

*Düsseldorf, Germany*

Annual Congress of the  
European Association of Nuclear Medicine

October 13 – 17, 2018  
Düsseldorf, Germany

## **CTE 5 (Technologists/ESTRO)**

**Tuesday, October 16, 14:30-16:00**

### **Session Title**

**PET/CT Radiotherapy Planning in Head & Neck Malignancies**

### **Chairpersons**

Andrea Santos (Lisbon)

Paulina Cegla (ESTRO, Poznan)

### **Programme**

- 14:30 - 15:00 Wouter Vogel (Amsterdam): The Contribution of PET/CT for Head and Neck Tumours - From Diagnose to Radiotherapy Planning
- 15:00 - 15:30 Paulina Cegla (ESTRO, Poznan): Head & Neck Radiotherapy - The Contribution of PET/CT for Radiotherapy Planning
- 15:30 - 16:00 Francesco Raimondi (Pavia): Hadron Therapy in Head & Neck Tumours - A Technologist's Perspective

### **Educational Objectives**

1. Get acquainted with the physio-pathological processes of disease involved in Head & Neck tumors (H&N)
2. Identify the available tracers and review techniques of imaging H&N tumors in nuclear medicine area
3. Describe the imaging protocols and techniques to diagnose, follow-up and aid radiotherapy planning
4. Understand the importance of good quality performance of PET-CT in H&N malignancies for radiotherapy planning
5. Understand the technologist role during imaging, treatment planning and therapy (NMT and RTT) processes
6. Review the radiotherapy planning principles and be familiarized with its outcomes in therapy
7. Be familiarized with the principles of external beam radiotherapy
8. Discuss the importance of the collaboration of a multi-professional team during all phases of the imaging and radiotherapy processes
9. Overview of Adrotherapy principles, clinical indication for H&N, technical challenges and consequent department structure
10. Discuss role of imaging procedures in Adrotherapy for H&N tumors, including PET/CT and Nuclear Medicine

### **Summary**

Radiotherapy is a ever evolving reality in treatment of H&N tumors. New methods are developed constantly, including proton therapy, and imaging techniques need to follow this evolution to provide efficient planning. Technological evolution increases treatment possibilities and overall quality of care in cancer patients. Nuclear Medicine, along with PET/CT technology has been contributing to the detection and follow-up of a diversity of malignancies, including Head and Neck tumors.

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The evolution of this technique, allied with Radiotherapy planning development, has proven to be beneficial to the patient outcome. The ability of nuclear medicine to identify the tumor activity, allows the delineation of tumor location for external beam radiotherapy planning.

PET-CT with FDG plays an important role in this area, being indicated for several types of tumors. Anyhow, the development of new tracers enables the study of other biological functions, such as hypoxia. Choosing the best tracer, along with the best technique applied, must lead to great results that will support and enhance the quality of the radiotherapy treatment.

The development of new imaging protocols, along with the improvement of the already established ones, should count with a multi professional approach in which the nuclear medicine technologist plays an important role, both in patient preparation and imaging processes. This includes a correct positioning, that is of utmost importance to the success of the whole process. The positioning must be discussed/performed gathering both nuclear medicine and radiotherapy professionals, to meet the best practice needs. The perfect fusion of both PET and CT, together with the Radiotherapy requirements will lead to a more effective treatment. The collaboration of both areas have a synergistic effect from which the patient will take a clear benefit.

In this session we will cover state of the art radiotherapy treatment for H&N and imaging associated with planning, with a deeper look at PET/CT role. We will also explore advanced proton therapy treatment from a technologist/radiographer point of view and technical challenges connected with Imaging and Treatment with synchrotron.

#### **Key Words**

PET/CT for Head&Neck malignancies, Head and Neck Radiotherapy, Radiotherapy planning aided by PET/CT, Hypoxia, Adrotherapy, Synchrotron

#### **Take Home Message**

Radiotherapy is a ever evolving reality in treatment of H&N tumors. New methods are developed constantly, including proton therapy, and imaging techniques need to follow this evolution to provide efficient planning. PET/CT technology is a useful tool to aid radiotherapy planning that is constantly evolving. The establishment of good quality procedures and protocols is very important for both Nuclear Medicine and Radiotherapy to perform high quality imaging and treatment techniques.