

SHORT COMMUNICATION

Hot topics in the epidemiology of relevant chronic and respiratory viral infections

SC 39 Trends of toxoplasma antibody prevalence in naive people living with HIV in Italy. Data from the ICONA cohort

Authors

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ABSTRACT

Background: Toxoplasmosis is the most common opportunistic infection affecting the CNS in AIDS, resulting from reactivation of latent infection. Around 30% of T. gondii-seropositive PWH with CD4 T cell counts <100/mcL, not receiving effective prophylaxis and antiretroviral therapy, develops neurotoxoplasmosis. T. gondii-seroprevalence, in turn, depends on geographical region, age, and nutritional habits. A 2017 metanalysis found that pooled prevalence of HIV and T. gondii co-infection is 26.3% in high-income countries. Prevalence in Italy, though, is yet to be thoroughly described. We aimed at assessing prevalence of latent T. gondii infection in patients with HIV (PWH) in a large Italian multicenter cohort, investigate its temporal trends, and evaluate associated factors; prevalence of neurotoxoplasmosis was also evaluated.

Methods: Retrospective observational cohort study including all participants to the ICONA cohort between 1997 and 2022. Primary objective was to describe the changes by calendar period in prevalence of T. gondii Ab at enrollment. Characteristics of Toxo-Ab positive and negative PWH were compared (Chi-square test or Mann-Whitney test, which appropriate). Temporal trends were evaluated through Cochran Armitage test. Variables associated with risk of being Toxo-Ab positive were studied with a multivariable logistic regression model. Prevalence of neurotoxoplasmosis among PWH with CD4<200/cmm and factors associated by multivariable logistic regression model were also evaluated.

Results: Positive T. gondii serology was observed in 5308/12619 (42%) patients; PWH positive for T.gondii Ab were older, born outside Italy, intravenous drug users (IDU), with heterosexual transmission, and with lower CD4 T cell count at enrolment (Table 1). Quinquennial prevalence of Toxo-Ab positivity decreased significantly, from 49% in 1997-2001 to 34% in 2017-2021 (p<.001). In the multivariable logistic regression model, participants with older age, born outside Italy, and other than MSM had higher risk of being Toxo-ab positive. Participants with higher CD4 T cell counts at enrolment (by 100/mcL), showed lower risk of being Toxo-Ab positive (Table 2). Temporal trends of neurotoxoplasmosis in PWH with CD4 T-cell counts < 200/mcL also decreased significantly, from 6% in 1997-2003 to 2% in 2017-2022, p=.0007. Among participants with CD4 T-cell counts < 200/mcL, multivariable analysis showed higher odds of neurotoxoplasmosis for participants born outside Italy and with intravenous drug use (IDU).

Conclusions: T gondii latent infection is decreasing among PWH, likely due to better life conditions. Neurotoxoplasmosis is also decreasing accordingly. Several groups, such as PWH born outside Italy and IDU, should be monitored closely to prevent neurologic disease.

| TABLE 1 - COHORT DESCRIPTION | | | |
|---------------------------------|------------------------------|------------------------------|---------|
| | Toxo-Ab POS (N=5308, 42%) | Toxo-Ab NEG (N=7311, 58%) | p-value |
| SEX | | | |
| M | 3924 (73,93) | 5497 (75,19) | 0,1105 |
| F | 1384 (26,07) | 1814 (24,81) | |
| AGE AT ENROLMENT | 38 [33-47] | 36 [30-43] | <,0001 |
| COUNTRY OF ORIGIN | | | |
| Italy | 4197 (79,10) | 6159 (84,27) | <,0001 |
| Africa | 446 (8,41) | 404 (5,53) | |
| South America | 160 (3,02) | 153 (2,09) | |
| Other | 503 (9,48) | 593 (8,11) | |
| ROUTE OF TRANSMISSION | | | |
| HO | 1471 (27,72) | 2859 (39,12) | <,0001 |
| HE | 2255 (42,5) | 2816 (38,53) | |
| IDU | 1222 (23,03) | 1209 (16,54) | |
| Other/unknown | 358 (6,75) | 425 (5,81) | |
| CD4 T CELL COUNT AT ENR. | | | |
| <200 | 1501 (29,06) | 1860 (26,27) | <,0001 |
| 200-350 | 1023 (19,81) | 1254 (17,71) | |
| >350 | 2641 (51,13) | 3967 (56,02) | |

| TABLE 2 - RISK OF TOXO AB POSITIVITY | | | | | | | | |
|--------------------------------------|-------------------|-------|-------|---------|---------------------|-------|-------|---------|
| | UNIVARIABLE MODEL | | | | MULTIVARIABLE MODEL | | | |
| | OR | LCI | UCI | p-value | OR | LCI | UCI | p-value |
| SEX (M vs F) | 0,935 | 0,863 | 1,014 | 0,107 | 1,045 | 0,917 | 1,191 | 0,237 |
| AGE AT ENROLMENT (+10 y) | 1,337 | 1,292 | 1,384 | <,0001 | 1,039 | 1,035 | 1,044 | <,0001 |
| COUNTRY OF ORIGIN | | | | | | | | |
| Africa vs Italy | 2,021 | 1,73 | 2,361 | <,0001 | 2,464 | 2,074 | 2,927 | <,0001 |
| South America vs Italy | 1,858 | 1,473 | 2,343 | | 2,416 | 1,898 | 3,075 | |
| Other vs Italy | 1,446 | 1,249 | 1,672 | | 1,764 | 1,513 | 2,057 | |
| Africa vs South America | 1,088 | 0,831 | 1,424 | | 1,02 | 0,77 | 1,351 | |
| Africa vs Other | 1,398 | 1,144 | 1,707 | | 1,396 | 1,136 | 1,717 | |
| Sud America vs Other | 1,285 | 0,987 | 1,673 | | 1,369 | 1,043 | 1,797 | |
| ROUTE OF TRANSMISSION | | | | <,0001 | | | | |
| HE vs HO | 1,556 | 1,431 | 1,692 | | 1,295 | 1,152 | 1,456 | <,0001 |
| IDU vs HO | 1,964 | 1,775 | 2,174 | | 1,754 | 1,442 | 2,134 | |
| Other vs HO | 1,637 | 1,403 | 1,91 | | 1,219 | 1,014 | 1,467 | |
| HE vs IDU | 0,792 | 0,719 | 0,873 | | 0,738 | 0,607 | 0,899 | |
| HE vs Other | 0,951 | 0,817 | 1,106 | | 1,062 | 0,886 | 1,273 | |
| IDU vs Other | 1,2 | 1,021 | 1,41 | | 1,439 | 1,125 | 1,841 | |
| CD4 COUNT (+ 100/mcL) | 0,969 | 0,958 | 0,981 | <,0001 | | | | |