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Applying principles of radioimmunotherapy to cancer, infections and autoimmune disease

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Radioimmunotherapy (RIT) uses monoclonal antibodies to deliver cytocidal radiation to the cells with the high precision. So far this approach has been used successfully in cancer arena. However, the principles of RIT could be applied to other, non-cancerous conditions where the diseased cells express the antigens which distinguish them from the healthy cells. Our laboratory is interested in developing RIT for several types of cancer, as well as for hard to treat infections and for autoimmune diseases such as multiple sclerosis. In cancer arena we are developing RIT for osteosarcoma, melanoma, some blood cancers and, most recently, colon cancer. When applying RIT to the fungal and bacterial infections, we are targeting antigens which are expressed on the surface of the microbial cells, such as polysaccharides, beta-glucans, or certain components of bacterial or fungal cell walls. Our recent work in this area includes RIT of opportunistic fungal infections and of bacterial infections of the prosthetic joints such as knees etc. in advanced animal models. In multiple sclerosis, which is a devastating autoimmune disease with disproportionally high incidence in Canada and especially in Saskatchewan, the activated T cells which attack the nerves protective sheath express high levels of program death recepto-1 (PD-1). Thus, we are utilizing PD-1 as our target for RIT of multiple sclerosis with the purpose of slowing down the disease progression and/or ameliorating its symptoms. In conclusion, the RIT approach can be applied to any disease for which a disease-specific antigen has been identified. With the help of modern technologies of antibody generation - making an antigen specific antibody can now be accomplished in a short period of time. RIT is technologically mature and can address the unmet needs of millions of patients with various conditions.

Keyword-1

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Keyword-2

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Keyword-3

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