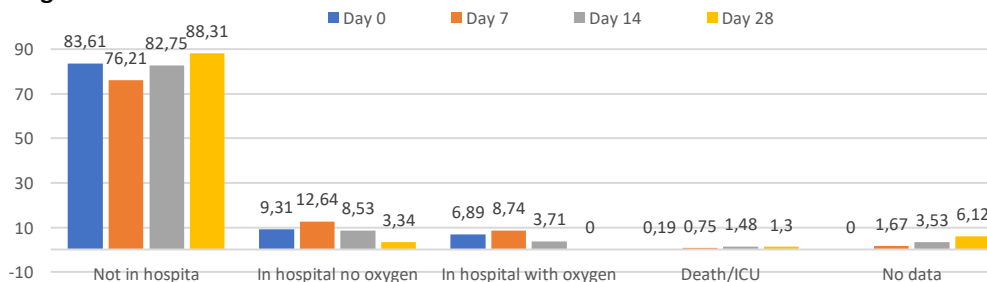
Results: Of 539 patients 426 (76.7%) were male, median age was 45 years (IQR:39.5-48) and median BMI 21.6 (19-26), 260 (48.2%) infected through MSM contacts, median time since HIV diagnosis was 5.5 years (2-17), median CD4 count before COVID-19 was 510 cells/mL (344-944), 512 (95%) were on cART and 470 (87.2%) with HIV viral load <50 copies/ml.

Table. Univariate nad multivariate odds ratioes for death

Effect	OR (95% CI)	P value	OR (95% CI)	P value
Age (per 10 years more)	1.381(0.951-2.007)	0.0903	1,089(0,689-1,722)	0.7142
BMI (per 1 unit more)	0.993(0.900-1.096)	0.8942	-	-
Gender: Male vs Female	0.360(0.146-0.890)	0.0269	0,418(0,140-1,248)	0.1181
Smoking: Ever vs Never	1.714(0.648-4.533)	0.2776	-	-
Comorbidities (per 1 more)	2.387(2.030-5.653)	<0.0001	3,647(1,903-6,989)	<0.0001
HCV or HBV infection: Yes vs No	2.474(0.920-6.655)	0.0727	0.952(0.276-3.281)	0.9378
Mode of HIV infection			-	-
Heterosexual vs MSM	2.825(0.930-8.584)	0.7734		
IDU vs MSM	1.984(0.463-8.496)	0.3934		
Other vs MSM	9.921(0.973-101.19)	0.2080		
Unknown vs MSM	5.835(1.053-32.32)	0.3556		
CD4 count (per 100 cells/ul more)	0.743(0.626-0.882)	0.0007	0,886 (0,731-1,076)	0.2222
HIV VL: >=50 vs <50 copies/ml	6.532(2.593-16.45)	<0.0001	3,246(0,865-12,18)	0.0810
On cART: Yes vs No/Unknown	0.131(0.043-0.394)	0.0003	0,297(0,054-1,623)	0.1614
Third drug in cART			-	-
INI vs PI	0.461(0.138-1.544)	0.6159		
NNRTI vs PI	0.183(0-020-1.672)	0.1542		
Other vs PI	1.354(0.139-13.189)	0.3107		
TDF or TAF: No vs Yes	2.527(1.027-6.217)	0.0437	0.996(0,295-3,362)	0.9944
Currently employed: Yes vs No	0.128(0.048-0.342)	<0.0001	0,318(0,100-1,006)	0.0512

Figure. WHO Ordinal Scale

Results: Most patients (399, 74.0%) were currently employed, 303 (75.6%) working in direct contact with people, 168 (31.2%) currently smoking and 46 (8.5%) currently using psychoactive substances, 152 (28.2%) had >=1 comorbidity. In 473 (87.8%) patients COVID-19 was diagnosed based on SARS-CoV-2 RT PCR, 470 (87.2%) were symptomatic, 61.6% (138/224 with radiological imagining) had typical radiological changes for COVID-19. Of 506 patients with available WHO Ordinal Scale stage 1-2 (non-hospitalized) was 430 (85.0%) at baseline, 402 (79.4%) on day 7, 437 (86.4%) on day 14 and 476 (94.1%) on day 28, **Figure**. Twenty (3.8%) patients were admitted to the ICU and/or died. In multivariable logistic regression the only factor associated with death/ICU was comorbidity (OR 3.647[95% CI:1.903-6.989]), **Table.**

Conclusions: Most HIV+ patients with COVID-19 were symptomatic, but not requiring hospitalization. Comorbidities, but not HIV VL or CD4 count, were increasing the odds of death and/or ICU admission.

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