C-27

Efficacy and Safety of Peptide Receptor Radionuclide Therapy Retreatment (r-PRRT) Practices in Progressive Neuroendocrine Tumors (prog-NETs): Systematic Review and Meta-Analysis

Aman Chauhan[1], Lowell Anthony[2], Virginia Corbett[3], Garima Gupta[4], Simron Singh[5].

[1]University of Miami Miller School of Medicine, Sylvester Comprehensive Cancer Center, Miami, FL, USA; [2]Division of Medical Oncology, University of Kentucky, Lexington, KY, USA; [3]Icahn School of Medicine, Mount Sinai, New York, NY, USA; [4]O'Neal Comprehensive Cancer Center, The University of Alabama at Birmingham, Birmingham, AL, USA; [5]Medical Oncology, Odette Cancer Center at Sunnybrook Health Sciences Center and University of Toronto, Toronto, ON, Canada.

BACKGROUND

In patients with prog-NETs, PRRT can prolong survival with low toxicity. r-PRRT is being increasingly utilized for prog-NETs, especially in patients with sustained responses to initial PRRT (i-PRRT) and limited alternative treatment options. While we eagerly await results from a prospective r-PRRT study (NET RETREAT, NCT05773274), to better understand the efficacy and safety of r-PRRT in patients with prog-NETs, we conducted a systematic review and meta-analysis of global r-PRRT practices.

METHODS

A systematic search of PubMed, Embase, and CENTRAL databases and a manual search of key conference abstracts were performed to identify studies published between 2020–2024, in adult patients with prog-NETs previously treated with PRRT and retreated with ^{177}Lu-, ^{90}Y-, or α-emitting PRRT. Eligible studies were those with ≥10 patients, in which the time gap between i-PRRT and r-PRRT was specified or indicated. Efficacy and safety outcomes were investigated, including progression-free survival (PFS), overall survival (OS), response rates, hematotoxicity, and nephrotoxicity. Outcomes were summarized descriptively, with pooled median PFS weighted by sample size, and pooled disease control rate (DCR) estimated from a meta-analysis using a random effects model in R.

RESULTS

Of 1709 studies screened, 12 studies were included along with four studies identified through manual searches (n=16; 1149 patients). i-PRRT included ^{177}Lu- and/or ^{90}Y-, or unspecified PRRT, with ^{177}Lu-DOTATATE being the most common. r-PRRT included ^{177}Lu- and/or ^{90}Y-, or unspecified PRRT and ^{225}Ac-DOTATATE. Most studies (n=14) reported ≥12 months (mean or median) from i-PRRT completion to r-PRRT, with one study inexplicitly reporting ≥6 weeks and another ≥6 months. Median r-PRRT follow-up ranged from 6.5–25.8 months (n=9). Following r-PRRT, the pooled median PFS weighted by sample size was 18.2 months (n=14). Only four studies reported median OS ranging from 7.0–27.7 months. The pooled DCR (95% CI), defined as stable disease, complete response, or partial response with RECIST v1.1, reported at any time (n=11) was 61.6% (55.5–67.5%), with no significant heterogeneity (P=.09). Hematotoxicity was mainly transient, low-grade anemia, with only one study reporting myelodysplastic syndrome or acute myeloid leukemia (0.243 per 100 person-years). Nephrotoxicity was mostly low

grade, with only one study reporting one patient (10.0%) with grade ≥3 nephrotoxicity. Overall, r-PRRT was well-tolerated and comparable to i-PRRT with no unexpected or new safety signals.

CONCLUSIONS

These data suggest that r-PRRT is well-tolerated and effective in patients with prog-NETs. Clinically meaningful PFS benefit without additional safety concerns supports r-PRRT as a promising treatment in these patients warranting further randomized data.

ABSTRACT ID 33411