

Cytomegalovirus and the response to ART may affect cardiovascular health in Indonesian HIV patients

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Background: Several studies have demonstrated accelerated cardiovascular syndromes in HIV patients assessed in “western” settings. Most have addressed patients over 40 years of age, with consideration to traditional risk factors. The consensus view ascribes vascular pathology to systemic inflammation in untreated patients, where this declines on antiretroviral therapy (ART) and metabolic factors become dominant. Here we present a longitudinal study of how demographic factors and persistent burdens of HIV and cytomegalovirus (CMV) influence cardiovascular health in young adults beginning ART in an inner-city clinic in Jakarta, Indonesia.

Methods: ART-naïve HIV patients [n=67; aged 31(19-48) years] were enrolled in the JakCCANDO Project. Echocardiography and carotid Doppler ultrasonography were performed before ART (V0) and after 3, 6, and 12 months (V3-12). Antibodies reactive with CMV lysate or IE-1 protein were quantitated at each timepoint and CMV DNA was identified by qPCR at V0.

Results: The diameter of the carotid arteries and systolic blood pressure correlated with CD4 T-cell counts at V0, whilst cardiac parameters were not affected significantly. Measures of cardiac capacity (left ventricular mass index and ejection fraction) and carotid intimal media thickness (cIMT) increased at V12. E/A ratios (left ventricular function) were lower in patients with CMV DNA at V0 (p=0.03), but this effect waned by V6. Levels of antibody reactive with CMV IE-1 correlated inversely with CD4 T-cell counts at V0 marking a high burden of CMV established pre-ART, so it is notable that IE antibody levels at V6-V12 correlated directly with the right cIMT.

Conclusions: Overall the severity of HIV disease and the response to ART had subtle effects on cardiovascular health in this young Asian population. CMV replication before ART may have a transient effect on cardiac function, whilst antibody reactive with CMV IE-1 may mark a high persistent CMV burden with cumulative effects on vascular health.

Conflict of Interest: None to declare