

Pitfalls & Artefacts 3

Dosimetry Committee

Friday, October 23, 13:50-15:20

Session Title

Dosimetry as Part of Patient Care

Chairperson

Lidia Strigari (Bologna, Italy)

Programme

13:50 - 14:34 Marta Cremonesi (Milan, Italy): Patient Specific Therapy in PRRT - The Bright Future

14:34 - 15:18 John Violet (Melbourne, Australia): Patient Specific Therapy with ^{177}Lu PSMA

Educational Objectives

1. Learn how dosimetry can be used to personalize radionuclide treatments
2. Realize the role of the medical physicist in optimisation of radionuclide therapy
3. See the value of multiple metastatic lesion dosimetry in ^{177}Lu PSMA therapy

Summary

Peptide receptor radionuclide therapy (PRRT) with ^{90}Y - and ^{177}Lu - peptides is an effective strategy for the treatment of metastatic neuroendocrine tumours (NETs). Dosimetry provides to be useful for optimizing PRRT with individualized patient care to reduce toxicity and increase tumour responses. This strategy is hardly applied in routine clinical practice, despite the fact that several dosimetric studies have demonstrated significant dose-effect correlations for normal organ toxicity and tumour response that can better guide therapy planning. Options to improve the existing protocol will be discussed with the aim to improve patient outcome in NET.

Radiation dosimetry to determine the absorbed dose to multiple metastatic lesions seems an impossible and a futile task in ^{177}Lu -PSMA therapy for metastatic castration resistant prostate cancer patients. Still the whole-body based lesion dosimetry shows a predictive value for the outcome of the therapy. Pretherapeutic ^{68}Ga -PSMA PET can be used as a predictor of absorbed dose, with an evident "sink effect" options for its use as personalized treatment prescription method will be discussed. Patient cases will be presented to go through the clinical work-flow in therapy with ^{177}Lu -PSMA.

Key Words

^{90}Y , ^{177}Lu , dosimetry, therapy prescription, PRRT, PSMA, neuroendocrine tumours, prostate cancer