

Sonbol, M.B., Halfdanarson, T.R., Hilal, T., 2020. **Assessment of Therapy-Related Myeloid Neoplasms in Patients With Neuroendocrine Tumors After Peptide Receptor Radionuclide Therapy: A Systematic Review.** *JAMA Oncol* 6, 1086–1092. <https://doi.org/10.1001/jamaoncol.2020.0078>

## **Abstract**

### **Importance**

Peptide receptor radionuclide therapy (PRRT) is a tumor-targeted treatment that uses radiation to induce tumor cell death in neuroendocrine tumors (NET) via  $\beta$  particle-emitting radionuclide linked to a somatostatin peptide analog. Therapy-related myeloid neoplasm (t-MN) has been reported as a potential long-term and frequently lethal adverse event after PRRT. However, the incidence, time of diagnosis, and nature of t-MN is unclear. Therefore, a systematic review is helpful to study the incidence and characteristics of t-MN after PRRT in patients with NET.

### **Objective**

To systematically evaluate the literature and report the incidence, time of diagnosis, and nature of t-MN after PRRT.

### **Evidence review**

MEDLINE, Embase, Scopus, Web of Science, and Cochrane Central Register of Controlled Trials for articles and abstracts reporting studies of different designs studying more than 1 patient (randomized clinical trials, prospective phase I or phase II, retrospective studies, and case series) were searched from database inception through April 2019. Studies of interest included patients with NET who were treated with PRRT and reported the incidence of t-MN, if any. The primary outcome was the incidence of t-MN.

### **Findings**

Twenty-eight articles were identified comprising 7334 patients who were treated with PRRT for NET. The main reason of exclusion was not reporting the t-MN incidence. The incidence of

t-MN was variable between studies with mean (SD) incidence of 2.61% (4.38%). Of all 134 cases, cytogenetic abnormalities were reported in 32 patients with the most common abnormality being complex cytogenetics, consistent with myeloid neoplasms following exposure to alkylating agents or irradiation.

### **Conclusions and relevance**

The risk of t-MN after PRRT is small but not insignificant given the poor prognosis after t-MN diagnosis. Close monitoring is warranted to identify such patients early in the disease course when hematologic abnormalities persist.