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Commentary

Clinical Pharmacology of Voriconazole in Acquired Immune Deficiency Syndrome

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ABOUT THE STUDY

In clinical practise, voriconazole, a triazole antifungal drug, is frequently employed. *In vivo*, voriconazole's pharmacokinetics are nonlinear, and its therapeutic window is constrained. Therapeutic Drug Monitoring (TDM) can increase the effectiveness and safety of voriconazole treatment. The personalised dose of voriconazole is more difficult in Acquired Immune Deficiency Syndrome (AIDS) patients due to the unique illness status and polypharmacy, and this is a problem that requires more attention and urgent investigation. Unfortunately, there haven't been many studies done in this area, especially on voriconazole TDM in AIDS patients. Implementing TDM could be a crucial tactic for individualised voriconazole treatment. This study looks back at how voriconazole TDM was used in pharmaceutical care with the goal of finding new ways to make it easier for patients to take it at their own pace.

Infections with *Candida* and *Cryptococcus* are typical fungal opportunistic infections in AIDS patients, while *Talaromyces marneffei* (*T. marneffei*) infections are widespread in southern China. Echinocandins and fluconazole are preferred to voriconazole for *Candida* infections. Flucytosine, fluconazole, and amphotericin B are frequently recommended for treating *Cryptococcus neoformans* infections. It is advised to start treatment with amphotericin B for the deadly systemic mycosis *T. marneffei* before switching to oral itraconazole for maintenance. Voriconazole is not typically advised as the first line of treatment for the frequent opportunistic fungal infections in AIDS patients. The majority of *T. marneffei* isolates, according to earlier research, are susceptible to voriconazole. Voriconazole has been shown to be effective and safe in treating *T. marneffei* infection in patients through a number of studies.

Because AIDS patients are a unique population with unique illness status and polypharmacy, prescribing voriconazole on an individual basis in a clinical context is more difficult. Numerous studies have examined the use of voriconazole TDM in particular populations, such as children, the elderly, cirrhotic patients, and tuberculosis patients. However, the application of voriconazole TDM in AIDS patients has not been documented in the literature, making this study's standout finding. Additionally, the clinical pharmacist was involved in all aspects of the treatment, including choosing appropriate medications and creating treatment plans for AIDS patients, conducting voriconazole TDM, directing the dose adjustment of voriconazole based on TDM, and overseeing the monitoring of Adverse Drug Reactions (ADRs).

Genotype, age, gastrointestinal absorptions, pathophysiological status, and drug interaction are just a few of the multifactorial and complex influencing factors that can affect how each patient responds to voriconazole treatment. Of these, drug interaction and CYP2C19 genetic polymorphisms are the two most significant influencing factors. Poor CYP2C19 metabolizers have voriconazole C_{max} and AUC values that are 2–5 times greater than those of healthy CYP2C19 metabolizers. The CYP2C19 genetic polymorphism affects voriconazole's steady-state level and is a significant contributing factor to the drug's very varied pharmacokinetics. Clinical Pharmacogenetics Implementation Consortium advises patients using voriconazole to have their CYP2C19 genetic polymorphisms checked (CPIC).

After starting a regular dose schedule, AIDS patients typically achieve low levels of voriconazole concentration, and the underlying causes are multifaceted and complex. Drug interactions as well as hypoproteinemia are major influencing factors. When the voriconazole concentration is higher than 5.0 g/mL, voriconazole-related adverse drug reactions are more common in AIDS patients. To improve the efficacy and safety of voriconazole therapy, it is therefore essential to apply pharmaceutical care based on TDM, which can direct the dosage optimization of voriconazole. Last but not least, the Chinese Practice Guideline's dosage modification approach is appropriate to the population of AIDS patients.

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