

Brachytherapy: State of the Art and Possible Improvements

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Abstract

Cancer often remains an incurable disease, despite significant progresses in diagnosis and treatment that have been made. Specifically, the use of nuclear medicine in oncology is greatly contributing to both imaging and therapy aspects. Targeted therapies are a major field of interest since it increases efficiency and reduces side effects. Brachytherapy is among the most valuable of recent developments for treating localized tumours resulting in improvements in improved quality of life. This is primarily because it irradiates cancerous cells most exclusively while barely effecting healthy tissue.

The use of radiochemicals implies specific management for production, transport and handling that have limited the development of this technique. This review article describes brachytherapy and their latest developments. Furthermore, alternative activation methods for the production of radioisotopes and a novel delivery system for targeted multi-therapy by using PLA-ferrite nanospheres are described.

Key words: brachytherapy, targeted therapy, nanoparticles, ARC technique, Holmium, Rhenium