

# Pitfalls in the Response Evaluation After Peptide Receptor Radionuclide Therapy with [177Lu-DOTA0,Tyr3]Octreotate

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**Background:** Peptide receptor radionuclide therapy with [177Lu-DOTA0,Tyr3]octreotate (177Lu-octreotate) is a treatment with good results, especially for patients with metastatic gastroenteropancreatic neuroendocrine tumors (GEPNETs). However, there are some pitfalls that should be taken into consideration when evaluating the treatment response after PRRT.

**Methods:** We performed a retrospective study of 354 Dutch patients with GEPNETs that were treated with 177Lu-octreotate between March 2000 and December 2011. Liver function tests and chromogranin A were measured before each therapy and in follow-up. Imaging was performed before therapy and in follow-up after 6 weeks, 3 months and 6 months and thereafter every 6 months.

**Results:** An increase of more than 20% from baseline values of the aminotransferases was observed in 83 of 351 patients (24%). There was no difference between patients who eventually had PD and patients who had CR/PR/SD. An increase of chromogranin A compared to baseline was observed in 76 patients (29%). This was present in 34% of patients who eventually had PD and 27% of patients who had CR/PR/SD. In the majority of patients these biochemical markers normalized after therapy. On imaging, an increase in the sum of diameters of lesions was seen in 40 patients (19%) with stable disease. Progressive disease on imaging was based on new lesions in 94% of patients.

**Conclusion:** An increase of liver enzymes and chromogranin A is not uncommon after therapy with 177Lu-octreotate. In the vast majority of patients this will resolve in follow-up and is therefore not due to progression. Also on imaging the lesions can show a temporary increase. Clinicians should be aware that these changes are more frequently due to radiation induced inflammation than to disease progression and that repeated measurements over time are necessary to differentiate between the two.