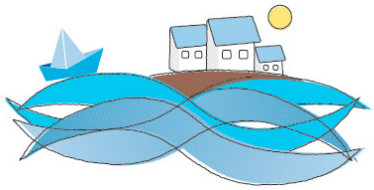

Mediterranean Thematic Workshops in Advanced Molecular Imaging

Contribution ID: **55** Type: **Oral**

Advancements in Parametric Imaging: Applications, Challenges, and Opportunities

Saturday 25 May 2024 15:00 (20 minutes)

Parametric imaging is emerging as a powerful tool in medical imaging, offering a deeper understanding of physiological processes by quantifying parameters such as blood flow, metabolic rate, and perfusion. Despite its potential, its clinical application has been limited so far, primarily due to the extensive scan durations required. This presentation seeks to underscore the principles of parametric imaging, its applications specifically in the domain of infection and inflammation, while exploring its challenges, and opportunities that could redefine its clinical use in the future. In the last years, significant innovations have already begun, facilitating the clinical integration of parametric imaging. These include the availability of the long-axial field of view (LAFOV) systems, the recent approval of CE Marked tool for direct parametric imaging reconstruction, and advanced techniques for deriving both population-based and image-derived input functions (PBIF & IDIF)1. These advancements hold the promise of overcoming the primary obstacles of traditional parametric imaging by significantly cutting down scan times and enhancing quantification accuracy, although the issue of motion artifacts in short dynamic acquisition still remains a concern 2,3. Among its various applications, parametric imaging has demonstrated its efficacy in primarily facilitating the differentiation of inflammation from malignancies, traditionally using radiotracers like 18F-fluorodeoxyglucose (FDG), and now expanding with the exploration of additional tracers, including oxygen-15 labelled water ([15O]H2O)4–6. This specific capability to discern metabolic patterns characteristic of infection and inflammation has the potential to enhance the diagnostic precision and enable more informed treatment planning. In conclusion, with the expanding use of new tracers and the advent of new technologies, parametric imaging can stand poised to revolutionize clinical practice, enabling more accurate and personalized patient care.

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Session Classification: Can AI/ML/Deep Learning contribute to Molecular Imaging of Inflammation and Infection?

Track Classification: AI/ML/Deep Learning in Molecular Imaging of Inflammation and Infection