HIV and AIDS Research Journal

Extended Abstract

Challenges in HIV and TB Treatment

Aldea-David Laura-Augusta

Turda Hospital, Brazil, E-mail: augu_lala_2006@yahoo.com

Keywords: Antiretroviral Therapy (ART); HIV; Mycobacterium tuberculosis (MTB)

Abstract:

Background: The Main objective of this presentation was to evaluate the impact of clinical pharmacists on important issues related to the use of antiretroviral therapy (ART) in patients with active tuberculosis disease. Treatment for HIV and tuberculosis leads to polypharmacy. This fact might be a challenge for the physician, but also for the pharmacist.

Methods: We analyzed noteworthy pharmacokinetic drug-drug interactions between antituberculous and antiretroviral (ARV) agents, the additive toxicities correlated with concomitant ARV and TB drug use. HIV and Mycobacterium tuberculosis are two widespread and highly successful pathogens whose synergy in pathogenesis has created a major threat to human health globally. Infection with HIV and Mycobacterium tuberculosis (MTB) is a deadly combination affecting major populations in Africa, Asia, Latin America, and Eastern Europe. Progressive immune dysfunction caused by HIV infection increases susceptibility to MTB infection also as progression from latent infection to active tuberculosis (TB) disease. Furthermore, when HIV and MTB-co-infected individuals are treated with antiretroviral drugs against HIV, they'll develop an immune reconstitution inflammatory syndrome, where the recovering system starts to react to the bacterial infection, resulting in increased morbidity. The medical handling of HIV/MTB co-infection and therefore the management of this public ill-health is complicated thanks to difficulties within the diagnosis of active TB patients. Effective vaccines are inadequate against both HIV and MTB infection, many diagnostic issues are unresolved and therefore the understanding of the host-pathogen interactions is in an early stage, there are more chances for improvement.

Vaccinations are the foremost efficient and cheapest ways to regulate microbial infections and, thus, there's an urgent need for effective vaccines against both HIV and TB. The major obstacles to the development of an HIV vaccine are the virus's extraordinary diversity. As HIV targets the CD4 helper T-cell population that's necessary for the generation of both adaptive immune responses, there's an intrinsic difficulty here that's connected with the viral lifestyle. The situation for TB is different from HIV because a vaccine already exists. Indeed, bacille Calmette–Guérin (BCG) is that the most generally administered vaccine worldwide, with 100 million doses given annually; however, it's of limited efficacy, because it mainly prevents disseminated TB in children rather than pulmonary infection and is contraindicated in infants with a confirmed HIV diagnosis. In order to eradicate TB by 2050, it's critical to possess a vaccine that's safe and confers durable protection against pulmonary and extrapulmonary TB in both HIV-infected and noninfected infants and adults.

The presently feasible diagnostic and therapeutic options for HIV infection are extraordinary. The virus is noticeable throughout the whole infection period and may be analyzed genetically to supply a phenotypic drug resistance profile with high accuracy. HIV sequence information can even be used to direct optimal therapeutic regimens, allowing individualized HIV treatment in the near future. Furthermore, by measuring surrogate markers, such as CD4 helper T-cell numbers, the patient's state of immunodeficiency can be monitored. Similarly impressive is the progress made in antiretroviral treatment. More than 20 antivirals are on the market and highly efficient new drug classes, like the integrase inhibitors, have recently gained official approval. For TB, the situation is completely different. There is an urgent need for diagnostic tools that will accurately and rapidly detect paucibacillary disease, and monitor treatment in infants, children, and adults. Because traditional TB control programs rely on passive case finding of smear-positive TB, many children and people with HIV, who are more likely to be asymptomatic and have smear-negative and extrapulmonary TB, are overlooked of the system of care. The response to HIV and TB requires

support from the highest level of leadership in the integration of HIV and TB strategies, interventions, services (prevention and care), and research. A major challenge to HIV/TB control is not political or financial, but social. Discrimination and fear are related to HIV infection and TB alike. The social effects of these two highly stigmatizing diseases compound individual suffering and adversely affect health-seeking behavior.

Results: At the Regional AIDS Centre Cluj we analyzed the clinically drud-drug interactions in HIV infected adults coinfected with active TB, who added to their usual therapy, are taking medications to treat and prevent opportunistic infections and current infections. The major interactions drug-drug interactions are Rifampicin+isoniazid: rifampin increases toxicity of isoniazid by increasing metabolism. Possible serious or life-threatening interaction. Monitor closely. Rifampicin+pyrazinamide: Either increases toxicity of the other by pharmacodynamic synergism Rifampicin+raltegravir: rifampicin decreases levels of raltegravir by increasing hepatic clearance. linezolid+isoniazid: linezolid and isoniazid both increase serotonin levels. Isoniazid+efavirenz: Isoniazid will increase the extent or effect of efavirenz by affecting hepatic/intestinal enzyme CYP3A4 metabolism Rifampicin + efavirenz: rifampin will decrease the extent or effect of efavirenz by affecting hepatic/intestinal enzyme CYP3A4 metabolism. Rifampicin+fluconazole: Rifampicin decreases levels of fluconazole by increasing metabolism. Significant interaction possible, monitor closely. Clarithromycin+efavirenz: clarithromycin will increase the extent or effect of efavirenz by affecting hepatic/intestinal enzyme CYP3A4 metabolism. Rifampicin+clarithromycin: Rifampin will decrease the level or effect of clarithromycin by affecting hepatic/intestinal enzyme CYP3A4 metabolism the field of HIV-related drug interactions is growing rapidly and the consequences lead to medication failure and significantly affect the patient's quality of life that's why it is very important for the clinical pharmacist to identify and manage the potential drug interactions.

Conclusion: A high percentage of pharmacists' recommendations were accepted by the physician, the bulk of the pharmacist's functions involved ARV dosing, detection of drug interactions or adverse drug reactions, provision of drug information, ARV adherence counseling, and instructing on the use of adherence-enhancing tools: the integrase inhibitor raltegravir (Isentress), requires nearly perfect adherence. The clinical pharmacist may have an area within the multidisciplinary team providing care in people living with HIV: patient HIV/AIDS education; adherence counseling; side effect management; medication therapy management; mitigation of patient barriers to treatment and staying within the care of patient barriers to treatment; drug cost management and optimization.

Biography: She is working as a Researcher at the Turda Hospital, Romania. Her experience includes various programs, contributions and participation in different countries for diverse fields of study. Her research interests reflect in her wide range of publications in various national and international journals.