PEDIATRIC HIV/AIDS COHORT STUDY

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From Research to the Real World: Sharing Science Symposium
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Two Distinct Populations of HIV-Infected Adolescents

- Disease acquired via perinatal transmission and surviving until adolescence ("Aging-Up")
- Disease acquired in adolescence via high-risk behaviors
Why PHACS Did This Study

  - Infant who was started on HIV treatment at 30 hours of life but then was lost to care and came off of treatment at 18 months of age.
  - The child has been off medication for a year with no signs of infection, though tests have revealed traces of the virus's genetic material remaining.
- Scientists are interested in exploring how this case should impact approach to treatment of HIV-infected infants and infants at high risk of infection.
HIV reservoirs and the possibility of a cure for HIV infection

Journal of Internal Medicine; Palmer S et al
http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2796.2011.02457.x/full#f2; used with permission
What PHACS Did

• 144 perinatally-infected youth enrolled in PHACS/AMP, median age 14.3 years were studied at one time point
• Comparisons were made between groups based on long-term HIV viral suppression <400 copies/ml (median 10.2 years) on ART
  • 14 children had viral suppression by age < 1 year
  • 53 children had viral suppression between age 1-5 years
  • 77 children had viral suppression by age > 5 years
• Markers of viral reservoir were compared based on timing of first viral suppression after 10 years on antiretroviral therapy (cART)
What PHACS Found: Viral Control Before Age 1 Year Significantly Reduces HIV Reservoirs, Persaud D, et al. CROI 2014, Oral Abstract 72

<table>
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<th>Age at 1&lt;sup&gt;st&lt;/sup&gt; viral suppression</th>
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<tbody>
<tr>
<td></td>
<td>&lt; 1 year (N= 14)</td>
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<tr>
<td>Age (years)</td>
<td>12.6</td>
</tr>
<tr>
<td>Age cART start</td>
<td>2.4 mos</td>
</tr>
<tr>
<td>Duration viral suppression</td>
<td>11.8 yrs</td>
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<tr>
<td>Viral Reservoir Measure {Proviral burden (c/10&lt;sup&gt;6&lt;/sup&gt; PBMC)}</td>
<td>4.2</td>
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<tr>
<td>Viral Reservoir Measure {2-LTR circle detection}</td>
<td>0%</td>
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<tr>
<td>Immune System Finding {Western blot +}</td>
<td>14%</td>
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What Our Results Mean and Why this Matters

• Early identification and treatment of HIV-infected infants and children leads to reduced viral reservoirs.
• Children with reduced viral reservoirs might have better chances to respond to future therapies aimed at curing HIV-infection.
• Knowledge about the pediatric immune response is influencing development of future trials to test the response to early treatment. IMPAACT 1115 is under development; TCH is an IMPAACT site that hopes to conduct this trial.
• More data is needed before the approach to treatment of the high risk infant is changed to include higher doses of combination antiretroviral medication very early in life.
Acknowledgments

- Persaud D, et al team who conducted the study and scientifically promote the Pediatric Cure agenda
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- Patients and their families