Background of use of 5-Fu

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Abstract

5-fluorouracil (5-FU) was first introduced in 1957, it is widely used in the treatment of a range of cancers, including colorectal and breast cancers, and cancers of the head and neck. 5-FU is an analog of uracil, an antimetabolite that exerts its anti-tumor activity on cells during the S-phase of the cell cycle. 5-FU can react in the following two ways; first, it transforms into 5-fluoro-2’-deoxyuridine-5’-monophosphate (FdUMP), which binds to thymidylate synthase, thus inhibiting the synthesis of DNA. Second, 5FU may convert into 5-fluorouridine-5’-triphosphate (FUTP) and then FUTP is incorporated into RNA, which causes dysfunction of RNA. Third, FdUMP can be transformed into 5-fluoro-2’-deoxyuridine-5’-diphosphate, which is then phosphorylated to 5-fluoro-2’-deoxyuridine-5’-triphosphate (FdUTP). FdUTP acts as a substrate for DNA polymerases and can thus be incorporated into DNA. The degradation of 5-FU occurs by the activity of dihydropyrimidine dehydrogenase. The decreased DPD activity influences on toxicity after administration of routine doses of 5-FU to patients.

Key Words: 5-fluorouracil, chemotherapy

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