

BIOLOGICAL AGE ACCELERATION IS LOWER IN WOMEN WITH HEMORRAGIC STROKE COMPARED TO MEN

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Background and aims

Stroke onset in women occurs later in life compared with men. Epigenetic age acceleration (EAA) measures indicate whether an individual is biologically younger or older than expected. Differences in EAA between men and women have been described in ischemic stroke (IS) patients. Here we aim to analyze whether sexual dichotomy at age of onset is conditioned by EAA in intracerebral hemorrhage (ICH).

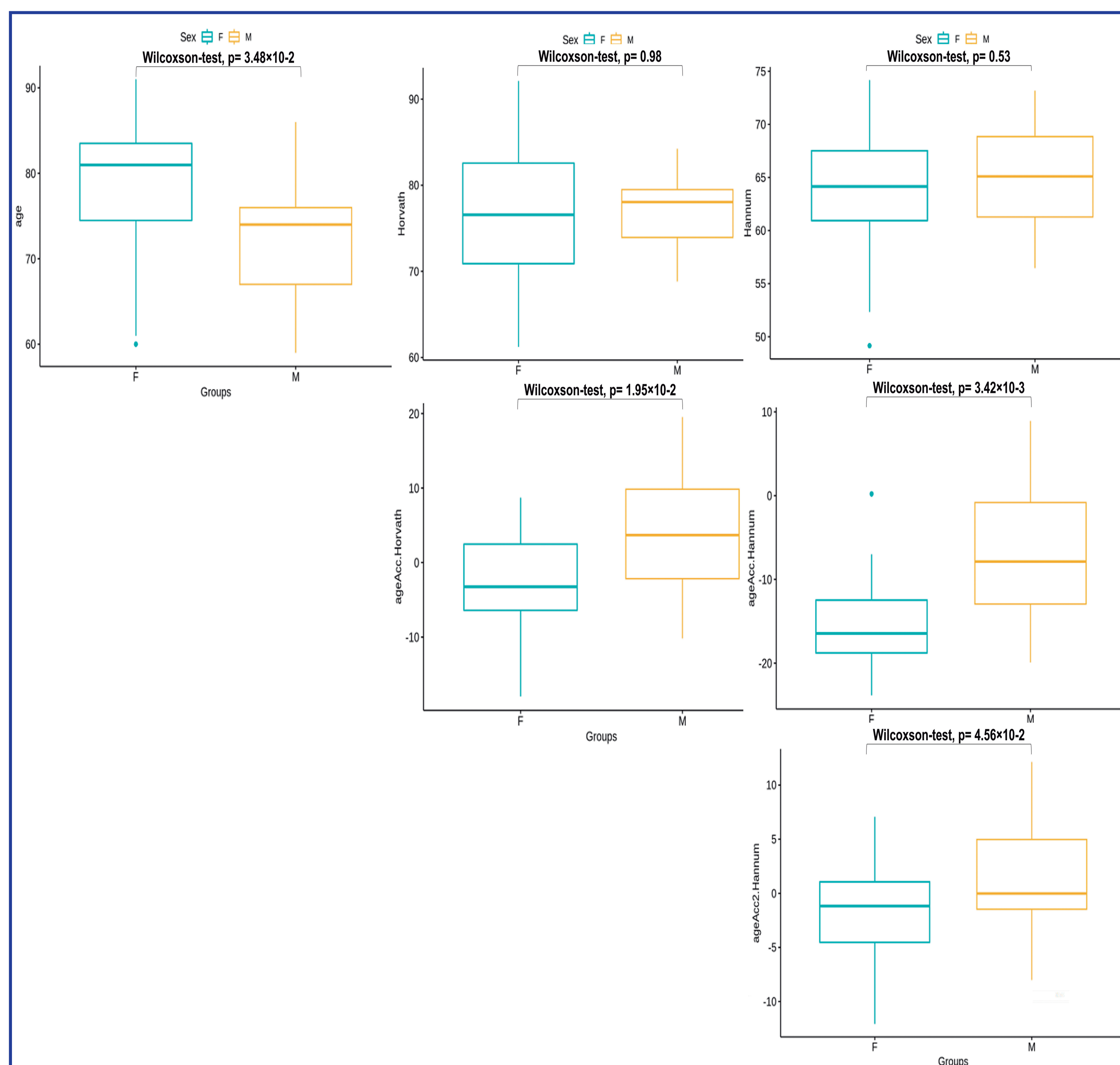
Methods

We analyzed DNA methylation (DNAm) levels from whole blood samples, of 40 lobar-ICH patients (57.7% women) from H. Sant Pau (Barcelona Spain), using Infinium EPIC BeadChip. Chronological age (Chrono_Age) described as time from birth, DNA methylation age (DNAm_age) and EAA were calculated using *mehty/Clock* R package. We assessed Horvath's⁽¹⁾ and Hannum's⁽³⁾ biological clocks. EAA is calculated based on the difference between DNAm_Age and Chrono_Age and extrinsic-EAA (EEAA) is based on the residuals obtained after regressing chronological age and DNAm_Age adjusted for cell count.

Results

Sex differences in Chrono_Age in lobar-ICH patients were observed (p .value= 3.49×10^{-2}), women were over 7 years older than men, mean Chrono_Age men= 74 ± 8.5 , women= 81 ± 8.3 , whereas no differences in DNAm_Age were found. Women present lower EAA values across all measures, (Horvath: women= -3.25 , men= 3.70 , $P=1.95 \times 10^{-2}$; Hannum: women= -16.45 , men= -7.88 , $P=1.84 \times 10^{-3}$). Women also showed lower Hannum EEAA values compared to men (Hannum-EEAA: women= -1.17 , men= -0.01 , $P=2.03 \times 10^{-2}$) (Figure 1).

Figure 1: Box plots of differences between Women and Men in Age, Biological Age and Epigenetic Age Acceleration measures.



Conclusions

Sexual dichotomy of EAA is not only an IS phenomenon as is also observed in lobar-ICH patients. Notably, Hannum-EEAA differences between sexes are also shared between IS and lobar-ICH.

References:

- (1) Horvath S. Genome Biol (2013)
- (2) Hannum G. et al. Mol. Cell. (2013)

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