

## **Pitfalls & Artefacts 1**

Neuroimaging Committee

**Thursday, October 22, 13:30-15:00**

### **Session Title**

**Unexpected Findings in Brain Imaging**

### **Chairperson**

Javier Arbizu (Pamplona, Spain)

### **Programme**

- 13:30 - 13:59 Elsmarieke van de Giessen (Amsterdam, Netherlands): Unexpected Findings on Coregistered MRI or CT in Hybrid PET and SPECT Imaging
- 13:59 - 14:28 Javier Arbizu (Pamplona, Spain): Unexpected Findings of PET Imaging in Brain Tumours
- 14:28 - 14:57 Diego Cecchin (Padua, Italy): Unexpected Findings of PET and SPECT Imaging in Neurodegenerative Diseases

### **Educational Objectives**

1. To learn about unexpected findings in brain PET and SPECT hybrid imaging (pitfalls related to the coregistered CT or MRI)
2. To discuss clinical cases with unexpected findings in patients with brain tumors and neurodegenerative diseases
3. To learn how to interpret possible incidental findings due to artifacts or to concomitant (unexpected) diseases

### **Summary**

The advent of hybrid imaging has significantly improved accuracy and clinical interpretation of brain PET and SPECT. Coregistered CT and more recently MRI data also provide their own set of valuable information in molecular brain imaging studies. Obviously hybrid imaging in neurology comes with additional pitfalls and challenges specifically due to the “structural part” of PET- and SPECT-CT studies.

Similarly, knowledge of physiological uptake of tracers for brain PET and SPECT imaging both in patients with brain tumors and neurodegenerative diseases is mandatory for images interpretation. However anatomical variations, vascular disorders, non-tumorous lesions such as inflammation or dysplasia, benign brain tumors and other systemic patient condition can affect the image interpretation and cause false positives and negatives. Finally, given clinical complexity of neurological disorders, knowledge of less frequent (and less expected) diseases possibly responsible for cognitive or motor symptoms should be considered when interpreting Brain PET findings. The present P&A session aims to increase familiarity with the spectrum and pitfalls of brain PET and SPECT imaging findings thus improving images interpretation and avoiding misdiagnoses.

### **Key Words**

Brain PET and SPECT; Brain tumors; Neurodegenerative diseases; Hybrid imaging