Therapeutic drug monitoring of non-anticancer drugs in cancer patients

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Therapeutic drug monitoring (TDM) or the measurement of drug concentrations in plasma, serum or blood, aims to improve clinical activity, avoid toxicity, and reduce the costs of drug treatment. Specific conditions for TDM to be reasonably applied include the availability of a validated assay, a considerable interindividual pharmacokinetic variability, a high correlation between drug concentration and toxicity, and a narrow therapeutic index. Cancer patients are especially prone to drug-drug interactions due to significant comedication, impaired liver and kidney function and hypoalbuminemia with altered drug binding. This article discusses TDM for various broadly used non-anticancer drugs in cancer patients and gives specific recommendations. Selected drugs covered in this article include those regularly used in febrile neutropenic patients such as the glycopeptide antibiotics, aminoglycosides, the antifungal agents, including flucytosine andazole compounds, the anticonvulsants phenytoin, carbamazepine and valproate, the tricyclic antidepressants, selective-serotonin-reuptake inhibitors, lithium, morphine, digitalis glycosides and the immunosuppressants cyclosporin A, tacrolimus, sirolimus and mycophenolate mofetil, crucial compounds in the setting of bone marrow transplantation. In all cases, treating physicians have to consider the variability in patient age, disease stage, comedication, organ function and protein level to weigh the pros and cons of TDM in the individual cancer patient.

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