Risk of Short-Term Progression in Ugandan Children Not Yet Eligible for Antiretroviral Therapy (ART)

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Methods

Subjects: Prospective cohort of 206 Ugandan children (ages 2–10) not meeting WHO criteria for ART initiation. Children were evaluated monthly and had quarterly CD4 assessments.

Outcome: Time to short-term progression (within 2 years) to a CD4% of <15% or WHO stage 3,4 or death.

Predictors: Baseline hematologic, virologic, weight-for-age, and immunologic-activation markers

Analysis: Multivariate Cox proportional hazards modeling and Kaplan-Meyer survival analysis.

Results (continued)

Background

• HIV infected children who do not meet guidelines for initiation of ART may be at risk for short-term progressive CD4 cell loss and clinical events.
• Understanding factors influencing increased risk of early progression may aid in strategies around monitoring for initiation of ART.

Conclusions

• Almost one-third of children with 15%–25% CD4 cells at baseline progressed by 1 year.
• Individuals with high HIV Viral load (>100K) combined with low CD4% (15%–25%) had extremely high progression rates (42% @ 1 year and 57% @ 2 years)
• HIV RNA, Hemoglobin, Weight-for-age, and CD4% were all independently predictive of progression.
• More frequent monitoring may be indicated for children with CD4 % of 15%–25%.

All Progressors Non-Progressors

<table>
<thead>
<tr>
<th>p-Value</th>
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<tbody>
<tr>
<td>Mean Age (SD) 6.1 (2.5) 5.8 (2.4) 6.2 (2.5) 0.33</td>
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<tr>
<td>Age - N (% of total) 1-3 29 (14.1) 7 (14.9) 2.2 (13.8) 0.68 &gt;3-5 35 (17.0) 6 (12.8) 29 (18.2)</td>
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<tr>
<td>Sex - N (% of total) Male 87 (42.2) 25 (53.2) 62 (39.0) 0.083 Female 119 (57.8) 22 (46.8) 97 (61.0)</td>
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<tr>
<td>Mean CD4 Count (SD) 850 (436) 770 (408) 874 (443) 0.112</td>
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<tr>
<td>Mean CD4 % (SD) 25.2 (7.4) 22.5 (5.9) 26.0 (7.7) 0.002</td>
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<td>CD4 Cell % - N (% of total) 15%-25% 117 (56.8) 34 (72.3) 83 (52.2) 0.014 &gt;25% 89 (43.2) 13 (27.7) 76 (47.8)</td>
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<tr>
<td>Mean HIV Log10 Viral Load (SD) 4.9 (0.8) 5.1 (0.8) 4.9 (0.8) 0.003</td>
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<td>HIV Viral Load - N (% of total) &lt;400 5 (2.4) 2 (4.3) 3 (1.9) 0.266 400-10,000 12 (5.8) 1 (2.1) 11 (6.9) &gt;10,000 – 100,000 80 (38.8) 14 (29.8) 66 (41.5) &gt;100,000 – 750,000 87 (42.2) 23 (48.9) 64 (40.3) &gt;750,000 22 (10.7) 7 (14.9) 15 (9.4)</td>
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<tr>
<td>Mean Hemoglobin (SD) 11.5 (1.3) 11.0 (1.3) 11.6 (1.3) 0.013</td>
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<td>Mean Z-Score Weight for Age (SD) -1.6 (1.4) -1.9 (1.5) -1.5 (1.3) 0.074</td>
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<td>Mean % CD4 Activation (SD) (% CD4+, CD38+, HLA-DR+) 13.2 (6.3) 15.4 (2.2) 12.9 (2.2) 0.007</td>
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<tr>
<td>Mean % CD8 Activation (SD) (% CD8+, CD38+, HLA-DR+) 42.8 (13.3) 47.2 (12.7) 45.8 (15.5) 0.016</td>
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</table>

54 subjects progressed

• 28 (52%) had a CD4 endpoint
• 26 (48%) had a WHO 3,4 or death endpoint

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