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Meta-analysis and specificity comparison between 13C-FDG PET and 13C-hyperpolarized MR spectroscopic imaging in cancer today

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The ability of PET and MRI to image cancers has been a very important aspect of clinical management. The ability to detect cancer by using different radiologic modalities with appropriate fusion imaging can help visualize cancer at various stages with various sensitivity and specificity. However, the two most promising modality for high sensitivity and specificity are 13C FDG-PET and 13-C Hyperpolarized MR Spectroscopic imaging (we will call Hyper MRSI) and may reduce or eliminate the need for biopsy. We have analyzed radiology and oncology literature for past ten years to compare the specificity of these two techniques. In our meta-analysis, Hyper MRSI plays a unique role for prostate as well as for a few types of brain cancer including glioma that is more useful for staging than 13-C PET. On the other hand, PET may be able to treat while detect cancer using ImmunoPET functionality. Since the background metabolic activity, e.g. in glioma, competes with tumor bed in Hyper MRSI, its effectiveness (signal/noise and thus sensitivity) may change with tumor grade and individual patient's brain metabolism. Resting brain state MRSI may require special patient preparation to reduce such background metabolism and high field MR systems could perform better. Outside brain, Hyper MRSI may be superior than FDG-PET. Specific advantages and disadvantages of both modalities will be discussed.

Biography

Janet Cordero is a BS student in Radiologic Science at New York City College of Technology. She holds an AAS in Nuclear Medicine Technology from Bronx Community College, New York. She is a licensed Nuclear Medicine and CT Technologist and has presented her work in lung cancer in Annual College conference in New York, in 2016. She has been working in Cancer Imaging for a year in Undergraduate research. She also holds a Technologist job at Winthrop Universsity hospital in Mineola, NY.

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