Effects of HIV and antiretroviral therapy (ART) on brain morphometry in 7-year old children: Evidence from the children with HIV early antiretroviral (CHER) trial

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What is the effect of HIV/ART on brain structure in children?

To investigate we used:

– High resolution T1-weighted anatomical magnetic resonance imaging (MRI) on 7 year-old children (50 boys):
  • 56 HIV-infected
  • 43 HIV-uninfected

– Cortical thickness, local gyrification index (LGI) and regional volume measures (calculated in FreeSurfer software)

– Statistical analysis: group comparisons
Results

Effect of HIV/ART on LGI

LGIs were greater in HIV-uninfected children than HIV-infected children in a left medial parietal region ($p<0.05$).
Effect of HIV/ART on brain volume

Total grey and white matter volumes, bilateral putamen and right hippocampus were larger in uninfected children than HIV-infected children.
Conclusions

Summary: Compared to HIV-uninfected children, HIV-infected children on ART had:
(1) Reduced LGIs in a left parietal region
(2) Smaller total grey and white matter volumes

Conclusions: Lower LGIs indicate a reduction of buried cortical surface, which has been previously associated with reduced fine motor dexterity and intelligence quotients.

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