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Prevalence and risk factors for drug-resistant tuberculosis in HIV-infected patients - a Romanian single-centre experience

Irina Ianache¹, Simona Erscoiu², Manuela Nica³, Gratiela Tardei⁴, Emanoil Ceausu⁵, Petre Calistru⁵, Cristiana Oprea^{*5}

¹*“Victor Babes” Clinical Hospital for Infectious and Tropical Diseases, Bucharest, Romania; Hiv*

²*“Victor Babes” Clinical Hospital for Infectious and Tropical Diseases, Bucharest, Romania; Carol Davila University of Medicine and Pharmacy*

³*“Victor Babes” Clinical Hospital for Infectious and Tropical Diseases, Bucharest, Romania; Laboratory of Bacteriology*

⁴*“Victor Babes” Clinical Hospital for Infectious and Tropical Diseases, Bucharest, Romania; Laboratory of Immunology and Virology*

⁵*“Victor Babes” Clinical Hospital of Infectious and Tropical Diseases; Carol Davila University of Medicine and Pharmacy*

Background: Despite all efforts made in the global fight against tuberculosis, drug resistant tuberculosis (DR-TB) registered an important increase in some east European regions, especially in HIV-infected patients. We aimed to assess the prevalence of DR-TB and to estimate the risk factors for survival in HIV/TB co-infected patients from a Romanian tertiary health care facility.

Material/methods: Prospective study on HIV-infected patients diagnosed with DR-TB at “Victor Babes” Clinical Hospital for Infectious Diseases, Bucharest, between January 2012 and December 2015. DR-TB strains were classified in MDR TB (resistance to INH and RIF), pre-XDR (MDR-TB and resistance to either quinolones or an injectable) and XDR TB (MDR and resistance to both aminoglycosides and quinolones). Statistical analysis was performed using SPSS 20.0, survival being compared using Kaplan Meier curves

Results: Out of 9,012 HIV-infected person-years (PY), 374 had documented positive TB cultures with drug susceptibility testing performed. Out of these, 48 (12.8%) were notified with resistance to at least one first-line drug (INH or RMP) and 56 (14.9%) with overall MDR-TB (incidence 6.21/1000 PY). MDR-TB incidence increased from 7.4% in 2012 to 20.6% in 2015 ($p=0.04$). The majority of all MDR-TB cases (69.6%) were males, with a median age of 31 years (IQR 26-37), 41.0% being homeless, 46.4% with a history of imprisonment and 48.2% previously treated for TB. The median CD4 cell count/mm³ and HIV viral load (copies/mL) at TB diagnosis were 31 (IQR: 12-100) and 5.20 log₁₀ (IQR 3.46-5.73) respectively. MDR-TB and HIV were diagnosed simultaneously in 15 (26.7%) patients, while 24 (42.8%) were patients non-adherent to cART. The modes of HIV acquisition were: injecting drug use (IDU) in 33 (59%), heterosexual contact (HSX) in 14 (25.0%) and by parenteral mode during early childhood (PI) in 9 (16.0%) cases. Twenty-three patients (6.1%) were diagnosed with MDR and pre-XDR TB and 33 (8.8%) with XDR-TB. The overall mortality rate was 67.8% (38/56), higher in IDUs compared to HSX and PI (42.8% vs. 10.7%, 14.2%, $p=0.04$). Survival was shorter in patients with history of imprisonment ($p=0.01$), homelessness ($p=0.01$), use of injectable drugs ($p=0.03$) and CD4 cell count $< 50/\text{mm}^3$ at TB diagnosis ($p=0.01$).

Compared to MDR-TB patients, XDR-TB patients had higher early mortality rate (within 3 months) (26.7% vs. 5.3%, $p=0.01$) and shorter median survival time (months) (3.2 vs. 15.3, $p<0.0001$) (Figure).

Conclusions: The prevalence and mortality rate in patients with HIV infection and DR-TB were high. Severe immunosuppression, history of imprisonment, homelessness and injecting drug use were associated with a lower survival. These results highlight the importance of rapid TB diagnosis methods, enhanced direct observed treatment and the need of proper isolation facilities and new anti TB drugs in order to limit the spread of TB.

