Research Week 2021

A comprehensive review of the therapeutic options for gastroenteropancreatic neuroendocrine tumors with a focus on PRRT and its sequencing

Lauren M. Raymond, BS.; Tetiana Korzun, BS, BA.; Adel Kardosh, MD, PhD.; Kenneth J. Kolbeck, MD, PhD.; Rodney F. Pommier, MD.; Erik S. Mittra, MD, PhD

Submitting Author:
Lauren M. Raymond, BS
raymonla@ohsu.edu
School of Medicine, OHSU

Keywords

Gastroenteropancreatic neuroendocrine tumor.; Neuroendocrine tumors.; Peptide receptor radionuclide therapy.; Receptors, Peptide.; 177Lu-DOTATATE

Abstract

Introduction

Gastroenteropancreatic neuroendocrine tumors (GEP-NETs) are the most common form of neuroendocrine neoplasia, but there is no current consensus for the sequencing of approved therapies, particularly with respect to peptide receptor radionuclide therapy (PRRT). Surgical resection is recognized as the only clinically curative measure for GEP-NETs; however, given that these tumors have a propensity to metastasize and the primary tumor may, in some cases, be unresectable, various treatment options have been introduced including PRRT. This review evaluates the data supporting approved therapies for GEP-NETs and the current recommendations for therapeutic sequencing with a focus on PRRT and how sequencing might change with respect to the increasing body of literature regarding PRRT utilization.

Methods

The search included the following Medical Subject Heading (MeSH) terms: peptide receptor radionuclide therapy, radionuclide therapy, 177Lu-DOTATATE, lutetium 177 DOTATATE, Lutathera, gastroenteropancreatic neuroendocrine tumors. The articles after full-text review were evaluated for PRRT sequencing data, after which 17 clinical research articles, 39 review articles, and 4 case series remained.

Results

The current recommendations for PRRT sequencing restrict its use to metastatic, inoperable, progressive midgut NETs, but emerging data suggest PRRT might be beneficial as neoadjuvant therapy for inoperable tumors, is more tolerable than other treatment modalities following first-line standard dose somatostatin analogues, and can be used as salvage therapy after disease relapse following prior successful cycles of PRRT. PRRT has also been shown to reduce tumor burden, improve quality of life, and prolong the time to disease progression in a broad spectrum of patients with GEP-NETs.

Conclusion

This review highlights the fact that the current approval for PRRT, for metastatic, inoperable, progressive GEP-NETs, is generally well suited, but also open-ended. As has been highlighted, PRRT is effective, well-tolerated, and results in limited toxicity. Ultimately, these therapeutic decisions should be made in the context of a multidisciplinary tumor board.