

Peptide Receptor Radionuclide Therapy Using ¹⁷⁷Lu-DOTATATE: Nursing Roles in Managing Patients With Gastroenteropancreatic Neuroendocrine Tumors

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BACKGROUND: Gastroenteropancreatic neuroendocrine tumors (GEP-NETs) are a diverse family of cancers that occur within the gastrointestinal tract and pancreas. Peptide receptor radionuclide therapy (PRRT) via ¹⁷⁷Lu-DOTATATE is a newer therapeutic option for certain patients with somatostatin receptor-positive GEP-NETs.

OBJECTIVES: This review informs on how oncology nurses treating patients with GEP-NETs receiving PRRT using ¹⁷⁷Lu-DOTATATE can facilitate care.

METHODS: Guidance on the monitoring, management, and care of patients undergoing PRRT for GEP-NETs was developed based on published literature and the nursing experience of the authors. A case study is summarized to highlight key concepts.

FINDINGS: Oncology nurses provide assessment, education, direct care, and emotional support when caring for patients with GEP-NETs receiving PRRT with ¹⁷⁷Lu-DOTATATE. As the treatment landscape evolves, so too will these roles and responsibilities.

KEYWORDS

peptide receptor radionuclide therapy; patient management; GEP-NETs; nuclear medicine

DIGITAL OBJECT IDENTIFIER

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GASTROENTEROPANCREATIC NEUROENDOCRINE TUMORS (GEP-NETs) are a diverse family of cancers that occur within the gastrointestinal tract and pancreas (Oronsky et al., 2017; Rindi et al., 2022). Although considered rare, GEP-NET incidence has increased, possibly because of improved diagnosis (Dasari et al., 2017; Gatta et al., 2017), making them one of the most common types of digestive system cancer (Cives & Strosberg, 2018; Khan & Pritchard, 2022). The prognosis of patients with GEP-NETs varies widely depending on tumor characteristics, with a median survival of months to decades (Dasari et al., 2017).

Symptoms of GEP-NETs, such as abdominal pain, diarrhea, nausea, and vomiting, can be nonspecific, delaying diagnosis by more than five years (Basuroy et al., 2018) and resulting in many patients having advanced or metastatic disease at diagnosis (Ter-Minassian et al., 2013). Diagnosis is additionally complicated because GEP-NETs present with diverse clinical syndromes, such as carcinoid syndrome (flushing and diarrhea) or hypoglycemia, depending on the site of origin and the tumor's ability to produce and secrete hormones. Frontline treatments for advanced metastatic GEP-NETs include surgery (Kohno, 2022; Raymond et al., 2021), locoregional therapy (e.g., radiofrequency ablation, cryoablation, liver-directed therapies) (Raymond et al., 2021; Uri & Grozinsky-Glasberg, 2018), and somatostatin analogs (e.g., octreotide, lanreotide) (Raymond et al., 2021; Strosberg, Halfdanarson, et al., 2017). Multiple treatment options exist for patients with advanced NETs progressing on somatostatin analog therapy, including targeted therapy with everolimus (a mammalian target of rapamycin inhibitor) and sunitinib (a small-molecule kinase inhibitor for pancreatic NETs) (Uri & Grozinsky-Glasberg, 2018); chemotherapy regimens such as capecitabine and temozolomide or 5-fluorouracil (Uri & Grozinsky-Glasberg, 2018); and peptide receptor radionuclide therapy (PRRT) with [¹⁷⁷Lu]Lu-DOTA-TATE (hereafter referred to as ¹⁷⁷Lu-DOTATATE) (Das et al., 2019; Hope et al., 2019; Raymond et al., 2021).

Nursing Guidance for PRRT

PRRT is a precision nuclear medicine approach that delivers radioactive compounds to a specific target highly expressed by certain cancer cells (Gomes