Review Article

Clinical Positron Emission Tomography Imaging—Current Applications

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Abstract

   Positron emission tomography (PET) is an established imaging technique based on the use of short-lived radiotracers. The unique value of PET lies in the ability of various radiochemical compounds to serve as tracers for measuring specific metabolic processes in the body. This enables detection of the early biochemical anomalies that precede the structural changes seen on other imaging techniques. For decades, PET had remained essentially a research tool in academic institutions. However, in recent years, it has emerged as a vital clinical tool, particularly for cancer diagnosis and management. In this era of evidence-based medicine, the clinical applications of PET imaging have been subjected to intense evaluation, and its roles in oncology, neurology and cardiology have dominated nuclear medicine research and scientific publications in the past 5 to 8 years. This review article summarises the present status of the major clinical indications for PET scanning. The field is rapidly evolving and, with the recent advent of hybrid PET-CT scanners, new data continue to emerge, refining these clinical applications. Another important area of ongoing research is the development of new radio-labelled compounds for PET imaging.

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Key words: Cancer staging, Epilepsy, Fluoro-deoxy-glucose, Lung cancer, Myocardial viability, Radionuclide imaging

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