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An Analysis of HIV-Infected Patients Attending an Urban Teaching Hospital in Kenya and their Antiretroviral Therapy Change

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Description

To assess the prevalence of ART modification and the factors associated with it among HIV patients on first-line therapy at a large teaching hospital in Kenya. A cross sectional retrospective assessment of clinical records. The researchers looked at all patients who started Anti-Retroviral Therapy (ART) between January 2005 and June 2011 and had at least one follow-up visit. A standard chart abstraction tool was used to obtain baseline data, which included socio demographic and clinical information. The average age of research participants was 37.8 years, and 658(64.4%) of the 1,022 patients were female. At the time of ART initiation, the median CD4+ count was 149 cells. Staudinger and zidovudine were the most common first-line regimens, with 63% and 13.3%, respectively. At a rate of 36.8%, 1775 patients changed their initial ART (95% Confidence Interval (CI) 35.4%-38.2%). Toxicity accounted for 66.5% of ART modifications, followed by treatment failure (12.9%) and co-morbid disorders (9.4%). Lipodystrophy (41.3%), peripheral neuropathy (10.6%), and anaemia were the most common adverse consequences (5.9%). The average time it took to start modifying therapy was 28 months (IQR 15-41). Pre and post modification immunological results ranged from 335 cells (IQR 8-497) to 399 cells (IQR 257-611), with p=0.001.

In this study, there was a significant rate of ART modification. The most common reason for therapy adjustment was drug toxicity; however, this did not alter treatment success. The median time it took for first-line ART to be modified was 28 months. Low CD4+ count, rising which stage, and prolonged ART duration were all linked to the possibility of ART modification.

Baseline Characteristics of the Respondents

The introduction of Anti-Retroviral Therapy (ART) has led to significant reductions in Acquired Immune-Deficiency Syndrome (AIDS) related morbidity and mortality. In 2007, the World Health Organization (WHO) estimated that 1,10,0000 adults and children were living with Human Immune-deficiency Virus (HIV) in Kenya, of these HIV-infected individuals, 470000 persons were estimated to be in need of antiretroviral therapy, of whom only 177000(38%) were actually receiving ART. As the number of patients starting ART in Kenya continues to rise, numerous medical and logistical challenges have arisen, at both the individual and national levels as only limited antiretroviral drugs are routinely available. These limited options make the modification (switching or substitution) of regimens because of treatment failure, drug toxicities or contraindications a particularly major issue in the scale up of national HIV treatment programs.

Quantifying the frequency of modification of specific regimens while remaining continuously on ART is important as it provides a rough estimate of the rate at which ART regimens are failing or not tolerated. This use of modification remains an important marker of unsuccessful therapies whether due to their inability to control the virus or because of their intolerable adverse effects in a patient's life. Studies conducted in sub-Saharan Africa have shown that viral suppression and improvement in immune status can be achieved among patients with near-perfect adherence to antiretroviral therapy. It has been observed, however, that prolonged exposure to ART may result in untoward adverse drug reactions, poor adherence, and the emergence of drug-resistant mutants with attendant treatment failure.

Immunological Outcome of Modification

Studies on patients taking proprietary ART from the developed world indicate that 36%-44% of patients may modify (switch or substitute) their ART regimen at 1 year of therapy. In these studies, younger female patients, those with a lower CD4 cell count and higher viral load at the start of therapy, those who had previously been treated, and those who were on 4 drug regimens were more likely to modify their ART regimens.

In a study HIV infected adults in Ivory Coast assessing the rate and causes of first ART they found 483(24%) patients changed treatment in a 2 year follow-up period. A review of AIDS relief data of 6520 patients, a total of 36% of patients modified ART over a 2 year period. A long-term cohort study in Europe found that at 6 years over 80% of patients on treatment had started at least one new drug (substitution) and nearly half had started a new class of drugs (switch).

As durable success is most likely with the first regimen, with sequential regimens leading to progressively less durable and less effective viral suppression, the avoidance of modification of therapy is imperative. Several studies have established the median time to ART modification to occur at approximately one year. Kumarasamy in a South India study found a median time to modification of ART of 13 months whereas O'Brien in the USA found a median time of 8 months in a multicenter study in the USA found a median time to initial modification of ART of 11.8 months. Sequential ART regimens were of progressively shorter duration, demonstrated less viral suppression and CD4 cell count benefit, yet low morbidity and mortality rates were sustained. Durable response to ART was associated with being pre ART therapy naive, prompt response to ART, and protease inhibitor-based initial ART (indinavir or nelfinavir) in this study. The aim of this study was determine the reasons, immunological outcome and predictors of initial modification of HAART among HIV patients at Kenyatta National Hospital (KNH) HIV/AIDS outpatient clinic.

The infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and the development of coronavirus disease 2019 (COVID-19) represents a major global health care

challenge. Laboratory diagnosis of infected patients and the assessment of immunity against SARS-CoV-2, presents a major cornerstone in handling the pandemic. Laboratory testing is built on 2 different pillars: On one side, the detection of viral RNA, and on the other side measuring antibodies of various isotopes against SARS-CoV-2 components, reflecting the host immune response. Although antibodies develop quite early during the course of the disease, the serological response is not suitable for early detection of infected patients.

The Spike Protein (SP) of the SARS-CoV-2 envelope has been shown to be highly immunogenic and is the main target for neutralizing antibodies. By day 14 after symptom onset, the serum of 95%-100% of patients with COVID-19 contains IgG antibodies to the spike protein of the SARS-CoV-2 envelope, including antibodies to the Receptor-Binding Domain (RBD) of the SP, which strongly correlate with antibodies that neutralize viral replication in cell cultures (i.e. neutralizing antibodies NtAb). However, studies have also shown some people who presented positivity in results from the molecular test did not have detectable levels of protective IgG antibody. Furthermore, neutralizing antibodies were low or not at all present even in hospitalized patients. This situation raises questions about protective immunity and about the ability of patients to mount an antibody response.