



PET/MR in practice: the 3rd Chinese PET/MR Academic Symposium

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The 3rd National PET/MR Academic Symposium took place in Ruijin Hospital, Shanghai Jiao Tong University School of Medicine on July 1st, 2023.

Shanghai hosts the highly anticipated 3rd PET/MR Meeting, bringing together approximately 300 experts, researchers, and practitioners from China and Europe (Fig. 1). This conference served as a platform for discussing groundbreaking advancements, exchanging ideas, and fostering collaborations in this peculiar field of medical imaging. The meeting marked a significant milestone in the journey towards harnessing the full potential of PET/MR technology.

The PET/MR Meeting showcased presentations that demonstrated the power and versatility of hybrid PET/MR imaging. Attendees were treated to a series of compelling presentations, covering diverse clinical topics.

One of the major focuses of the PET/MR Meeting was the practical application of PET/MR technology in the realm of patient care. Presenters shared compelling case studies and clinical trials, illustrating how PET/MR imaging can contribute to more accurate and personalized diagnoses, improved treatment planning, and enhanced patient outcomes. This emphasis on clinical relevance underscored the commitment of the PET/MR community to translating research into tangible benefits for patients.

The first PET/MR was introduced into clinical use in China in 2012. As of June 2023, there have been 81 PET/MR installations. The 14th Five-Year Plan of China (2021–2025) aims to add additional 141 PET/MR devices.

Due to low radiation dose of PET, high soft tissue contrast of MR, one-stop efficient acquisition, and accurate image fusion in PET/MR device, as well as the complementary advantages of MR multi-sequence and PET imaging with specific molecular probe, PET/MR device demonstrates clinically valuable applications in prostate cancer and neuroendocrine tumors and nervous system and cardiovascular system diseases. According to the 2020 report of Chinese Society of Nuclear Medicine [1], the total number of routine PET/MR examinations reached 14,095, including 11,545 tumor imaging (81.9%), 1607 nervous system disease imaging (11.4%), 175 cardiovascular disease imaging (1.2%), and other diseases imaging (5.5%). Among them, ¹⁸F-labeled PET imaging accounted for 94.6%, ¹¹C imaging accounted for 3.6%, and ⁶⁸Ga imaging accounted for 1.8%. However, 32 wall charts from Chinese PET/MR device units presented at the conference showed that unlike routine clinical PET/MR imaging, tumor imaging only accounted for 50% in PET/MR-related research, while nervous system disease accounted for 28%, cardiovascular disease accounted for 3%, inflammatory diseases accounted for 3%, and optimization of image acquisition and animal imaging accounted for 16%. In addition, 53% of non-[¹⁸F]-FDG molecular probes were used among which ¹⁸F, ⁶⁸Ga, and ¹¹C labeling probes account for 58%, 29%, and 13%, respectively. Finally, the conference highlighted that standardized PET/MR image acquisition and interpretation as well as the use of non [¹⁸F]-FDG-specific molecular probes and complementary MR multi-parameter and multi-sequence techniques are key to the effective implementation of this device.

In addition, quantitative imaging, a burgeoning field that aims to extract precise measurements from medical images, sparked another concern at the conference. The PET/MR Meeting provided a forum for discussing advancements in standardizing imaging protocols to reduce radiation exposure, improve image quality, and accelerate image acquisition, developing robust quantitative analysis techniques, and validating imaging biomarkers. These developments lay the groundwork for the adoption of quantitative imaging as an

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Fig. 1 Group photo of the main attending experts

essential tool in clinical practice, facilitating more objective and data-driven decision-making.

Challenges such as cost, availability, and technical standardization of PET/MR as well as shortage of physicians and technicians who have MR qualifications need to be addressed to ensure equitable access and consistent quality of PET/MR imaging globally. Moreover, continued investment in research, development, and education is vital to harness the full potential of this cutting-edge modality.

Data availability Not applicable.

Declarations

Ethical approval Not applicable to this Editorial.

Informed consent Not applicable.

Conflict of interest The authors declare no competing interests.

Reference

1. Chinese Society of Nuclear Medicine. A brief report on the results of the national survey of nuclear medicine in 2020. *Chinese Journal of Nuclear Medicine and Molecular Imaging*. 2020;40(12):747–9. <https://doi.org/10.3760/cma.j.cn321828-20201109-00403>.

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