INDICATIONS AND 'RELATIVE' CONTRAINDICATIONS FOR PET

Adil AL-Nahhas
Department of Nuclear Medicine, Hammersmith Hospital, London, UK

Positron Emission Tomography (PET) has now become an established imaging procedure that can substantially improve the management of patients with a variety of diseases. Its use of short-lived radionuclides attached to biological molecules such as Fluorine-18 and desoxy-glucose (^{18}FDG) is the most common method by which areas of increased metabolism can be easily detected. Over the last 2 decades, extensive clinical and research work has shown ^{18}FDG-PET to posses a very high sensitivity and specificity in a wide range of oncologic, neuro-psychiatric and cardiac diseases amongst others. However, expert opinion suggests that oncology will continue to be the main target for ^{18}FDG-PET, constituting 85-90% of its use.

The judicial use of this technique, which is now only available for a small percentage of the world population, provides diagnostic, prognostic and cost-effective approach to management. However, there are instances when the use of ^{18}FDG-PET is not advisable simply because of reduced sensitivity and specificity relating to the clinical conditions under study. This talk will attempt to address this issue and will be limited to the use of ^{18}FDG in oncology rather than other positron emitters such as ^{15}O, ^{11}C and ^{13}N or other systems such as cardiology and neuropsychiatry. The use of ^{18}FDG-PET in each clinical setting will be described as:

- Indicated
- Not routinely indicated (but may be helpful)
- Contraindicated

There are other factors that may reduce the sensitivity and specificity of ^{18}FDG-PET and make it ineffective in providing diagnostic and prognostic information. They include:

- Effect of therapy
- Patient selection
- Instrumentation

Knowledge of these factors could further improve the cost-effectiveness of PET and optimise its use.