



Radionuclide Therapy

The basics

Radionuclides are chemical elements which undergo radioactive decay with the emission of nuclear radiation (β waves and γ waves). This radiation causes cell death by interfering with cell division and the cellular DNA.

The specific radionuclide is attached to a carrier molecule, mixed with a patient's blood and re-injected where it is carried to its target tissue. The target tissue receives a large amount of radiation and spares normal healthy tissue because the carrier molecule is taken up by the tumour cells.

With neuroendocrine cancer, the radioisotope used is ¹⁷⁷**Lutate** which is added to a small protein (peptide) using a chelator (a substance able to link metal compounds eg. DOTA).

Not all patients suffering from neuroendocrine cancer are suitable for this treatment. They need to be investigated and fit certain selection criteria. The main selection criterion for this treatment is finding the cellular expression of somatostatin receptors on the cancer tissues.

The obvious benefits of this treatment are the ability to deliver radiotherapy directly to the cancer tissue (even very small lesions) with minimal damage to normal tissue and it is extremely well tolerated with only minor side effects for the majority of patients.

In Australia we have extensive experience in radionuclide therapy with neuroendocrine cancers in a limited number of centres. Their outcomes show that it can provide significant symptomatic benefit, reduction in measurable hormone secretion, and either stabilization or regression of previously progressive disease in the majority of patients.

Ready access to this treatment for neuroendocrine patients is a priority and the benefits of State based facilities which form an integrated network of expertise would put Australia in the forefront of research in this area and more importantly give neuroendocrine patients the treatments that they are entitled to.