Mini Course 1
Technologists Committee
Friday, October 23, 09:00-09:50

Session Title
New Developments in Cardiac Imaging Instrumentation

Chairperson
Agata Pietrzak (Poznan, Poland)

Programme
09:00 - 09:24 Sebastijan Rep (Ljubljana, Slovenia): Difference in Myocardial Perfusion Imaging Between Conventional SPECT Imaging and Imaging with Dedicated Cardiac Cameras
09:24 - 09:48 Jan Jamsek (Ljubljana, Slovenia): Diagnostic Performance of Dedicated Cardiac Cameras

Educational Objectives
1. Understanding clinical indications for myocardial perfusion imaging.
2. To understand the basic principles of different dedicated cardiac systems for myocardial perfusion imaging.
3. To get acquainted with the advantages of different dedicated cardiac systems for myocardial perfusion imaging.
4. To understand the difference and advantages between iterative and filtered-back projection reconstruction algorithm.
5. To know how to create a acquisition and processing protocol.
6. To understand the role of the technologist in the imaging procedures.

Summary
In nuclear cardiology, myocardial perfusion imaging (MPI) started from planar scintigraphy and evolved into single photon single computed tomography (SPECT), to dual SPECT detector alone or in combination with computed tomography (CT) imaging to the current state of more (more than two) SPECT detector images. In recent years, technology has begun to move away from the conventional SPECT imaging approach to create innovative designs for dedicated heart images. The design of these imagers has in common that all available detectors are limited to simultaneous imaging of the cardiac field of view only. These new designs vary in the number and type of scanning or stationary detectors, and whether crystals or solid state detectors are used. The use of OSEM iterative reconstruction algorithm provides MPI SPECT images with higher image quality than that obtained with conventional filtered-back projection (FBP) reconstruction. During the iterative reconstruction, a variety correction methods can be applied, such as attenuation correction (AC), scatter correction (SC), resolution recovery (RR), and noise reduction techniques.

Key Words
Myocardial perfusion imaging, SPECT, SPECT/CT, solid state detectors, crystals, iterative reconstruction, filtered-back projection