

Regional therapy using radiopharmaceuticals

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The goal of radiopharmaceutical Therapy (RPT) is to deliver high-specific radiation to tumors and to minimize radiation exposure to untargeted tissue. The delivering route of therapeutic radionuclide could be systematically or regionally. Unlike the systemic RPT which might produce unwilling radiation to metabolic or excreting healthy organs, regional RPT could release high radiation targeting on the intend-to-treat organs or tumors and reduce the concentration of radiopharmaceuticals in untargeted tissue.

The success of a locoregional RPT will heavily depend on the appropriate selection of a therapeutic radionuclide, the synthesis of a radiopharmaceutical or a device, and the appropriate delivering method. Besides, developing a pharmaceutical with a theranostic combination for pre-treatment evaluation and post-treatment follow up is also crucial for RPT. With the incorporating image guiding, the locoregional RPT should be more specific targeting and dosimetrically more precising.

With more and more pharmaceuticals or devices developed into clinical use and image-based dosimetric calculation incorporated into treatment planning, RPT will be a powerful tool in the radiation therapy armament.