

**Technologists' Mini Course 1**

Technologists Committee

Wednesday, September 13, 08:00 – 09:00**Session Title****Radiotherapy planning using PET-CT and PET-MR****Chairpersons****Marta Coelho** (Essen, Germany)**Paolo Turco** (Padua, Italy)**Programme**

08:00 – 08:20 **Bartosz Bak** (Poznan, Poland): Hybrid imaging in radiotherapy and the role of technologists

08:20 – 08:40 **Valentina Mautone** (Meldola, Italy): PET/CT based radiotherapy planning

08:40 – 09:00 **David Sipos** (Kaposvar, Hungary): PET/MRI based radiotherapy planning

Educational Objectives

1. Understand the applications of PET-CT and PET-MR studies in oncology
2. Describe the role of PET-CT method in radiotherapy planning
3. Present the characteristics of the PET-MR-based radiotherapy protocols
4. Outline the process of 18F-DOPA PET-MR radiotherapy planning
5. Overview the hybrid imaging-based radiotherapy planning considering image processing, special features and treatment planning systems (TPS)
6. Mention limitations of PET-CT and PET-MR methods in radiotherapy planning procedures
7. Characterize the role of Technologist in radiotherapy planning

Summary

The PET-CT method has been widely recognized as useful imaging tool in the radiotherapy planning due to, i.e., possibility to evaluate the staging of the disease based on the whole-body assessment. A currently developing method of hybrid imaging, PET-MR, is getting increasingly explored as a potentially useful technique in the process of external beam radiotherapy planning. In radiotherapy planning using hybrid imaging techniques, various factors need to be considered. During this Mini Course, a whole PET-CT and PET-MR-based therapy planning is going to be presented, including the pathway of the patients' preparation to the procedures, scanning protocol's characteristics, the role of images fusion and treatment planning systems. The role of each method of imaging using various radiopharmaceuticals (eg., 18F-FDG, 18F-DOPA) in the context of the external beam radiotherapy planning are going to be discussed.

Not only methods, but also the interdisciplinary team of professionals can significantly affect the process of therapy planning. One of groups of specialists who participate in the procedure necessary to prepare the patient for the therapy are technologists. The Mini Course aims to teach the practical aspects of the role of technologists in the radiotherapy planning along with discussing applications, limitations, novelties, and perspectives of both PET-CT and PET-MR scanning in modern external beam radiotherapy planning. Mini Course speakers will present, discuss and teach the most critical points of the process of PET-CT and PET-MR-based radiotherapy planning, sharing their experiences and the hybrid imaging therapy planning state of the art and perspectives.

Key Words

Hybrid imaging, radiotherapy planning, PET-CT, PET-MR