Survival, clinical, immunological and hematological outcomes of antiretroviral therapy among HIV-infected children attending a public clinic in Kinshasa, Democratic Republic of Congo

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Background: To assess the mortality, immunological, hematological, and clinical outcomes of children initiating antiretroviral therapy (ART) during the first 5 years (November 2004 – October 2009) of a standardized HIV care and treatment program at the Kalembe-Lembe pediatric hospital in Kinshasa, DRC.

Methods: Retrospective analysis of routine clinical data from a cohort of 603 HIV-infected children) 17 years of age at ART initiation.

Results: Children initiated ART at a median age of 6.4 [interquartile range 3.2–10.5] years. At ART initiation, 27.1% were on treatment for tuberculosis, 54.6% were in WHO stage III IV, 52.8% had < 10 g/dL hemoglobin, 63.0% had a CD4% < 15% (severe immunosuppression), 39.6% had a weight-for-age Z score (WAZ) -3 (severe underweight), and 9.8% had previously received antiretrovirals. The first line regimens included stavudine or zidovudine, lamivudine, and nevirapine or efavirenz. During 1409.8 child-years of follow-up (median follow-up, 28.7 months), 61 children died: 38 during the first 90 days of treatment (early mortality rate, 28.0/100 child-years; 95% CI, 1.9—2.5). The mean CD4% and WAZ rose rapidly from 11.6% and -2.57 at baseline to 25.0% and -1.92 at 12 months before stabilizing above 28.0% and around -1.80 between 18 and 48 months, respectively. The mean height-for-age Z scores (HAZ) and hemoglobin increased almost linearly from -2.23 and 9.8 g/dL at baseline to -1.78 and 10.8 g/dL at 12 months to -2.23 and 12.0 g/dL at 48 months, respectively. Children under two years of age at ART initiation had greater and more sustained gains in weight, height, CD4% and hemoglobin compared to children who started ART at least two years of age (p < 0.01, p < 0.01, p = 0.01, p < 0.01, respectively).

Conclusion: Despite late presentation in our clinic, good clinical, immunological, and hematologic outcomes were obtained within the first 12 months and maintained through 48 months of ART among children who survived the first three months. The high early mortality rate reflects obstacles to health seeking behavior, early HIV diagnosis, and access to timely ART initiation in Kinshasa.

doi:10.1016/j.ijid.2010.02.2037
Informed consent. Plasma HIV-1 RNA levels were estimated by Amplicor HIV-1 Monitor test V 1.5 (Roche Diagnostics). HIV-1 pol gene, consisting protease region (codons;1-99) and RT region (codons;1-232 to 1-239) was reverse transcribed, followed by nested PCR with self designed primers. The PCR product was sequenced with an ABI PRISM 3100 genetic analyzer system.

Results: The median HIV-1 RNA levels were log10 4.6 copies/ml (IQR; 4.2-5.3). All patients were found to be infected with HIV-1 subtype C. Only one (1.4%) study sequence harbored resistance-associated mutations in RT region, showing NRTI resistance mutation (M184I). No mutation at major resistance positions in protease region was detected. High rate of polymorphisms were observed at codons; 35, 39, 40, 48, 60, 121, 122, 123, 135, 166, 173, 174, 177, 185, 200, 204, 206, 207, 208, 211, 216, 217, 233 & 239 in RT gene and 12, 15, 18, 19, 36, 38, 41, 63, 69, 70, 89 & 93 in protease gene.

Conclusion: The overall prevalence of transmitted resistance-associated mutations was found to be 1.4%, lower than the alert cut off of 5% defined by WHO. HIV-1 subtype C exhibited enormous polymorphism in RT and protease regions of pol gene as compared to subtype B.

doi:10.1016/j.ijid.2010.02.2039

Infection Control, Nosocomial Infections and Critical Care (Poster Presentation)

56.001

Clinical, radiological and microbiological corroboration to assess the role of endotracheal aspirate in diagnosing ventilator-associated pneumonia in an intensive care unit of a tertiary care hospital, India

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Background: Early and accurate diagnosis and follow up of VAP varies considerably with the clinical, radiological and microbiological criteria employed.

Methods: This study was aimed to correlate clinico-radiological findings with microscopy and quantitative culture of consecutive ETA from 50 mechanically ventilated patients along with the antibiogram and risk factor assessment.

Results: The prospective observational study in MICU revealed the incidence of VAP to be 42% with a rate of 116/1000 ventilator days. 8 had early onset and 13 late onset VAP, with no age or sex significant preponderance. The attributable mortality rate was 61.9% which rose with duration of stay. The important independent risk factors were multi-organ failure, reintubation and pleural effusion. The most commonly isolated organisms were multidrug resistant Acinetobacter baumannii (76%) and Pseudomonas aeruginosa (42%). All enterobacterial isolates were ESBL producing and all S. aureus isolates were methicillin resistant. In 66%, colonization on day 1 resulted in development of VAP on day 4. Gram stain findings had a significant correlation with the quantitative culture of ETA, which by itself showed a significantly progressive increase in specificity in diagnosing VAP on day 7. The strength of association between CPIS scoring, the microbiological findings and the clinical diagnosis was found to be strong.

Conclusion: This study emphasizes that Gram stain and quantitative culture of ETA can be considered useful for the diagnosis of VAP and a combined clinical, radiological and microbiological approach can be successful in the management and further follow up of VAP.

doi:10.1016/j.ijid.2010.02.2040

56.002

Virucidal efficacy of topical antiseptics versus a novel strain of Influenza H1N1

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Background: On April 11, 2009 the WHO raised the epidemic alert to Phase 6 and declared a pandemic of novel Influenza H1N1. During the impending influenza season, the number of "swine" influenza cases is expected to increase, emphasizing the importance to public health of contact and respiratory hygiene. This study evaluated the susceptibility of Influenza H1N1 A/California/04/2009 strain to three topical sanitizing products, designed for application in a variety of public and healthcare settings.

Methods: ASTM E 1052-96, Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension, was used to evaluate a non-medicated soap and three topical antiseptics: AvagardTM Surgical and Healthcare Personnel Hand Antiseptic (1% Chlorhexidine Gluconate, 61% Ethanol); AvagardÔ Foam Instant Hand Antiseptic (62% Ethanol); and AvagardÔ D Instant Hand Antiseptic (61% Ethanol). All products were tested at a 90% (v/v) concentration versus Influenza H1N1 A/California/04/2009 strain with exposures of 30 seconds, 1 minute, and 2 minutes. Viral titers were calculated using the Spearman- Kärber Method.

Results: All products significantly reduced infectivity of the epidemic strain of Influenza H1N1. AvagardTM (1% Chlorhexidine Gluconate, 61% Ethanol) and AvagardTM D (61% Ethanol) produced 5.25 log10 (>99.999%) reduction after 30 second exposure, as well as after 1 and 2 minute exposures. AvagardÔ Foam (62% Ethanol) reduced the viral population by 4.25 log10 (>99.99%) after 30 second, 1, and 2 minute exposures. Testing performed on non-medicated soap revealed low virucidal efficacy after short-term exposures: 2.50 log10 (99.68%) reduction after 30 second and 1 minute exposures.

Conclusion: Significant reduction (>99.99%) in the population of A/California/04/2009 strain was achieved after 30 second exposures of the virus to the hand sanitizers. In a pandemic situation, the rapid virucidal activity provides a decided advantage in reducing Influenza transmission via hand contact.

doi:10.1016/j.ijid.2010.02.2041