

## Therapy of Neuroendocrine Tumours with Lutetium - 177 DOTATATE

Dear patient

You have been diagnosed with a tumour of endocrine origin. By means of this information, the details of a peptide - mediated internal irradiation of neuroendocrine tumours with lutetium - 177 DOTATATE are discussed.

### What is a neuroendocrine tumour?

Everyone has neuroendocrine cells in the body. Neuroendocrine cells are found mainly in the gastrointestinal tract, the lungs as well as in the pancreas. The task of these cells is the production of different messengers (hormones). Cells in the body are renewed at intervals, and therefore have to be divided.

Once, probably a while ago, a mistake happened in the division of such a neuroendocrine cell in your body. The newly formed neuroendocrine cell and each following generation have lost hereditary information: they divide faster than they should and do not die. This results in a growth and replacement of normal cells in the surrounding. Fortunately, neuroendocrine cells grow much slower compared to other types of tumour cells.

Neuroendocrine cells produce mainly hormones. The elevated hormone levels lead to a syndrome, called malignant carcinoid syndrome. You probably have experienced them in form of heat waves, flush, diarrhoea, asthma or skin problems.

### How does a Lutetium-177 DOTATATE therapy work?

Neuroendocrine cells have a somatostatin receptor on their surface. When the somatostatin hormone is docking with the proper somatostatin receptor, a message will be transferred. Neuroendocrine cells usually have this specific receptor in a high density on the cell surface.

"DOTATATE" is very similar to somatostatin. It finds the somatostatin receptor on the tumour cells and sticks there for days. "DOTATATE" is loaded with a radioactive particle (name: Lutetium-177), which irradiates the surrounding tumour cells over several days, and therefore often kills. "Lutetium - 177 DOTATATE is administered intravenously and, within minutes, is concentrated up to 90 % in the tumour.

### Is this irradiation dangerous for me and do I notice something of it?

The risk of experiencing side effects in this radiation is low. Most patients do not have any adverse effects. The radioactive particle Lutetium - 177 radiates only within a radius of 4mm. For the most part, it radiates only in the tumour. Lutetium - 177 DOTATATE is also partly taken up by the kidneys, just like amino acids. To prevent kidney damage, the kidneys must be blocked for the "DOTATATE". This is done by intravenously administering an amino acid solution. Amino acids are found as building blocks in most animal and plant products on your diet. The infusion is generally tolerated well and not dangerous for your kidneys.

Nevertheless, Lutetium - 177 DOTATATE therapy is associated with a low risk of renal damage. In very rare cases, this can lead as far as to dialysis. In studies however, this was less than in a half a percent of the patients. These were usually patients with pre-existing renal disease.

Injecting DOTATATE may cause short-term (5 min) nausea with vomiting (in approximately 20% of patients). The remaining treatment stays are tolerated with few exceptions without any impairment. During therapy, 30% of the patients experience a slight drop in the white blood cells, but these regenerate themselves within a few weeks. With extensive liver metastases, during therapy a drainage problem of the bile juice can occur, which may lead to an endoscopic insertion of a stent (tube) into the bile ducts (0.015 % of the patients).

### What is the course of the therapy?

First, you will be given detailed information by the treating nuclear medicine physician. Then, an intravenous access is placed in your arm and you will be given 1000 ml of the amino acid solution named above over the next four hours. After approximately 30 min. the Lutetium - 177 DOTATATE dissolved in a saline solution is infused over half an hour. 24 and 48 hours after the infusion of the Lutetium, scintigraphy controls are carried out.



### What can I expect of the therapy and what does the science say so far?

The response rate to the therapy according to the criteria of the world-health-organization (WHO) were the following: complete remission of the tumour (CR) in 2 %, partial remission of more than 50% of the volume (PR) in 22%, slight tumour remission (< 49% and > 25% in 12%, stable disease (SD) in 49% and progression of the disease (PD) in 15% of the patients. Overall, according to WHO criteria, a tumour response (all tumour regression > 50%) was detected in 24% of cases, and in endocrine pancreatic tumours even 36%. If one takes into account slight tumour regression (MR), the total collective has a tumour response of 37%. This condition lasted at least 9 months after completion of the therapy. In patients with "malignant carcinoid syndrome", a clear subjective improvement of the symptoms could be observed. All patients with morphine-requiring pain were able to switch to pain killers without morphine or were able to stop the pain medication totally.

### Legal and costs

The treatment complies with the Swiss laws on the federal and cantonal level. In most cases, the costs for Swiss patients are covered by the health insurance companies. Most foreign health insurance companies also pay the costs of the therapy.

You have the right to withdraw from therapy at any time without giving reasons.

### Please note:

**If you have to cancel your therapy, please let us know by phone no later than four days prior to the admission to the hospital. Otherwise we have to charge you the costs incurred.**

**Telephone: +41 44 255 18 18 select dialling 3**

The parking possibility in the vicinity of the university hospital is very limited and limited in time to a maximum of two hours.

The university hospital is easy to reach by public transport.

