Efficacy and Safety of Diffusing Alpha-Emitter Radiation Therapy (DaRT) for Head and Neck Cancer Recurrence After Radiotherapy[1]

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Recurrent head and neck cancer (rHNC) following initial radiation therapy presents a significant clinical challenge, as traditional salvage options like surgery or reirradiation are often limited by inoperability or severe toxicity. Standard systemic therapies, including chemotherapy and immune checkpoint inhibitors, frequently offer low response rates or high incidences of severe side effects. In this multicenter, prospective clinical trial, researchers evaluated the efficacy and safety of diffusing alpha-emitter radiation therapy (DaRT), a novel method in which radioactive seeds containing radium-224 are implanted directly into the tumor. Radium-224 decays, releasing high linear energy alpha-emitting daughter isotopes that diffuse a short distance into surrounding tumor tissue, causing dsDNA breaks with minimal damage to normal tissue. The study enrolled 11 patients with rHNC confirmed via biopsy who had failed prior radiation therapy and had no other viable treatment options. Efficacy was measured by tumor shrinkage 10 weeks after seed implantation, while safety was assessed through adverse event monitoring and radioactivity levels in blood and urine. Ultimately, the authors reported a favorable response rate of 81.8%, with complete or partial responses observed in 9 out of 11 tumors. They conclude that DaRT provides a highly effective and safe treatment alternative for localized rHNC, with an acceptable safety profile compared with existing therapies.

References

1) Yoshimura R-I, Toda K, Watanabe H, et al. Efficacy and safety of diffusing alpha-emitter radiation therapy (DaRT) for head and neck cancer recurrence after radiotherapy. *Int J Clin Oncol*. 2025;30(5):893-903. doi:10.1007/s10147-025-02720-6

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