Review on Capecitabine and the impact of preliminary tests in lowering toxicity

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Abstract: Colorectal cancer is the third common cancer and the second reason of deaths worldwide. Capecitabine is an orally used Fluoropyrimidine Carbamate converted into 5-FU in tumor tissues and has proven efficacy in metastatic colon, colorectal and breast cancers. It is also used in combination with Oxaliplatin in various regimens. For most of anti-cancer agents, the way of calculating dose is body surface area (BSA). But this process should be valid if there is a correlation between BSA and pharmacokinetic parameters. Due to genetic or non-genetic variation, anti-cancer drugs have intra- and inter-individual variability. This variability leads to different toxicity and even fulminant death. So balance of toxicity and safety is strongly critical. This study aims to inform a review of data set to conclude information about the impact of preliminary tests in safety of patients. PubMed and Scopus data bases were searched for clinical trial with the keywords of Capecitabine, TDM (Therapeutic Drug Monitoring), Toxicity, DPD and pharmacokinetic which were published from 2000 through September 2013 with relevant abstracts. This review clarifies influence of TDM and assessment of DPD-activity in both clinical treatments and safety profile. Monitoring and evaluation of DPD-activity have the highest impact on patient’s ensuring safety. Besides, this rare deficiency can cause toxic and fatal accumulation of 5-FU type medications. Despite of safety profiles of recent chemotherapy agents, still toxic side effects can cause life-threatening complications. Since there is no correlation between pharmacokinetic and pharmacodynamics, TDM is not appropriate way to avoid toxic complications. However, the deficiency of DPD can lead to death, it is recommended to be performed proper procedures to assess the relative toxicity and optimize patient’s responses.

Keyword: Capecitabine, TDM, DPD-Deficiency, Toxicity, Adverse Effects