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Automated Stereotactic Gamma Ray Radiosurgery to the Pituitary Gland in Terminally Ill Cancer Patients with Opioid Refractory Pain

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Abstract

Objectives: Report our initial series of terminally ill cancer patients treated with radiosurgery to the pituitary gland to alleviate pain.

Methods: A fully automated rotating gamma ray unit was used to deliver a high dose of radiation (150Gy) using an 8 mm collimator to the neurohypophysis in 11 patients suffering from opioid-refractory pain deriving from cancer.

Results: From November 2016 to November 2018, 11 patients were treated, and 10 were eligible for follow-up evaluation. Pain from bone metastases was present in 70%; others suffered from neuropathic and visceral pain. The median survival was 119.7 days (range: 32 to 370). The visual analogue scale (VAS) was nine (7-10) and standardized to 10; eight patients (80%) responded. The average VAS at the time of response was three (range: 1-6), and the average time to response was 2.8 days (range: 2-5). In the first week, 40% of the patients categorized the result as 'excellent', 30% deemed the result 'good', and 20% reported the result as 'poor'. One patient (10%) referred to the result as 'regular'. Those who responded were able to reduce their medications by at least 25%. The one-month average VAS score was five (range: 1-6), 60% reported a 'good' effect, 20% reported 'excellent' results, and 20% had no response. Of the study participants, 60% maintained their level of medicine consumption at lower than baseline. At the end of life, five patients (50%) presented substantial pain, two (20%) never had a therapeutic effect, and three (30%) died without substantial pain. There were no clinical complications that could be attributed directly to the treatment.

Conclusions: Radiosurgery to the pituitary gland is effective and safe and warrants further investigation to understand its potential role in palliative care in cancer patients.

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