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TARGETED THERAPIES

Radiopeptide therapy improves outcomes for neuroendocrine cancers

Radionuclide therapy has been shown to cure metastasized solid tumors such as differentiated thyroid cancer, an outcome not often observed with systemic chemotherapy. Differentiated neuroendocrine cancers frequently express the somatostatin receptor, which allows treatment with the somatostatin analog octreotide LAR, and imaging with radiolabeled somatostatins.

Anna Imhof and coauthors developed therapy with ^{90}yttrium-labeled octreotide [^{90}Y-DOTA]-TOC and reported the long-term outcomes from 1,109 patients with metastatic neuroendocrine cancers treated with this therapy in a phase II single-center open-label trial. Martin Walter, senior investigator of the study, highlights "the most significant finding is that response to [^{90}Y-DOTA]-TOC is associated with longer survival, however, this was also associated with the risk of significant nephrotoxicity".

Morphologic response was reported in 378 (34.1%) patients, biochemical response in 172 (15.5%) and clinical response in 329 (29.7%) patients. Overall, 491 patients (44.3%) died; 142 (12.8%) patients experienced severe transient grade 3 or 4 hematologic toxic effects and 102 (9.2%) patients developed severe permanent renal toxic effects.

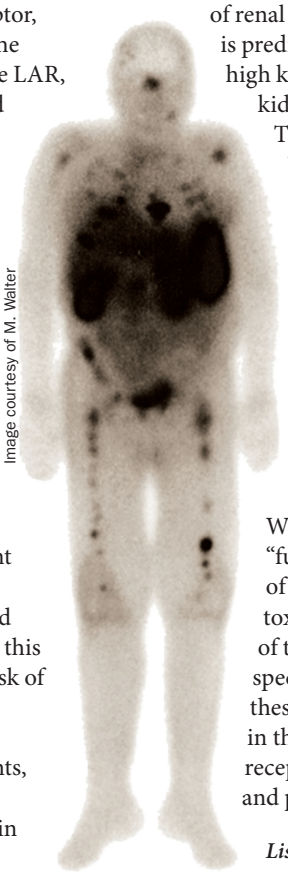

Image courtesy of M. Walter

A high tumor uptake of the radiopeptide was significantly associated with a longer survival after treatment. "The present results showed that these scans are already predictive for both survival after [^{90}Y-DOTA]-TOC and occurrence of renal toxicity. High tumor uptake is predictive of longer survival and high kidney uptake is predictive of kidney toxicity," explains Walter. The authors also comment that "[^{90}Y-DOTA]-TOC therapy is most promising and should be preferably used in patients with high pre-therapeutic tracer uptake." As a result of these data, somatostatin receptor imaging might become a valuable predictive imaging tool that allows identification of patients likely to benefit from [^{90}Y-DOTA]-TOC therapy. Walter and his team plan to "further improve the efficacy of our treatment, to reduce its toxicity and to make this form of treatment available for a wider spectrum of tumors. To achieve these aims, we are currently in the process of optimizing receptor binding, *in vivo* stability and pharmacokinetics."

Lisa Hutchinson

Original article Imhof, A. *et al*. Response, survival, and long-term toxicity after therapy with the radiolabeled somatostatin analogue [^{90}Y-DOTA]-TOC in metastasized neuroendocrine cancers. *J. Clin. Oncol*. doi:10.1200/JCO.2010.33.7873