IDA Highlight: Possible barriers and opportunities for HIV cure

This year the IDA Symposium was fortunate to have Prof. ***Thumbi N'dungu*** from African Health Research Institute (AHRI), as one of the faculty member, he presented his research on "**Possible barriers and opportunities for HIV cure in patients who initiate treatment during acute HIV infection.**" His presentation focused on ongoing studies his research group conducts on a unique cohort (known as FRESH) of young females in the region of KwaZulu-Natal. These females were at high risk of getting HIV, and were recruited prior to getting infected, this enabled researchers to study anti-viral immunity during early phases of HIV infection.

N'dungu showed that participants initiated on anti-retroviral therapy (ART) during Fiebig stage I/II showed diminished magnitude of humoral and CTL immune responses, but CTL responses were more functional and had greater recall potential than those who initiated ART post Fiebig stage I/II.

In the FRESH cohort, the reservoir is established very early and even in Fiebig I treated participants, total RNA load in lymphoid tissue during acute infection is similar to ART-untreated participants. Early initiation of ART leads to slow but steady decay of the reservoir, which may indicate ease of cure. Analytical treatment interruption in early treated patients inevitably resulted in viral recrudescence in majority of cases.

Lastly, N'dungu outlined in brief some of the projects they are working on, as well as prospective work. These studies include the combination approaches of early treatment such as immune modulators (TLR agonists) and specific antiretroviral-immune agents (e.g.multiple bNAbs). These strategies should be tested to investigate whether they can induce long-term remission upon ART interruption.

In addition to the potential treatment strategies discussed by Prof N'dungu, there is growing interest in developing HIV therapeutics that target human genes, e.g altering epigenetic mechanisms using CRISPR interference (CRISPR-I). **Upasana Ramphal,** PhD Candidate from University of KwaZula-Natal gave an oral presentation on **"CRISPR-I as a therapeutic tool for the modification of human HIV genes".** She demonstrated that CRISPR-1 induced methylation of C-C chemokine receptor (CCR5) results in the reduction viral load, while Tetherin methylation leads to increased viral load.

In summary these stalks highlighted the importance of ART in reducing global burden of HIV infections, as well as the quality of life of HIV-infected individuals. In spite of the improvement of HIV management ART has caused, we need better therapeutics to eliminate the viral load and achieve HIV cure.

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