Targeted Therapy using Radiolabeled Monoclonal Antibody

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Abstract

Molecular targeting may be defined as the specific concentration of a diagnostic or therapeutic tracer by its interaction with a molecular species that is distinctly present or absent in a disease state. Monoclonal antibody (mAb) is one of the successful agents for targeted therapy in cancer. To enhance the therapeutic effect, the concept of targeting radionuclides to tumors using radiolabeled mAbs against tumor-associated antigens, radioimmunotherapy, was proposed. The efficacy of radioimmunotherapy, however, has to be further optimized. Several strategies to improve targeting of tumors with radiolabeled mAbs have been developed, such as the use of mAb fragments, the use of high-affinity mAbs, the use of labeling techniques that are stable in vivo, active removal of the radiolabeled mAb from the circulation, and pretargeting strategies. Until now, however, there are many kinds of obstacles to be solved in the use of mAb for the targeted therapy. Major technical challenges to molecular targeting are related to the rapid and specific delivery of tracers to the target, the elimination of unwanted background activity, and the development of more specific targets to create a cytocidal effect. Further development of this field will be determined by success in solving these challenges and developing cancer-specific mAbs.

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