

# Transcranial Doppler pulsatility index as a marker of endothelial dysfunction, especially useful when before persistently low CD4+/CD8+ ratios

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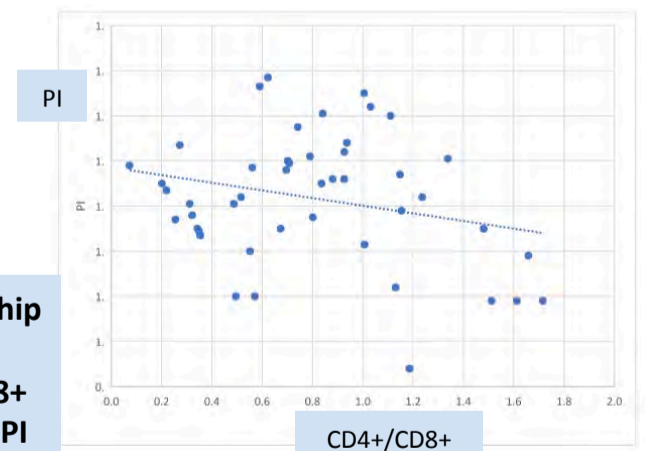
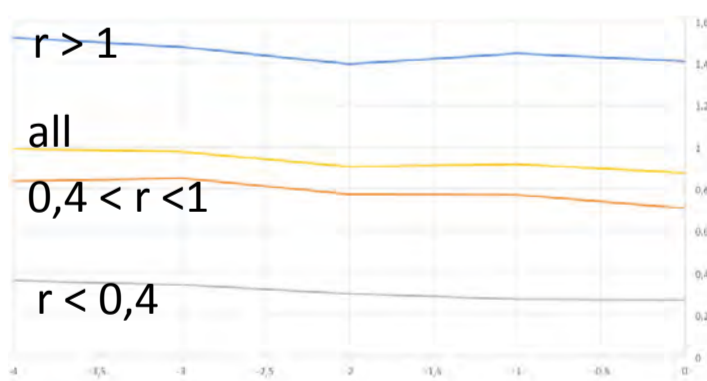
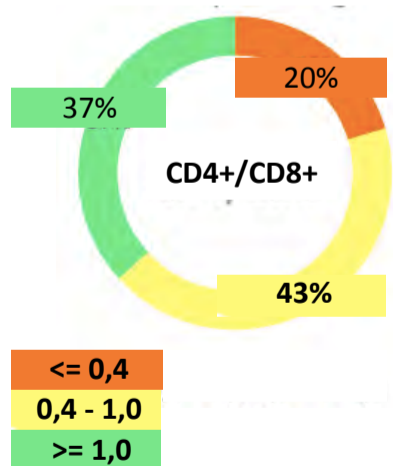
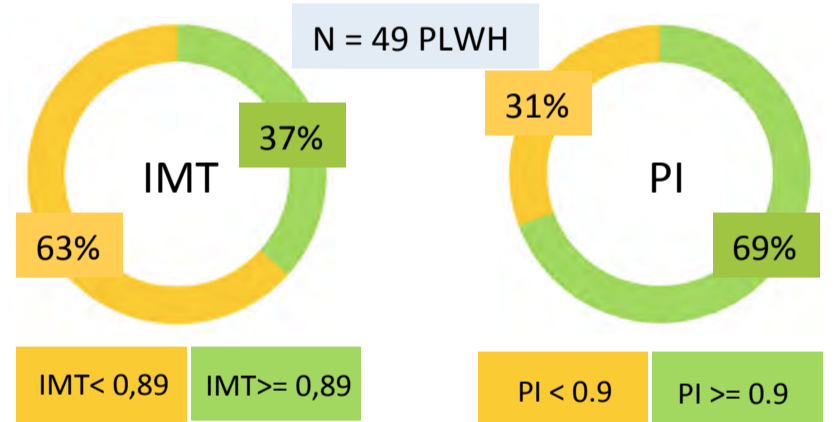
**Background:** Even under effective ART, some HIV (PLWH) patients never normalize their CD4+/CD8+ ratio, keeping in low values<sup>1,2</sup>. This is associated with an increased morbidity/mortality risk despite the recovery of the CD4+ T cells count. This phenomenon may reach clinical importance given the association between HIV and ischemic strokes/myocardial infarctions, particularly in middle-aged adults, with lesser conventional vascular risk factors. In PLWH an increased subclinical atherosclerosis was suspected as evaluated by the carotid intima-media thickness (IMT)<sup>3,4,5</sup> and/or transcranial Doppler (TCD) pulsatility index (PI) when compared with the control groups.



**Patients and methods:** Seventy-nine HIV1 men aged <65 years, under ART for more than 2 years, with no history of cardiovascular events, were selected by convenience sampling from our immunodeficiency hospital clinic during the year of 2019. Data were collected from both carotid ultrasound and TCD examinations. Sequential CD4+/CD8+ ratios were calculated by lymphocyte subpopulations counts, during the previous 5-year period. Two groups were established according to ratios as: "very low" (<0.4) and "immunologically normal" (>1). Possible associations were statistically sought, using linear regression models and controlling additional risk variables and non-linear regression models (by branches).

**Results:** Only 49 individuals underwent carotid ultrasound and TCD evaluation. Overall, the CD4+/CD8+ ratio showed a trend to stabilization over the 5 years. The ratio shows a negative impact of -.10 over PI (p<0.05). Additionally the adjustment of a non-linear model shows that the impact of the CD4+/CD8+ ratios over the PI is more significant for ratios below .4 (impact on PI of -0.72, p<0.01). This relationship is still significant, but attenuated for ratios above .4 (impact on the PI of -0.19, p<0.05). No association between IMT with CD4+/CD8+ ratios was found to be statistically significant (p=0.68).

## Carotid ultrasound and TCD evaluation



**Conclusions:** There is a negative impact of CD4+/CD8+ ratio over PI, that is more intense for values below 0.4 and attenuated as this ratio approaches normal values. TCD PI seems to be an accurate marker of cerebrovascular changes in PLWH, particularly for those keeping low ratios of CD4+/CD8+, despite the efficacy of ART.

### References:

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