INVESTIGATION OF THE EFFECT OF STALANEV (STAVUDINE, LAMIVUDINE AND NEVIRAPINE) TREATMENT ON SERUM LACTATE LEVELS IN ADULTS ATTENDING BRIDH AND WIDH OPPORTUNISTIC INFECTIONS CLINICS IN HARARE

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF

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ABSTRACT

Background

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) have become a significant public health problem in Zimbabwe, threatening the socio-economic fibre of the country and placing a tremendous strain on the capacity of the health sector to respond to the needs of the population. Antiretroviral therapy (ART) has reduced morbidity and mortality due to HIV and AIDS. Although it has also improved the quality of life of people living with HIV and AIDS, concern has risen due to its association with challenges such as impaired glucose metabolism, insulin resistance, lactic acidosis, osteopenia and dyslipidemia. Although World Health Organization (WHO) has recommended phasing out stavudine in all ART regimens due to its association with mitochondrial toxicity thereby leading to lactic acidosis, Zimbabwe has continued to use it due to the limited resources available. This study assessed the development of hyperlactatemia in patients on antiretroviral therapy containing stavudine, lamivudine and nevirapine(STALANEV) attending Wilkins Infectious Diseases Hospital (WIDH) and Beatrice Road Infectious Diseases Hospital (BRIDH) OI clinics in Harare.

Study design and methods

One hundred and eighty (180) adults aged 20-60 years who were HIV infected and were about to be initiated on STALANEV at WIDH and BRIDH OI clinics were recruited into this prospective cohort study. All the participants were antiretroviral naïve before entering the study and were commenced on first line regimen of STALANEV and then

followed over a period of 4 months. The serum lactate levels of these participants were determined at enrolment (before commencing ART), after 2 months and 4 months on STALANEV treatment.

Results

Out of a total of 176 participants who completed the study, 95 (54.0%) developed hyperlactatemia over the 4-months follow-up period i.e. their serum lactate levels exceeded 2.5mmol/l. Eleven (6.8%) developed mild lactic acidosis i.e. their serum lactate levels exceeded 3.5mmol/l but were less than 4.0mmol/l. Serum lactate levels of 81 (46.0%) participants remained within the normal levels (0.5-2.5mmol/l) although there was an increase over the 4 months follow-up period. In all the participants, the mean difference between the serum lactate levels at baseline and 2 months after ART initiation was 20% whilst the one between 2 months and 4 months was 33%. A high increase of 59% was obtained between baseline serum lactate levels and the serum lactate levels after the 4 months follow-up period.

Conclusion

In this study population, STALANEV treatment led to an increase in serum lactate levels thereby, posing a danger for the development of lactic acidosis.

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ABBREVIATIONS

3TC……Lamivudine

ABC……...Abacavir

ADP…….**.....**Adenosine Diphosphate

AIDS…….Acquired Immunodeficiency Syndrome

ANC……..Antenatal Clinic

ARV……..Antiretroviral

ATP…….**.....**Adenosine Triphosphate

ATV……...Atazanavir

AZT……**...**Zidovudine

BRIDH……..Beatrice Road Infectious Diseases Hospital

CD4..... Clusters of Differentiation 4

d4T……Stavudine

ddl…….Didanosine

DNA……..Deoxyribonucleic acid

EFV……**...**Efavirenz

FDA…….….Food and Drug Administration

FDC…….Fixed Dose Combination

FI……..Fusion Inhibitors

FTC…….**.....**Emitracitabine

GI…….Gastrointestine

HAART……..Highly Active Antiretroviral Therapy

HIV…….....Human Immunodeficiency Virus

IDV…… Indanavir

LDH……Lactate Dehydrogenase

LPV…… Lopinavir

NAD ……...Nicotinamide Adenine Dinucleotide

NADH ……reduced Nicotinamide Adenine Dinucleotide

NNRTIs …….Non Nucleotide Reverse Transcriptase Inhibitors

NRTIs ……Nucleotide Reverse Transcriptase Inhibitors

NVP ……Nevirapine

OIC ……Opportunistic Infections Clinic

PIs ……..Protease Inhibitors

RNA ……..Ribonucleic Acid

RTV ……...Ritonavir

SQV ……...Saquinavir

STALANEV …….Stavudine, Lamivudine and Nevirapine

TDF ……...Tenofovir

WHO ……World Health Organization

WIDH ……..Wilkins Infectious Diseases Hospital