AJR FOCUS ON:

Neuroendocrine Tumor Therapy: ^{177}Lu-DOTATATE

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OBJECTIVE. The purposes of this article are to increase understanding of the concepts of theranostics and peptide receptor radionuclide therapy (PRRT) as they apply to neuroendocrine tumors (NETs); review the key 1, 2, and 3 clinical trial data leading to the approval of ^{177}Lu–tetraazacyclododecanetetraacetic acid–octreotide (^{177}Lu-DOTATATE); and foster understanding of the practical aspects and future directions of PRRT for NETs.

CONCLUSION. In January 2018, ^{177}Lu-DOTATATE therapy was approved in the United States (previously approved in Europe in September 2017) for adult patients with somatostatin receptor–positive gastroenteropancreatic neuroendocrine tumors, including those of the foregut, midgut, and hindgut. The results of the phase 3 Neuroendocrine Tumors Therapy (NETTER-1) trial show favorable outcomes with respect to the primary endpoint of progression-free survival and a host of secondary objectives, including overall survival, objective response rate, and quality of life measures. Patient selection is based on a number of specific factors and should be sequenced carefully with respect to other available therapies, ideally in multidisciplinary cancer conferences. Establishing the therapy at a new institution can be somewhat involved, but once it is established, the therapy is fairly straightforward to administer and is well tolerated with limited side-effects and toxicity. A number of approaches and issues are still to be worked out, and this therapy will continue to be studied and optimized.