Cardiovascular Disease and Antiretroviral Therapy

Introduction

Patient with HIV infection or full-blown AIDS is at increased risk of cardiovascular diseases.[1] HIV itself and ART induces dyslipidemia have been implicated. The incidence of acute myocardial infarction was higher among the HIV-infected patients, even after adjusting for the Framingham risk factors and other potential contributors.

AIDS patients are at higher risk of arteritis (with or without opportunistic infections), and these arteritic changes can be an additional risk factor for increased coronary artery disease.

It has been now established that antiretroviral therapy (ART)-associated dyslipidemia and the increased glucose level is associated with significant morbidity and mortality, these should also be evaluated subsequent to ART initiation. However, many treating physician underestimate the risk of cardiovascular disease (CVD) looking to the lean body mass of few AIDS patient, hence many risk assessment scores, and calculators are devised and studied. Here is an attempt to update you regarding the same.

HIV and ART induce dyslipidemia itself is a big topic, treatise can be written on that. Hence, I have chosen few issues that may bewilder the treating physician in this regard.

Which Risk Assessment Method is Better?

CVD risk estimates from the Framingham equation were generally higher than those from the DAD (data collection on adverse events of anti-HIV drugs) equation, although by only a moderate margin.[2]

In typical HIV clinic, however, the application of HIV population-specific equation could be cost saving by reclassifying them into the lower risk strata, those would likely be ranked as high risk by the general CVD equation.

These could be cost saving in terms of further investigation and treatment cost and also save patients with associated side effect profile of lipid-lowering medicines.

Till now, while none of the available risk assessment tools are optimal enough for HIV-infected patients, the PCE (Pooled Cohort Equations CV Risk Calculator) seems a reasonable starting point for clinical use until more studies are published.[3] Framingham risk score is also reliable predictor as found in one study, 14 (17.72%) patients with lipodystrophy had moderate-to-high cardiovascular disease risk by Framingham risk score as compared to only 3 (3.3%) in patients without lipodystrophy.[4]

The cardiovascular risk reduction interventions in the primary care of HIV-infected patients are very much overlooked. Like in one Similar study, only 17% of patients with HIV meeting criteria for aspirin use for primary prevention of disease (based on the Framingham risk score) were prescribed Aspirin.[5]

HIV-infected patients should be screened for diabetes at baseline and after the initiation of ART.

Dose Earlier Initiation of Antiretroviral Therapy Lowers the Incidence of Cardiovascular Risk?

Till date, data from randomized clinical trials do not confirm that earlier initiation of ART actively lowers the incidence of cardiovascular disease. Although the START trial demonstrated an overall clinical benefit of early versus delayed ART.

However, now as the most guidelines and even as per the NACO guideline, ART is started irrespective of the cd4 count for early suppression of viremia.

Which Drugs are more Having Risk to Induce Dyslipidemia and Increase Cardiovascular Risk?

Of note, certain older-generation protease inhibitors (such as indinavir and lopinavir-ritonavir) and nucleoside reverse transcription inhibitor abacavir, were implicated in inducing dyslipidemia. Thus, we only use these agents, if otherwise indicated, with caution among patients with significant risk factors for coronary artery disease rilpivirine is associated with more favorable lipid effects than efavirenz among nonnucleoside reverse transcriptase inhibitors. Atazanavir and darunavir has less negative lipid effects than other protease inhibitors; they may not be as lipid neutral as raltegravir (integrase inhibitors) [6].

Switching of Antiretroviral Regimen for Cardiovascular Risk Reduction?

Switching from a lopinavir-containing regimen to an atazanavir-containing regimen has a beneficial effect on lipid profiles while maintaining virologic suppression.[7]

Switch from a boosted protease inhibitor to an integrase inhibitor-based regimen is also promising alternative.

How to Treat Dyslipidemia in Cases of HIV and Dyslipidemia?

Atorvastatin with starting dose of 10 mg daily is a sound choice due to the lack of metabolism through the cytochrome P4503A4 system. Others in this league are pitavastatin with

a starting dose of 4 mg daily and less potent pravastatin (starting dose 20 mg daily).

The optimal approach to cardiovascular risk reduction in HIV-infected patients is not precisely defined, but it is widely accepted that, early ART initiation helps to control dyslipidemia in addition to suppression of HIV viremia.

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