Role of 18- F FDG-PET/CT in the assessment of primary hepatic neoplasm (Heptocellular carcinoma HCC) after hepatic intervention.

Thesis
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Abstract

Keyword :-(HCC- PET/CT- FDG- SUV)

The tumor thrombus differentiates itself from blood thrombus by its intense FDG uptake as result of its high metabolic neoplastic activity. Delayed PET images (2-3 hours) are useful in assessing disease residue or recurrence with progressive tracer accumulation in the lesion and calculation of retention index PET/CT was more sensitive than conventional CT in detecting extra hepatic metastatic disease based on their metabolic activity & it provide whole body assessment in single examination Our findings showed that the combination of good anatomical resolution and the metabolic data offered by PET/CT can exclude the presence of extra hepatic disease that affects the tumor stage and the intervention procedure.

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Dedication:

I dedicate this work to ***My Wife.***

My family.

My professors & My Colleagues.

For their help and assistance

Thanks for all of you

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LIST OF ABBREVIATIONS

ACD: Annihilation Coincidence Detection

ACC: Accuracy

ADC: Apparent Diffusion Coefficient

AFP: Alfa fetoprotein

APD: Avalanche Photodiode

BaF: Barium Fluoride

BGO: Bismuth Germinate

CE-CT: Contrast enhanced Computed tomography

CI: Confidence Interval

CT: Computed tomography

DWI: Diffusion weighted imaging

E: Energy

18F: Fluorine 18

FBP: Filtered Back Projection

FDG: Fluorodeoxyglucose

FLLs: Focal Liver Lesions

FN: False Negative

FP: False Positive

List of Abbreviations

GSO: Gadolinium Orthosilicate

HCC: Hepatocellular Carcinoma

KBq: Kilobecquerel

Kg: Kilogram

La Br: Lanthanum Bromide

LOR: Line of Response

LSO: Lutetium Orthosilicate

Max: Maximum

MBq: Megabecquerel

MDCT: Multi-detector Computed tomography

MEV: Million Electron Volt

MRI: Magnetic Resonance Imaging

N: Neutrons

NaI (Tl): Sodium iodide with thallium doping

NPV: Negative Predictive Value

OSEM: Ordered Subsets Expectation Maximization

PET: Positron Emission Tomography

PPV: Positive Predictive Value

P+: Protons

List of Abbreviations

RF: Radiofrequency

ROI: Region of Interest

SEN: Sensitivity

SEP: Specificity

SUV: Standard Uptake Value

TACE: Trans-arterial chemoembolization

TN: True Negative

TOF: Time of Flight

TP: True Positive

VOI: Volume of Interest

V: neutrino

β +: Positron

2D: 2 Dimensional

3D: 3 Dimensional

Introduction

Hepatocellular carcinoma (HCC) is the cause of 250,000 deaths worldwide each year. Early HCC is typically clinically silent, and the disease is often well advanced at the first manifestation. ***(Clark et al, 2005)***

Complete surgical resection and hepatic transplantation offer the best chance of a cure for HCC. However, surgery is often precluded by extensive disease or poor hepatic functional reserve. ***(Clark et al, 2005)***

Several minimally invasive percutaneous techniques are now available to help manage localized solid neoplasms, including primary HCC. Chemical ablation involves the direct infusion into the tumor of a denaturing material such as ethanol or acetic acid. Thermal ablation involves the killing of tissue either by freezing it (as in cryoablation) or heating it (as in RF, microwave, or laser ablation). ***(Clark et al, 2005)***

For many years, interventionalists have derived therapeutic advantages from the dual blood supply to the liver and the propensity for neoplasms to derive their blood supply primarily from the arterial circulation. Various protocols for pharmaceutical infusion and/or arterial embolization via catheter have been developed to help patients who are ineligible for more definitive treatment of hepatic neoplastic disease. ***(Clark et al, 2005)***