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Commentary

Estimating Plasma Drug Concentration in Therapeutic Drug Monitoring

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DESCRIPTION

The contribution of pharmacokinetic variability to variations in dose requirements can be identified by measuring drug attention at consistent intervals and increasing the dose to obtain a preferred attention that has been linked to efficacy. However, because there may be significant inter-person pharmacodynamics variability at given plasma concentration, multiple concentrations rather than a single level are typically targeted. The measurement of plasma or blood concentrations has proven to be a valuable surrogate index of drug publicity exposure in the body for a limited number of medications for which there may be a higher relationship between plasma or blood concentration-reaction than dose-reaction.

The healthcare system is still under pressure to provide services at the lowest possible cost. As a result, many drug analysis laboratories' job is to measure therapeutic agent concentrations in blood samples and correlate that number with treatment options. TDM includes therapeutic drug measurements as well as expert clinical interpretation of drug concentrations and assessments based on pharmacokinetic principles. To ensure full clinical benefit, a drug concentration measurement expert's interpretation is required. Clinicians measure physiological indicators of therapeutic response such as lipid levels, blood glucose, blood pressure, and coagulation to track the pharmacodynamics of drugs on a regular basis. Many drugs don't have an easy way to measure efficacy, or the method isn't sensitive enough. As a result, TDM is predicted on the basis of a clear relationship between dose and plasma or blood drug concentration, as well as between blood drug concentration and pharmacodynamics effects. In two well-known situations, doctors can stop treatment by measuring plasma drug levels. First, treatment should be stopped if digoxin plasma levels fall below the therapeutic range in patients who have a good clinical status, as this is unlikely to result in clinical deterioration. It's worth noting that this application of plasma concentration measurement is predicated on the assumption that the treatment range has a lower bound.

Even for drugs that meet these criteria, there is some debate about how useful it is to monitor their plasma levels. First, there is no good evidence that targeting plasma concentrations improves treatment outcomes, and it has been argued that plasma monitoring's therapeutic value should be tested. These arguments, however, ignore the underlying principles. The relationship between plasma concentration and effect is stronger than the relationship between dose and effect, implying that monitoring plasma concentration could help with drug treatment. Second, difficulties in defining the scope of treatment, such as those encountered when conditions alter a drug's pharmacodynamics effects, have been argued to reduce the technology's value. This discussion, however, only emphasizes the importance of correctly interpreting plasma drug concentrations in such circumstances. Third, some argue that the plasma concentration is being treated rather than the patient; for example, improper sample collection timing causes monitoring to be misused. This last point, we argue, suggests that the data provided by plasma drug concentration monitoring is being misused. Without a specific reason, there is no reason to measure plasma drug levels on a regular basis. In fact, routinely measuring plasma drug levels for no apparent reason is just as irresponsible as not taking medication.

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