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Studying Fesaibility of Simultaneous Hyperpolarized 129Xe MRI and [15O]water PET Measurements

Ramanpreet K. Sembhi
Western University, rsembhi@uwo.ca

^{129}Xe is a stable, non-radioactive-isotope, capable of being imaged with MRI. [^{15}O]-water PET (positron emission tomography) is a gold-standard imaging method.

We propose to utilize gold-standard [^{15}O]-water PET to validate our ^{129}Xe-based perfusion imaging methods using a one-shot, multi-modal-imaging approach utilizing simultaneous PET/MRI.

Globally our group is the first one to perform successful validation work for ^{129}Xe-based brain perfusion techniques, directly and simultaneously with [^{15}O]-water PET using phantom scans. This enables the next step of in-vivo imaging which we are planning to perform on small animal model.

As Xe-129 provides higher sensitivity and superior SNR as compare to other imaging techniques. It would be much more cost-effective alternative to PET for imaging stroke, brain cancer and other brain diseases.

RESULTS:

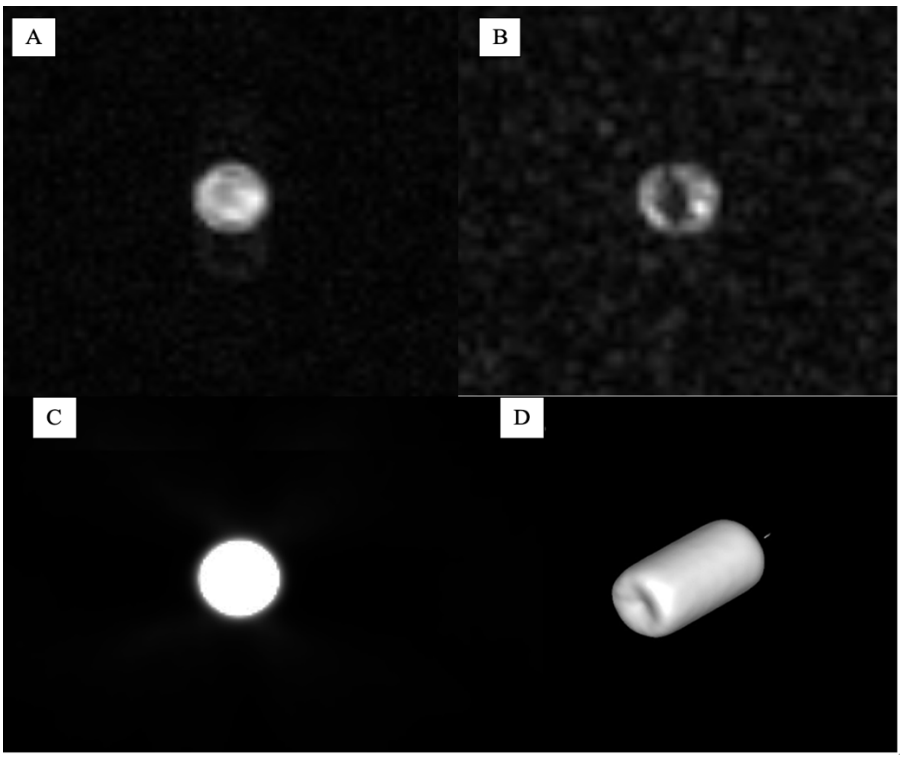

FIGURE 1. (A) and (B) shows two consecutive 2D ^{129}Xe MRI images. (C) and (D)shows 2D and 3D PET images acquired simultaneously.