Central nervous system toxicity of efavirenz in HIV-infected children in Tanzania

L. VandeWijer1; D.N. Michalle2; A.F.A. Schellenkens3,4; N.J.J. Lambregts-Rommelse2; Q. de Mast1; B.T. Mmbaga5; A.J.A.M. van der Ven6 and G.D. Kinabo2

1Radboud University Medical Center, Department of General Internal Medicine, Nijmegen, Netherlands, 2Kilimanjaro Christian Medical Centre, Department of Pediatrics, Moshi, Tanzania, United Republic of, 3Radboud University Medical Center, Department of Psychiatry, Nijmegen, Netherlands, 4Nijmegen Institute for Scientist Practitioners in Addiction, Nijmegen, Netherlands, 5Kilimanjaro Clinical Research Institute, Moshi, Tanzania, United Republic of

Background: The World Health Organization recommends efavirenz as part of the first-line combination antiretroviral therapy (cART) for HIV-infected children. Awareness of central nervous system (CNS) side effects in adults is increasing. Reliable data on CNS toxicity in children, however, remain sparse. We compared neuropsychological symptoms, cognitive performance as well as adherence between long-term treated HIV-infected Tanzanian children on efavirenz vs. control regimens.

Methods: Cross-sectional observational study among HIV-infected children (6 to 12 years) on cART for >26 months and with viral loads ≤1000 copies/mL in Kilimanjaro, Tanzania. We used the Child Behavior Checklist (CBCL6-18) to evaluate behavioral and emotional problems. Cognitive performance was assessed using the Raven’s Colored Progressive Matrices and the Digit Span test. Non-adherence was defined as any reported missed doses over the previous three days or <100% adherence since the last clinic visit. Our study was powered to show a group difference of 0.5 SD in CBCL6-18 total problem scores. MANCOVA and logistic regression were used to assess differences between groups. Analyses were adjusted for age, sex, being treatment naïve, duration of cART, history of TB treatment, parental loss, and HIV disclosure.

Results: One-hundred-forty-one children were enrolled of whom 72 (51%) used efavirenz. Groups did not differ in age, sex, nadir CD4+ or general demographics. We found no differences in the CBCL6-18 behavioral and emotional problem scores (total/internalizing/externalizing), cognitive performance tests or adherence. Efavirenz-treated children had lower CBCL 6 to 18 competence scores (p = 0.025), which was mainly due to lower scores on school performance with mean (SD) 4.1 (1.4) and 4.7 (0.9) (p = 0.001) for efavirenz and controls respectively.

Conclusions: Overall, we did not see differences in emotional and behavioral problems, cognitive performance scores or adherence between efavirenz-treated and controls, which is in contrast to earlier studies in adults. The lower school performance scores in efavirenz-treated children, however, warrant further study.

Outcomes of second-line antiretroviral therapy (ART) in HIV-infected children: a CIPHER cohort collaboration global analysis

K. Patel1; C. Smith2; I.J. Collins2; R. Goodall2; E. Abrams3; A. Sohn4; T. Mohamed5; R. Van Dyke6; P. Rojo7; K. Wools-Kaloustian8; J. Pinto9; T. Mohamed5; R. Van Dyke6; P. Rojo7; K. Wools-Kaloustian8; J. Pinto9; G.D. Kinabo2

1Harvard T.H. Chan School of Public Health, Epidemiology, Boston, United States, 2University College London, MRC Clinical Trials Unit, London, United Kingdom, 3Columbia University Medical Center, Epidemiology and Pediatrics, New York, United States, 4TREAT Asia/amfAR, Foundation for AIDS Research, Bangkok, Thailand, 5Hospital Kuala Lumpur, Paediatric Institute, Kuala Lumpur, Malaysia, 6Tulane University School of Medicine, Pediatrics, New Orleans, United States, 7Hospital Universitario 12 de Octubre, Pediatrics, Madrid, Spain, 8Indiana University School of Medicine, Infectious Diseases, Indianapolis, United States, 9School of Medicine, Federal University of Minas Gerais, Pediatrics, Belo Horizonte, Brazil, 10UNC Gillings School of Global Public Health, Epidemiology, Chapel Hill, United States, 11Voi University School of Medicine, Child Health and Paediatrics, Eldoret, Kenya, 12Baylor College of Medicine, Pediatrics, Houston, United States, 13Columbia University, Mailman School of Public Health, ICAP, New York, United States, 14Institut de Santé Publique, d’Épidémiologie et de Développement (ISPED), Université Bordeaux, Centre de Recherche Inserm U 897, Bordeaux, France, 15University of Cape Town, Centre for Infectious Disease Epidemiology and Research, Cape Town, South Africa, 16Indiana University School of Medicine, Pediatrics, Indianapolis, United States

Background: There are limited data describing characteristics at second-line ART initiation and subsequent outcomes among children, particularly in resource-limited settings.

Methods: Data through 2015 on HIV-infected children aged <18 years initiating ART from 11 cohort networks were pooled. Characteristics at second-line ART initiation and immunological and clinical outcomes measured at one and two years after initiation were summarized by region: North America, Latin America (Caribbean, Central & South America), Europe, Asia, Southern Africa (South Africa & Botswana) and the rest of sub-Saharan Africa (SSA). Results were not adjusted for censoring due to loss to- or end of- follow-up.

Results: Of 85,389 children who started first-line ART, 3555 (4%) switched to second-line, primarily with protease inhibitors (92%). Median (interquartile range (IQR)) age at second-line ART initiation varied from 4.1 (1.9, 7.5) years in North America to 10.3 (6.7, 13.8) years in Latin America (Table 1). The lowest CD4 counts at second-line initiation were in SSA and Latin America (235 (81, 561) and 239 (63, 661) cells/mm3, respectively). Overall, the median (IQR) follow-up after second-line ART initiation was 29 (12, 51) months, with the shortest follow-up in SSA (21 (8, 39) months) and the longest in North America (63 (22, 101) months).

In the first year after initiation of second-line ART, observed mortality was higher in Latin America (4.9% (1.8, 10.6)) and SSA (2.8% (2.0, 4.0)) compared to Southern Africa (0.7% (0.3, 1.4)); progression to AIDS was highest in SSA (12.1% (9.4, 15.4)) followed by Asia (4.6% (2.2, 8.4)). Median CD4 counts one year after second-line initiation improved and were >500 cells/mm³ in all regions. No deaths were observed between one and two years of follow-up after second-line ART initiation in North or Latin America, while there were increases in cumulative mortality through two years in the other regions. There were continued improvements in CD4 counts in most regions at two years of follow-up.

Conclusions: We found wide regional variations in age and CD4 count at second-line ART initiation among children. Immunological restoration was observed in all regions after switch to second-line. However, deaths continued to be observed in some regions through two years of follow-up.

Abstract WEAB0203-Table 1.