TO EVALUATE THE SENSITIVITY OF W.H.O PRESUMPTIVE DIAGNOSTIC CRITERIA IN DIAGNOSIS OF HIV INFECTION IN CHILDREN <18 MONTHS ADMITTED TO UTH

By

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DECLARATION

I declare that this dissertation represents my own work and that it has not previously been submitted for a degree, diploma or other qualification at this or another University.

Signed…….. Date……

Candidate

APPROVAL

This dissertation of **Kunda Mutesu-Kapembwa** is approved as fulfilling the requirements for the award of the Master of Medicine in Paediatrics and Child Health of the University of Zambia.

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ABSTRACT

Title: To evaluate the sensitivity of WHO presumptive diagnostic criteria in diagnosis of HIV infection in children <18 months admitted to UTH.

Background: Making a diagnosis of HIV infection in children aged less than 18 months remains a challenge in low resource set ups like Zambia due to scarcity of DNA PCR testing equipment which is the gold standard. Clinicians in rural areas have to depend on HIV ELISA tests and clinical diagnosis to start HAART as they wait for the DBS for DNA PCR results sent from the urban centers.

Methods: This descriptive cross-sectional study was performed at the University Teaching Hospital, Lusaka, Zambia. 299 HIV exposed children aged less than 18 months were enrolled following a consent procedure. Information was gathered from caregivers by means of an interviewer administered questionnaire and the attending paediatrician's case notes. Two milliliters of blood was then drawn for CD4% and HIV-DNA PCR assessment. Data was analyzed using SAS, version 9.1.3.

Results: Of the 299 exposed patients analyzed 111(37%) were HIV infected by DNA PCR. The median CD4% in the infected children was 18%. WHO presumptive diagnostic criteria (PDC) used on its own proved unreliable especially in infants younger than 6 months (46% with a specificity of 84%, 62% PPV and 72% NPV). Multivariate analysis was used to identify the most sensitive predictors when combined with the WHO PDC. WHO PDC with CD4% improved the sensitivity to 81% (95% CI 0.74 to 0.88) and specificity to 77% (95% CI 0.71 to 0.83), PPV of 67% and NPV of 87%. Assessed but did not improve the sensitivity were weight < 3rd percentile (56%), lymphadenopathy (50%), hepatomegaly (47%), Splenomegaly (47%) and nappy rash (47%). When the WHO-PDC, weight<3rd percentile, hepatomegaly, Splenomegaly, lymphadenopathy and CD4% were combined, the sensitivity improved to 86%, specificity 63% , PPV 58% and NPV of 88%.

Conclusion: The WHO-PDC clinical algorithm which has a sensitivity of 46% can be improved to 81% when combined with a CD4% <25% in children less than 12 months and CD4 %< 20% in those >12 months and <18 months also with increase in age above 6 months. However, DNA PCR still remains the most reliable in detecting HIV infection especially in the 0-6months age group.

DEDICATION

This study is dedicated to my husband Kenneth, my daughters Mutale and Musawa, and to my son, Kenneth Chali Kapembwa Jr, for the support they gave me during the performance of this study.

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ABBREVIATIONS

ART- Anti-Retroviral Therapy

CDC- Centre for Disease Control and Prevention

CHER- Children with HIV Early Antiretroviral Therapy

DNA- Deoxyribonucleic Acid

EID- Early Infant Diagnosis

FBC- Full Blood Count

HAART- Highly Active Anti-Retroviral Therapy

IMCI- Integrated Management of Childhood Illnesses

MTCT- Mother to Child Transmission of HIV

NPV- Negative Predictive Value

PCR-Polymerase Chain Reaction

PITC- Provider Initiated Testing and Counseling

PMTCT- Prevention of Mother to Child Transmission

PPV- Positive Predictive Value

UTH- University Teaching Hospital

WHO- World Health Organization

WHO-PDC- World Health Organization- Presumptive Diagnostic Criteria

DEFINITIONS

Infants – children less than 12 months of age but the WHO context of infants can be 12 or 18 months and therefore appeared as such in some parts of this document quoting WHO

Reference test – DNA PCR for diagnosis of HIV infection

Index test – WHO presumptive diagnostic criteria

Sensitivity in this study was defined as the percentage of the participants who were identified as HIV infected by DNA PCR and correctly identified as being infected by use of WHO presumptive diagnostic criteria.

Specificity was defined as the percentage of the participants who were identified as being free of HIV disease by DNA PCR and correctly identified as being HIV uninfected by use of the WHO presumptive diagnostic criteria

Positive predictive values were used to tell the probability that HIV is present if the presentation of the patient fits the WHO presumptive diagnostic criteria

Negative predictive values were used to tell the probability that HIV is absent if the patients does not fit into the WHO presumptive diagnostic criteria