C-39

Real-World Evidence of Response to 177Lu-DOTATATE PRRT Based on Primary and Metastatic Sites in Patients with Neuroendocrine Tumor

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BACKGROUND

Neuroendocrine tumors (NETs) are rare tumors that commonly originate from the GI tract, pancreas, lung, and other sites. ^{177}Lu-PRRT was approved in 2018 for treatment of GI or pancreatic NETs. Here we report our institutional experience in pts with advanced NETs treated with PRRT and explore whether NETs of different primary and certain metastatic sites respond to PRRT differently.

METHODS

This is a retrospective observational study. Data were collected from the electronic health record. Eligible pts were ≥18 years old, had histologically confirmed metastatic NET, received ≥ 1 cycle of ^{177}Lu-PRRT between 1/1/2015 and 3/31/2025, had baseline and post-treatment imaging available for response assessment. The primary endpoint was overall response rate (ORR) after PRRT. Secondary endpoints included overall survival (OS), progress-free survival (PFS), disease control rate (DCR), and site-specific response by metastatic location. OS is defined as the time from PRRT initiation to death, PFS defined as the time from PRRT initiation to radiographic progression or death.

RESULTS

Two hundred and nine pts were included. Median age was 66 (57-72). Over half (53%) were male. The majority (71%) were Caucasian, 26% were Black. Half of the pts (49%) had grade (gr) 2 disease, 24% had gr 1, 12% had gr 3. For the overall cohort, the median OS was 46.0 (range 39.0-55.0) months (mo), median PFS 11.0 (9.0-12.0) mo. Complete response (CR) was seen in 1.5% of pts, 34.9% had partial response (PR), 52.0% stable disease (SD), with progressive disease (PD) in 11.6%. The overall DCR was 88.4%. The ORR according to primary site was 23.7% in GI (n=97), 52.5% in pancreas (n=40), 23.1% in lung (n=13), 0% in other (n=2), and 52% in unknown primary (n=25). DCR according to primary site was 85.6% in GI, 85.0% in pancreas, 92.3% in lung, 100.0% in other, and 92.0% in unknown primary. The best response of liver, peritoneal, and bone mets are summarized in Table 1.

Table 1.

Metastatic Site	N	CR (%)	PR (%)	SD (%)	PD (%)
Liver	187	2 (1.1)	58 (32.8)	94 (53.1)	23 (13.0)
Peritoneum	78	0 (0)	19 (25.3)	49 (65.3)	7 (9.3)
Bone	117	1 (0.9)	16 (15.0)	79 (73.9)	11 (10.3)

CONCLUSIONS

In this study, pts with pancreatic and unknown primary had a higher ORR to ^{177}Lu-PRRT compared to pts with other primaries. Response to PRRT is commonly seen in liver mets. Peritoneal and bone mets have a lower response rate but stable disease is achieved in the majority of pts.

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