

Mid-Congress-Symposium 1

Cardiovascular + Infection & Inflammation Committee / European Association of Cardiovascular Imaging (EACVI)

Monday, October 26, 09:30-12:15

Session Title

Detecting Cardiac Amyloidosis - Increasing Role of Nuclear Medicine

Chairperson

Riemer Slart (Groningen, Netherlands)

Programme

09:30 - 09:55 Hans Nienhuis (Groningen, Netherlands): Introduction Cardiac Amyloidosis and New Treatment Options

09:55 - 10:20 Olivier Lairez (Toulouse, France): Echocardiography and Cardiac MRI in Cardiac Amyloidosis

10:20 - 10:45 Riemer Slart (Groningen, Netherlands): Cardiac Bone Scans -Protocols, Interpretation, Quantification

10:45 - 11:00 Break

11:00 - 11:24 Eve Piekarski (Paris, France): Cardiac MIBG - Protocols, Interpretation, Quantification

11:24 - 11:48 Jens Sörensen (Uppsala, Sweden): New PET Radiopharmaceuticals in Cardiac Amyloidosis, Perspectives

11:48 - 12:12 Alessia Gimelli (Pisa, Italy): Results EU Questionnaire on Cardiac Amyloidosis and Cardiac Sarcoidosis & Clinical cases

Educational Objectives

1. Background information of cardiac amyloidosis including new therapy approaches for managing patients with CA
2. The role of non-invasive imaging in the diagnostic work-up of CA, including the results of the EU questionnaire.
3. Details of bone agent imaging and MIBG in CA, including imaging protocol, scoring, and interpretation, using the new consensus recommendations.
4. Overview of novel PET imaging in CA

Summary

Cardiac amyloidosis (CA), commonly resulting from deposition of misfolded immunoglobulin light chain (AL) or transthyretin (ATTR) protein, is an underestimated cause of heart failure. ATTR has gained increasing attention in recent years and can be divided into a hereditary type (ATTRv) and a wild-type (ATTRwt). Diagnosis of CA is frequently delayed for several reasons. Clinical manifestations are varied, serum cardiac biomarker elevation is non-specific, awareness of CA is lacking, and non-invasive techniques for specific diagnosis became only more recently available.

Accurate and early diagnosis of heart failure as a result of CA has major implications on prognosis and treatment, using echo and MRI in the first line. Molecular imaging with PET and SPECT nowadays play a critical role in the diagnosis, identification and distinction between ATTR and AL type CA. Bone scintigraphy is an important non-invasive tool to diagnose cardiac amyloidosis due to ATTR (either ATTRv or ATTRwt). Additionally, the innervation agent ¹²³I-MIBG accumulates in vesicles in sympathetic nerve endings close to myocardial cells and the reduced uptake and increased loss reflects myocardial cell damage caused by amyloid. More specific PET-imaging tracers in amyloidosis selectively bind to β -amyloid plaques, such as ¹¹C-Pittsburgh compound-B (11C-PiB), ¹⁸F-florbetaben, and ¹⁸F-florbetapir and are useful for the detection of AL and ATTR CA. Current and new treatments are targeted at reducing the production or stabilisation of the precursor protein or aiming at promoting amyloid removal and thereby aim to stop or slow down further accumulation of CA. Molecular imaging should be able to visualize regression of CA under these new treatment regimens, but data are lacking at this moment. For diagnostic considerations, specific target imaging using hybrid or multimodality techniques such as PET/MR definitely will play a role in the future.

Key Words

Cardiac amyloidosis, non-invasive imaging, images reading, new PET tracers, novel therapy, EU questionnaire