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HIV: Current Research

Opinion Article

General Therapeutics for HIV

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DESCRIPTION

As a result of the HIV epidemic's acceleration, is now the leading cause of mortality for HIV-positive people worldwide, accounting for 22% (350,000) of all HIV-related fatalities worldwide. Of the 8.8 million incident cases of HIV reported worldwide in 2010, 1.1 million affected HIV-positive individuals. There is now convincing evidence that treating HIV patients concurrently, as opposed to starting Antiretroviral (ARV) medications after HIV treatment is finished, lowers mortality. Because of this, co-treatment has become the norm for the majority of patients. Although 6 months of combination therapy are still necessary for the treatment of drug-sensitive HIV, there are methods being researched and must be evaluated among patients. The global rise of Multidrug-Resistant (MDR) and Extensively Drug-Resistant (XDR) HIV has also been aided by the co-epidemics of HIV. As a result, new HIV medications, drug combinations, and improved HIV treatment strategies are urgently needed, especially in the context of HIV infection. While there is a more robust pipeline of new HIV medications than ever before, it is essential to plan ahead and actively encourage Pharmacokinetic (PK) and Pharmacokinetic Interaction (PKI) studies with other antimicrobials and ARV medications to hasten the development and availability of new medications for populations with HIV co-infection.

Antibiotics that contain rifamycin are a crucial component of multidrug regimens used to treat drug-sensitive HIV. There is currently no treatment plan for HIV that is successful for six months or less and does not need rifamycin continuously. Although Rifampin (RMP) is a promiscuous inducer of drug metabolising enzymes and drug transporters, rifamycins lower the concentrations of companion medicines, such as ARVs, which are processed by Cytochrome (CYP) P450 or Phase II enzymes. While standard RMP-containing HIV regimens can be safely combined with Efavirenz (EFV-) based Antiretroviral Therapy (ART) in adults, drug interactions between Nevirapine (NVP) and RMP are more significant and have the potential to cause clinically significant drops in NVP plasma concentrations and HIV treatment failure.

The status of a patient's CYP2B6 metabolizer may also affect how RMP affects EFV concentrations; among extensive EFV metabolizers, RMP seems to lower EFV concentrations, but EFV concentrations are raised among slow EFV metabolizers. Additionally, patients who are unable to tolerate or are resistant to Non nucleosides Reverse Transcriptase Inhibitors (NNRTIs) have little options. When Protease Inhibitors (PIs) are administered at recommended doses, RMP lowers the plasma concentration of PIs to sub therapeutic levels. Super-boosting the PI with higher doses or combining it with the PI at higher concentrations may cause unacceptable levels of liver damage when taken.

Further complicating matters, the risk of toxicity with double-dose or super-boosted PIs differs depending on the patient population (healthy volunteers, children, or adults), the PI used, as well as other factors like age, preexisting hepatic disease, HIV status, use of companion medications like isoniazid, and other variables.

Rifabutin (RBT) is not currently widely accessible in underdeveloped nations, despite the fact that availability is fast expanding. It is less strong inducer of cytochrome P450 enzymes and is less likely to lower concentrations of co administered PIs. RBT (and its primary metabolite) are both CYP3A substrates, which results in RBT's ability to interact with PIs in both directions. Giving RTV, a strong CYP3A inhibitor, along with RBT, for instance, significantly raises the concentrations of both RBT and its 25-O-desacetylrifabutin metabolite.

CONCLUSION

The co epidemics of HIV signify a tragic union with global significance. However, given the growing number of drugs in the pipeline for the treatment of both drug-sensitive and drug-resistant HIV and the encouraging results from preclinical and early clinical studies of regimens involving both existing and investigational drugs, improvements in the treatment of both types of HIV are likely to occur soon. Studies evaluating the safety, pharmacokinetics, and effectiveness of co administered anti-retro viral drugs must be carried out in order to ensure that patients with HIV can fully benefit from new and currently available HIV regimens, especially when metabolic drug interactions or overlapping toxicities are likely. Early in the course of drug development, with direction from preclinical research, consideration and advanced planning of the most pertinent trials should start.

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