UK and Ireland Neuroendocrine Tumour Society

UKINETS bitesize guidance
Managing a patient through Peptide Receptor Radionuclide Therapy (PRRT)

Indications for treatment

- Progressive metastatic SSTR positive well-differentiated G1/G2 midgut and pancreatic neuroendocrine tumours[1,2]
- SSTR receptor positivity should be defined on SSTR imaging within 12 months of considering treatment
- Patient should have no criteria, which may exclude treatment and require up to date FBC, LFT's and formal eGFR testing
- All cases require discussion at a NET MDT experienced in PRRT treatment

Criteria which may exclude treatment

- Platelets <75 x10^9/L
- WCC< 2 x10^9/L
- Absolute neutrophil count <1 x10^9/L
- Hb < 9 g/L
- GFR <40 ml/ml
- Bilirubin > 1.5 times ULN
- ALT > 5 times ULN
- Pregnancy
- Poor performance status (2 or more)
- Patients < 18 years [3]
- PRRT is not licensed in the UK for bronchial or thymic NETs, PPGL or well differentiated G3 NET's, but can be considered as part of a clinical trial[4]

ULN=upper limit of normal
PPGL= phaeochromocytoma or paraganglioma

Side effects of treatment

'Very common' (1 in 10 people)

- Nausea and vomiting, myelosuppression, reduced appetite

'Common' (1 in 100 people)

- Fatigue, hair loss, abdominal pain, diarrhoea

'Uncommon' (1 in 1000 people)

- Tumour lysis syndrome

Long-term complications

- Long term bone marrow issues in 1-2%, chronic kidney failure

Radiation protection considerations

- Avoid public places for 7 days
- Avoid sharing a bed for 14 days
- Avoid close contact with children for 14 days
- Access a separate toilet for 7 days or double flush
- *Pregnancy is contraindicated for 7 months post PRRT*
- Inpatients should be isolated in an individual room with individual toilet access with local medical physics team input

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Considerations before treatment

- Stop long-acting somatostatin analogues (Lanreotide or Octreotide LAR) at least 21 days ahead of PRRT.
- Stop short acting somatostatin analogues at least 24 hours ahead of PRRT *
- Most PRRT treatments can be safely delivered as outpatient treatments.
- Patients with severe carcinoid syndrome or secretory neuroendocrine tumours may require inpatient observation and such cases should be discussed at MDT.
- Pre-treatment on the morning of PRRT with medications including anti-emetics (e.g. ondansetron 4-8mg) and anti-histamine medication (e.g. chlorphenamine 4mg as a stat dose) can be considered to minimise treatment related side effects.

*=(exception may be made for patients with severe carcinoid syndrome or known carcinoid heart disease and should be discussed at MDT).

Monitoring after treatment

- Post PRRT treatment dosimetry scans are scheduled as per the local Nuclear Medicine departmental policy **
- Blood test monitoring including kidney function, liver function and full blood count is required at week 1, 3 , 5 and 7 post treatment.
- Surveillance cross sectional imaging, is typically reserved until 8-12 weeks after completion of all 4 cycles of PRRT.
- Cycles may need to be delayed or the interval between cycles extended after MDT review for patients with severe or refractory myelosuppression.

**=A typical schedule is day 0-1, day 4 and day 7.

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Centres offering PRRT in the UK and Ireland

- Barts Health NHS Trust
- Belfast Royal Victoria Hospital
- Queen Elizabeth Hospital Birmingham
- University Hospital Bristol NHS Foundation Trust
- Cambridge University Hospital NHS Foundation Trust
- University Hospital Coventry & Warwickshire
- St Vincent's Hospital, Dublin
- Gartnavel General Hospital (GGH) and The Beatson West of Scotland Cancer Centre
- Guys and St Thomas' NHS Foundation Trust
- Imperial College Healthcare NHS Trust
- Kings College Hospital NHS Foundation Trust
- University Hospitals of Leicester NHS Trust
- Leeds Teaching Hospital NHS Trust
- Royal Liverpool University Hospital
- Maidstone and Tunbridge Wells NHS Trust
- Medway Maritime Hospital
- University Hospital Plymouth
- Newcastle Hospitals NHS Foundation Trust
- Oxford University Hospitals
- Royal Free Hospital
- Royal Marsden Hospital
- Royal Surrey County Hospital
- University Hospital Southampton
- The Christie NHS Foundation Trust
- University College Hospital

References

1. Strosberg J, et al. Phase 3 Trial of 177Lu-Dotatate for Midgut Neuroendocrine Tumors. N Engl J Med. 2017 Jan 12;376(2):125-135. doi: 10.1056/NEJMoa1607427. PMID: 28076709; PMCID: PMC5895095.
2. Strosberg JR, et al. ^{177}Lu-Dotatate plus long-acting octreotide versus high-dose long-acting octreotide in patients with midgut neuroendocrine tumours (NETTER-1): final overall survival and long-term safety results from an open-label, randomised, controlled, phase 3 trial. Lancet Oncol. 2021 Dec;22(12):1752-1763. doi: 10.1016/S1470-2045(21)00572-6.
3. LUTATHERA® Summary of Product Characteristics. Available at: https://www.medicines.org.uk/emc/product/12723
4. Singh S, et al. [^{177}Lu]Lu-DOTA-TATE plus long-acting octreotide versus high-dose long-acting octreotide for the treatment of newly diagnosed, advanced grade 2-3, well-differentiated, gastroenteropancreatic neuroendocrine tumours (NETTER-2): an open-label, randomised, phase 3 study. Lancet. 2024 Jun 29;403(10446):2807-2817. doi: 10.1016/S0140-6736(24)00701-3. Epub 2024 Jun 5. PMID: 38851203.

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