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Outcomes of Peptide Receptor Radionuclide Therapy (PRRT) with 177Lu-DOTATATE in Patients with Malignant Pheochromocytoma (PCC) and Paraganglioma (PGL): A Single Institution Retrospective Study

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BACKGROUND

Peptide receptor radionuclide therapy (PRRT) has emerged as a promising treatment option, showing improvements in both survival and the management of cancer-related symptoms in malignant PPGL. This study aimed to evaluate the outcomes of PRRT in patients with metastatic PPGL, based on a single-institution experience.

METHODS

Records of patients with advanced PPGL who received their initial dose of PRRT between May 2019 and February 2024 were retrospectively reviewed. Patient characteristics, prior treatments, imaging response based on RECIST 1.1, biochemical response, symptomatic response to catecholamine-induced symptoms, toxicity profiles within the first 8-12 weeks and 12-24 weeks following PRRT, PFS, and OS outcomes were assessed.

RESULTS

Our study included 12 patients, involving 7 (58.3%, 7/12) had PCC and 5 (41.7%, 5/12) had PGL. Seven patients (58.3%, 7/12) had germline mutations. The median age was 52.5 years (range: 41-68), and the mean follow-up time was 28.4 ± 16.3 months. One patient (8.3%, 1/12) discontinued PRRT due to disease progression and worsening condition, 11 (91.7%,11/12) completed the 4 cycles. Two patients (16.7%, 2/12) received PRRT as their initial systemic therapy, and 2 (16.7%, 2/12) were re-challenged with PRRT, totaling 8 cycles. Partial response (8.3, 1/12) or stable disease (67.7%, 8/12) was observed in 9 (75%, 9/12), including 1 who received PRRT as an initial treatment, 5 who were previously stable, and 3 who had progressive disease before PRRT. Symptomatic improvement was seen in 9 (75%, 9/12), and 2 (16.7%, 2/12) remained stable. The mean duration of PRRT response was 20.1 ± 13.9 months. Following PRRT, 5 patients (41.7%, 5/12) underwent additional systemic therapies. The mean time to initiate the additional treatments after PRRT was 10.2 ± 7.3 months. The most common symptom

following PRRT was grade 1 fatigue (83.3%, 10/12). Grade 3 and 4 hemotoxicities were reported in 2 patients (16.7%, 2/12), 1 with thrombocytopenia and 1 with myelodysplastic syndrome, respectively. No moderate or severe nephrotoxicity was reported. Two patients (16.7%, 2/12) experienced hypertensive crises during or right after PRRT cycles; 1 had a history of hypertensive crises. The median OS was 54.8 months (95% CI: 15.832- 93.768). The median PFS was 18.0 months (95% CI: 0.008 - 35.932).

CONCLUSIONS

Our findings suggest that PRRT yielded promising therapeutic outcomes in the management of both cancer and cancer-related symptoms. Although hypertensive crises were observed in a small number of cases, the treatment was overall well-tolerated, with fatigue being the most frequently reported symptom following PRRT.

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