692

Telomere Length in Aviremic PWH: How Different is it from Persons Without HIV?

Julen Cadiñanos[1,2], **Javier Rodríguez-Centeno[1,2]**, Rocio Montejano[1,2], Andrés Esteban-Cantos[1,2], Beatriz Mena-Garay[1], María Jiménez-González[1], Gabriel Saiz-Medrano[1], Rosa de Miguel[1,2], Fernando Rodríguez-Artalejo[3], José I Bernardino[1,2], Cristina Marcelo-Calvo[1], Lucía Gutierrez-García[1], Patricia Martínez-Martín[1], Berta Rodés[1,2], José R Arribas[1,2]

[1]Hospital Universitario La Paz-IdiPAZ, Madrid, Spain, [2]CIBER de Enfermedades Infecciosas, Spain, [3]Universidad Autónoma de Madrid, Spain

BACKGROUND

Blood telomere length (BTL) attrition is a surrogate biomarker of immunosenescence and aging associated with HIV infection. BTL recovers in long-term virologically suppressed people with HIV (PWH)[1,2], but it is unknown if this recovery is complete. Our hypothesis is that despite sustained viral suppression, BTL in PWH is shorter compared to those without HIV who are of the same chronological age, and comparable to those who are older chronologically.

METHODS

Prospective 6-year observational study assessing the evolution of BTL in virologically suppressed PWH, and a cross-sectional analysis comparing BTL with age and sex-matched blood donors, and sex-matched persons older than 60 from a general population cohort. DNA from whole blood was isolated and relative BTL was determined by monochrome quantitative multiplex PCR assay and expressed as the ratio of telomere to single-copy gene (T/S).

RESULTS

We included 135 PWH, 135 blood donors, and 135 persons over 60.

Table 1. Characteristics of participants.

	PWH at 6 years of follow-up N = 135	Blood donors N = 135	General population >60 N = 135
Age, years	55 (51-60)	55 (51-60)	70 (68-73)
Female sex	40 (29.6)	40 (29.6)	40 (29.6)
Caucasian	125 (92.6)	-	-
Smoking			
- Current	59 (43.7)	-	13 (9.6)
- Past	47 (34.8)		61 (45.2)
- Never	29 (21.5)		61 (45.2)
Hazardous alcohol consumption	8 (5.9)	-	-
Ever injected drug user	39 (28.9)	-	-
≥ 1 comorbidity	45 (33.3)	-	-
Resolved hepatitis C infection	45 (33.3)	-	-
Positive CMV IgG	123 (91.1)	-	-
Time with known HIV-1 infection, years	23.1 (18.4-27.6)	-	-
Time with virological suppression, years,	13.4 (12.5-14.0)	-	-
Nadir CD4 count, cells/μL	180 (71.5-258)	-	-
Current CD4 count, cells/μL	780 (535-1000)	-	-
Current CD4/CD8 ratio	1.12 (0.79-1.40)	-	-

Quantitative variables are expressed as medians and interquartile range. Categorical variables are presented as frequencies and percentages.

After prolonged virologic suppression, middle-aged people with HIV have shorter blood telomeres than age and sex matched blood donors, but longer than older people

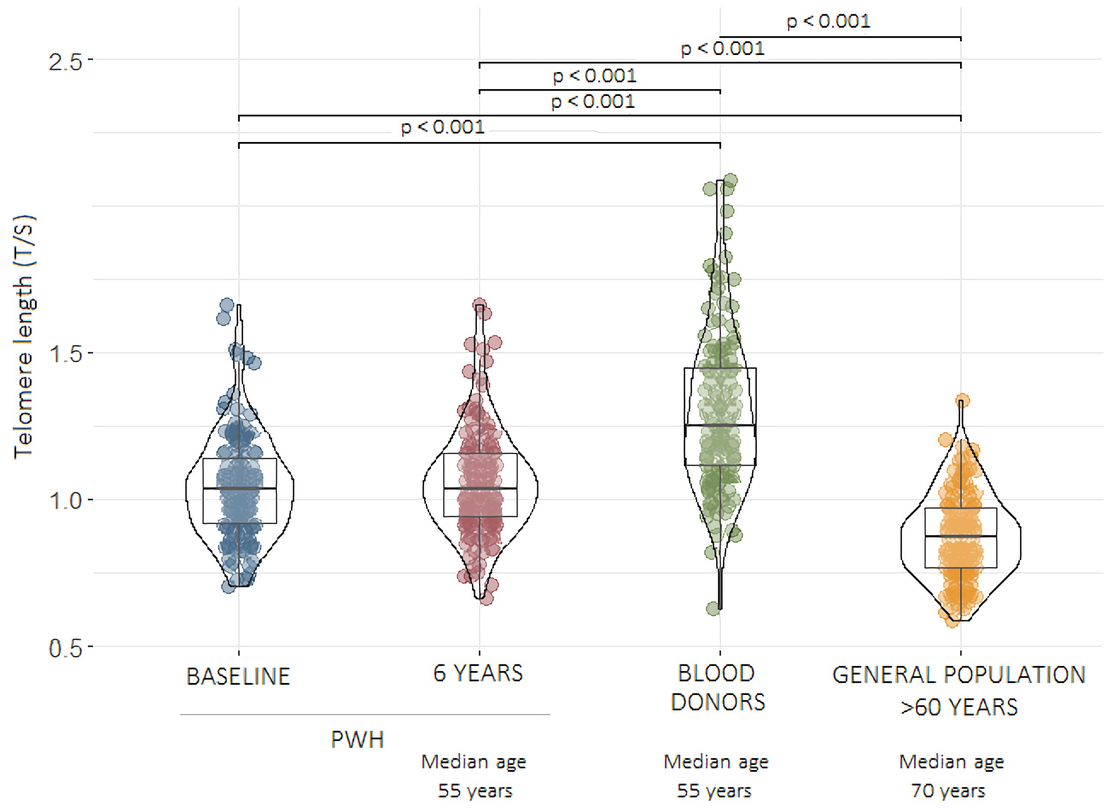


Figure 1. Blood telomere length in PWH, blood donors, and general population >60 years. This figure shows the differences in Blood telomere length (BTL) in the 4 groups (PWH at baseline and at 6-year follow-up, blood donors, and general population older than 60 years). BTL is expressed as the ratio of telomere to single copy gene (T/S). Kruskall-Wallis test was used for comparison between the PWH, blood donor, and general population older than 60 years, and the Wilcoxon test was used for comparison between the PWH groups. Holm's adjustment was used for p-value correction. In PWH, no significant differences were found at baseline and after 6 years of virologic suppression. The BTL of PWH was significantly shorter than that of age/sex matched blood donors, but significantly longer than that of a general population with a median age 15 years older.

RESULTS (CONT'D)

Blood telomere length of PWH remained stable after 6 years of virological suppression (median BTL at baseline 1.03 [IQR: 0.92-1.14] vs. 1.03 [IQR:0.94-1.15] after 6 years [p=NS]), without reaching the median BTL of blood donors of the same age and sex (1.25 [IQR: 1.11-1.45]; p< 0.001), but significantly above the median BTL of the older than 60 general population group (0.87 [IQR: 0.77-0.97]; p< 0.001) (Figure 1). 33 (24.4%) of PWH had BTL that was within ± 10% of the BTL of his/her age/sex-matched blood donor. 27 (26.5%) of PWH < 60 had BTL that was within the ± 10% of the median BTL of the sex-matched ≥ 60 participants from the general population.

CONCLUSIONS

In middle-aged PWH with sustained viral suppression, the blood telomere length is shorter than expected for their chronological age. However, it is longer than the telomere length seen in older people.

ADDITIONAL KEY INFORMATION

This work was supported by the Fondo de Investigaciones Sanitarias, Instituto de Salud Carlos III (PI19/00294, PI18/01327, PI18/00569).

Author Contact Information: biojaroce@gmail.es

Acknowledgements: We are grateful to all study participants, their partners, families and caregivers.

References

1. Stella-Ascariz N et al. J Infect Dis. doi: 10.1093/infdis/jiy399.
2. Montejano R et al. J Infect Dis. doi: 10.1093/infdis/jiy364.

IdiPAZ Instituto de Investigación Hospital Universitario La Paz
ciber | INFEC
Unión Europea
Fondo Europeo de Desarrollo Regional
"Una manera de hacer Europa"
GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA E INNOVACIÓN