PDF - PROVIDE INFORMATION OF THE IL-2 LEVELS IN VIROLOGICALLY SUPPRESSED HIV INFECTED INDIVIDUALS AND ITS POTENTIAL FOR TREATMENT OF HIV INFECTION - researchcub.infoCHAPTER ONE

INTRODUCTION

The human immune deficiency viruses (HIV) are two species oflentivirus (a sub group of retrovirus) that causes HIV infection and over timeacquired immune deficiency syndrome (AIDS). AIDS is a condition in humans inwhich progressive failure of the immune system allow life threatening opportunisticinfection and cancers to thrive.(UNAIDS and WHO, 2007). Two types of HIV havebeen characterized: HIV-1 and HIV-2. HIV-1 is the virus that was initiallydiscovered and termed both Lymphadenopathy associated virus (LAV) and human T-lymphotropic virus 3 (HTLV-III). HIV-1 is more virulent and more infective thanHIV-2, (Glibert et al, 2003) and the cause of the majority of HIV infectionsglobally. The lower infectivity of HIV-2, compared to HIV-1, implies that fewerof those exposed to HIV-2 will be infected per exposure. Due to its relativelypoor capacity for transmission HIV-2 is largely confined to West African(Reeves and Doms, 2002).

In must cases,HIV is a sexually transmitted infection and occurs by contacts with or transferof blood, pre ejaculate Semen and vaginal fluid. Research has shown (for bothsame sex and opposite- sex couples) that HIV untransmissable through condomlesssexual intercourse if the Hiv positive partner has a consistently undetectableviral load. (Rodger et al, 2009; Eisinger et al, 2019) contaminated bloodtransfusions, hypodermic needle and from mother to child during pregnancy,delivery or breastfeeding (Rom and Markowitz, 2007). Some body fluids, such assaliva and tears do not transmit HIV (CDC, 2006).

The HIV attacksthe body’s immune system specifically the CD4 cells (T cell), which helps theimmune system fight off infections. Untreated, HIV reduces the number of CD4cells (T cell) in the body, making the person more likely to get otherinfection, or infection related cancers. Over time, HIV can destroy so many ofthese cells that the body can’t fight off infections and disease. Theseopportunistic infections or cancer take advantage of a very weak immune system and signal that theperson has AIDs, the last stage of HIV infection (CDC, 2017).

In topical andlow income countries, HIV disease and AIDS is a major public health problem,socio-economic burden, and a serious treat to development. At the end of 2008,the joint United Nation program on HIV/AIDS (UNAIDS), estimated that globallythere were 33.4 million of people living with HIV/AIDS. An estimated 2.7million new infections, occurred, 2.3 million being adults and 430,000 beenchildren under the age 15 years. About 67% of the total number of infectedpeople live in sub-Saharan African an estimated 2.0 million deaths occurredduring 2008.

As of 2017,approximately 36.9 million people are infected with HIV globally, in 2018,approximately 43% are women. There were about 940,000 death from AIDs in 2017(UNAIDS org, 2018).

The managementof HIV/AIDS normally include the use of multiple antiretroviral drugs in anattempt to control HIV infection. There use of multiple drugs that acts ondifferent viral target is known as highly active antiretroviral therapy(HAART). HAART decreases the patient’s total burden of HIV maintains functionof the immune system and prevent opportunistic infections that often leads todeath (Moore and Chaisson, 1999). Highly active antiretroviral therapy (HAART)has resulted in more effective suppression of HIV replication and a slowing ofslowing of immune deterioration. Evidence of immune restoration has beenobserved in patients who respond to HAART, even in those with advanced disease,(Mitsuyasu, 1999). However, complete restoration of immunity has not beenobserved. Consequently, as viral resistance to ARV therapy

develops, furtherimmune deterioration ensues.
A new paradigm for HIV therapy incorporates the use ofimmune stimulants that can help to expand the immune repertoire and enhanceHIV-specific immunity. Such therapies are expected to delay HIV diseaseprogression and decrease the occurrence of opportunistic infection/disease.Immune-based therapy was founded on the premise that stimulation of HIV- andpathogen-specific immunity will facilitate immune reconstitution and delaydisease progression. Immune stimulation may also provide an opportunity fordeveloping strategies to reduce or eliminate CD4+ memory cells with latent HIVinfection. These cell may represent a major reservoir for HIV in HAART-treatedindividuals (Siliciano 1999; Chun et al, 1997 and Finzi et al, 1997). Severalstrategies for reducing the number of latently infected cells have beenproposed including the use of DNA synthesis inhibitors (e.g., hydroxyurea),gene therapy, enhancement of HIV-specific immunity by massive immune activationwith agents such as human ril-2, anti-CD3, multiple vaccination, andgranulocyte-macrophage colony-stimulating factor, and other approaches, whichmay be implemented in the presence of cytotoxic therapies or suppressive ARVtreatments (Saag and Kilby, 1999). Enhancement of immune restoration over andabove that achievable with ART alone, using a number of strategies includingcytokine therapy, has been of interest for many years. The most studiedcytokine in this setting is recombinant interleukin (IL)-2 (rILn-2).

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