Drug Interaction Issues in Oncologic Treatment

Young-Chai Lim

Department of Pharmacology and Clinical Trial Center, Chonnam National University Medical School and Hospital, Gwangju, Republic of Korea

Cancer patients are particularly susceptible to drug interactions because they commonly receive multiple medications for the treatment of their tumors, comorbid conditions and cancer-related syndromes such as pain, emesis, depression, venous thrombosis, and seizures. In addition, the majority of cancer patients are elderly, requiring polypharmacy due to their multiple cormorbidities. Three types of drug interactions are pharmacokinetic, pharmacodynamic, and pharmaceutical. A pharmacokinetic interaction takes place when a drug alters the absorption, distribution, metabolism, and/or excretion of another drug. The risk of drug interactions is further increased because the pharmacokinetic parameters in these cancer patients may be altered. The change in pharmacokinetic parameters may be due to a number of factors such as impaired drug absorption due to mucositis and malnutrition, variation in a drug's volume of distribution because of reduced levels of serum-binding proteins and generalized edema, renal and/or hepatic dysfunction, and altered drug excretion. Pharmacokinetic interactions via metabolic effects most frequently occur via drug interactions with cytochrome P450 enzymes. Pharmacodynamic interactions usually result from combining two drugs with similar mechanisms of action or when an electrolytic abnormality induced by one drug alters the net effect of another. The use of complementary and alternative medicines may increase the risk of clinically relevant herb-anticancer drug interactions in certain cases, considering the narrow therapeutic window of oncolytic drugs. All the drug interactions can not be predicted, and those that are predictable are not always avoidable. Increased awareness of the potential for these interactions will however allow healthcare providers to minimize the risk by choosing appropriate drugs and also by monitoring for signs of interaction. This review considers and presents the principles of drug interactions, its examples, and other interaction-related issues in oncology.