

The Third Chinese PET/MR Academic Symposium: PET/MR in Practice.

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INTRODUCTION

On July 1, 2023, the Third National PET/MR Academic Symposium was held in Shanghai Jiao Tong University School of Medicine's Ruijin Hospital.

The much awaited 3rd PET/MR Meeting takes place in Shanghai and brings together about 300 practitioners, researchers, and specialists from both China and Europe (Fig. 1). This conference provided a forum for the discussion of innovative developments, idea sharing, and collaboration in this odd field of medical imaging. The conference was a critical turning point in the process of realizing PET/MR technology's full potential.

Presentations at the PET/MR Meeting illustrated the effectiveness and adaptability of hybrid PET/MR imaging. A range of engaging presentations spanning various clinical subjects were given to the attendees.

The practical application of PET/MR technology in the context of patient care was one of the main themes of the PET/MR Meeting. Speakers provided engaging case studies and clinical trials to show how PET/MR imaging can help with better treatment planning, more precise and individualized diagnoses, and better patient outcomes. The focus on clinical relevance highlighted the PET/MR community's dedication to

converting research into real benefits for patients. In 2012, the first PET/MR was used in a clinical setting in China. There were 81 PET/MR installations as of June 2023. The goal of China's 14th Five-Year Plan (2021–2025) is to add 141 more PET/MR equipment.

Owing to the low radiation dose of PET, the high soft tissue contrast of MR, the one-stop efficient acquisition, the precise image fusion, and the complementary benefits of MR multi-sequence and PET imaging with a specific molecular probe, the PET/MR device exhibits clinically valuable applications in neuroendocrine tumors, prostate cancer, and diseases of the nervous and cardiovascular systems. The Chinese Society of Nuclear Medicine reported in 2020 [1] that a total of 14,095 routine PET/MR examinations were performed. Of these, 11,545 had tumor imaging (81.9%), 1607 had nervous system disease imaging (11.4%), 175 had cardiovascular disease imaging (1.2%), and other diseases imaging (5.5%) were included. Among them, 94.6% came from 18F-labeled PET imaging, 3.6% from 11C imaging, and 1.8% from 68 Ga imaging.

Nevertheless, unlike routine clinical PET/MR imaging, tumor imaging only accounted for 50% of PET/MR-related research, according to 32 wall charts from Chinese PET/MR device units that were presented at the conference. Other factors included nervous system disease (28%), cardiovascular disease (3%), infectious diseases (3%), and optimization of image acquisition and animal imaging (16%).

Furthermore, 53% of non-[18F]-FDG molecular probes were employed, of which 58%, 29%, and 13% were labeling probes for 18F, 68 Ga, and 11C, respectively. The meeting concluded by emphasizing that the successful use of this device depends on standardized PET/MR image acquisition and interpretation, the use of non-[18F]-FDG-specific molecular probes, and complementing MR multi-parameter and multi-sequence approaches.

Another issue raised at the conference was quantitative imaging, a developing field that seeks to get exact measures from medical images. The PET/MR Meeting offered a platform for the discussion of developments in creating strong quantitative analysis tools, verifying imaging biomarkers, and standardizing imaging protocols to minimize radiation exposure, improve image quality, and speed up picture acquisition. These advancements pave the way for quantitative imaging to become a crucial tool in clinical practice, enabling

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more unbiased and data-driven decision-making.

It is imperative to tackle issues like PET/MR imaging cost, accessibility, and technological standardization, as well as the scarcity of qualified physicians and technicians, in order to guarantee fair and uniform PET/MR imaging quality worldwide. Additionally, sustained research investment, Developing and educating people is essential to maximizing the potential of this innovative method.

REFERENCES

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