Austin Radiological Association

Nuclear Medicine Procedure

Lutathera
(Lu-177 dotatate)

Overview

- LUTATHERA is a radiolabeled somatostatin analog indicated for the treatment of somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs), including foregut, midgut, and hindgut neuroendocrine tumors in adults

Indications

- LUTATHERA is indicated for the treatment of somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs),

Procedure Time

- 90 minutes – prep, administer aminos 30 minutes prior to Lutathera
- 30 minutes – administration of Lutathera
- 180 minutes post administration for aminos
- Availability for patient restroom throughout the procedure
- 45 minutes - clean up, decontamination, and survey

Patient Preparation

- Before initiating LUTATHERA: Discontinue long-acting somatostatin analogs (e.g., long-acting octreotide) for at least 4 weeks prior
- Administer short-acting octreotide as needed; discontinue at least 24 hours prior to initiating LUTATHERA
- Coordinator to perform consult and verify labs and treatment plan with radiologist.
- Authorized User obtains written consent and provides written directive
- Paramedic to administer antiemetic and amino acid solution

Equipment & Energy Windows

- NA – No imaging post-treatment

Radiopharmaceutical, Dose, & Technique of Administration

- Radiopharmaceutical: Lu-177 dotatate 200 mCi every 8 weeks for a total of 4 doses

- Insert a 2.5 cm, 20-gauge needle (short needle) into the LUTATHERA vial and connect via a catheter to 500 mL 0.9% sterile sodium chloride solution (used to transport LUTATHERA during the infusion). Ensure that the short needle does not touch the LUTATHERA solution in the vial and do not connect this short needle directly to the patient. Do not allow sodium chloride solution to flow into the LUTATHERA vial prior to the initiation of the LUTATHERA infusion and do not inject LUTATHERA directly into the sodium chloride solution.

  Insert a second needle that is 9 cm, 18 gauge (long needle) into the LUTATHERA vial ensuring that this long needle touches and is secured to the bottom of the LUTATHERA vial during the entire infusion. Connect the long needle to the patient by an intravenous catheter that is prefilled with 0.9% sterile sodium chloride and that is used exclusively for the LUTATHERA infusion into the patient.

  Use a clamp or pump to regulate the flow of the sodium chloride solution via the short needle into the LUTATHERA vial at a rate of 50 mL/hour to 100 mL/hour for 5 to 10 minutes and then 200 mL/hour to 300 mL/hour for an additional 25 to 30 minutes (the sodium chloride solution entering the vial through the short needle will carry the LUTATHERA from the vial to the patient via the catheter connected to the long needle over a total duration of 30 to 40 minutes).

  Do not administer LUTATHERA as an intravenous bolus.

  During the infusion, ensure that the level of solution in the LUTATHERA vial remains constant

  Disconnect the vial from the long needle line and clamp the saline line once the level of radioactivity is stable for at least five minutes.

  Follow the infusion with an intravenous flush of 25 mL of 0.9% sterile sodium chloride.

  Dispose of any unused medicinal product or waste material in accordance with local and federal laws

Post Treatment Restrictions

- Follow PRRT Patient Discharge Instructions

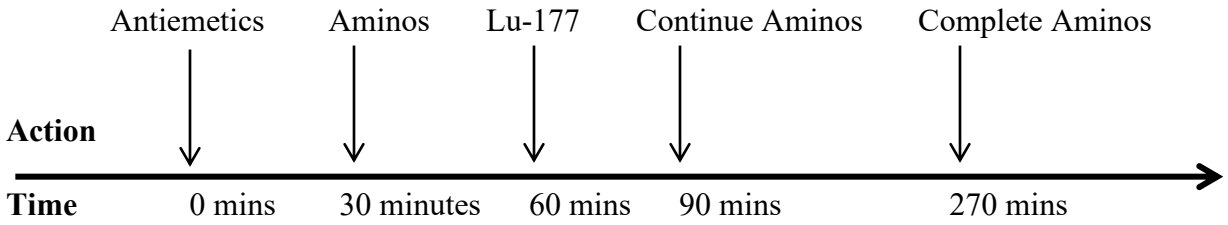
Patient Position & Imaging Field

- NA

Acquisition Protocol

- NA

Protocol Summary Diagram



Data Processing

- NA

Optional Maneuvers

- None

Method for timely correction of Data Analysis and reporting errors and notification of referring parties

- Data Analysis and reporting errors are reported to the interpreting physician and appropriate clinic manager for timely correction and notification of the referring physician via report addendum or STAT call if error is significant.

Principle Radiation Emission Data Lu-177

- Physical half-life = 6.647 days
- Decays to stable Hf 177.

Radiation	Energy (keV)	Iβ%	Iγ%
β-	176.5	12.2	
β-	248.1	0.05	
β-	384.9	9.1	
β-	497.8	78.6	
γ	71.6	0.15	
γ	112.9	6.40	
γ	136.7	0.05	
γ	208.4	11.0	
γ	249.7	0.21	
γ	321.3	0.22	

Table 3. Estimated Radiation Absorbed Dose for LUTATHERA in NETTER-1

	Absorbed dose per unit activity (Gy/GBq) (N=20)		Calculatedabsorbeddosefor4 x 7.4GBq (29.6 GBq cumulative activity)(Gy)	
Organ	**Mean**	**SD**	**Mean**	**SD**
Adrenals	0.037	0.016	1.1	0.5
Brain	0.027	0.016	0.8	0.5
Breasts	0.027	0.015	0.8	0.4
Gallbladder Wall	0.042	0.019	1.2	0.6
Heart Wall	0.032	0.015	0.9	0.4
Kidneys	0.654	0.295	19.4	8.7
Liver*	0.299	0.226	8.9	6.7
Lower Large Intestine Wall	0.029	0.016	0.9	0.5
Lungs	0.031	0.015	0.9	0.4
Muscle	0.029	0.015	0.8	0.4
Osteogenic Cells	0.151	0.268	4.5	7.9
Ovaries**	0.031	0.013	0.9	0.4
Pancreas	0.038	0.016	1.1	0.5
Red Marrow	0.035	0.029	1.0	0.8
Skin	0.027	0.015	0.8	0.4
Small Intestine	0.031	0.015	0.9	0.5
Spleen	0.846	0.804	25.1	23.8
Stomach Wall	0.032	0.015	0.9	0.5
Testes***	0.026	0.018	0.8	0.5
Thymus	0.028	0.015	0.8	0.5
Thyroid	0.027	0.016	0.8	0.5
Total Body	0.052	0.027	1.6	0.8
Upper Large Intestine Wall	0.032	0.015	0.9	0.4
Urinary Bladder Wall	0.437	0.176	12.8	5.3
Uterus	0.032	0.013	1.0	0.4