Introduction

Breast cancer is the second leading cause of cancer deaths in women today (after lung cancer) and is the most common cancer among women, excluding non melanoma skin cancers. According to the world health organization, more than 1.2 million people will be diagnosed with breast cancer each year worldwide. The American Cancer Society estimates that 178,480new cases of invasive breast cancer will be diagnosed in2007.Breast cancer death rates have been dropping steadily since1990, according to the society, because of earlier detection and better treatments.About40, 910 breast cancer deaths are expected in 2007 ***(www.imaginis.com, 2007).***

PET/CT is new imaging modality in oncology it has redefined as the gold standard for oncologic imaging ***(David et al., 2005).***

PET/CT collect between the CT anatomical information and PET functional information leading to increase the ability of early detection of cancer ,staging and follow up, therapy monitoring, detection of recurrence***(Blodgett et al.,2007).***

PET/CT added incremental diagnostic confidence to PET in more than 50% of Patients and regions with increased FDG uptake. PET/CT accurately detect more regions with malignancies than did CT. this initial evaluation suggest that PET/CT is preferable to PET or CT in the diagnosis of breast cancer ***(Tatsumi et al., 2006).***

By combing the functional (physiological) image information derived from PET with the excellent anatomical detail provided by breast CT, we anticipate that amore quantitative assessment of breast cancer aggressiveness can be made, and the fused PET/ CT image data sets well provide physicians with better information to optimize the therapeutic Treatment of breast cancer on a patient-by-patient basis **(Ramsey, 2005)**

Form other obvious benefits of performing combined PET/CT over PET and CT done separately include consolidation of the patient imaging procedures, faster scan times, improved lesion localization, ability to use the technique for radiation therapy evaluation, planning**(James ,2005).**

The clinical application of PET and PET/CT in breast cancer will help to predict clinical behavior, and allow one to choose the appropriate treatment and to tailor local treatment options to the individual patient. PET and PET/CT are also likely to play key roles in monitoring systemic therapy and evaluating the response to therapy at an earlier stage than conventional methods. In the future, PET may be applied with other tracers in addition to FDG, to improve characterization of tumor biology and more effectively measures response to therapy (***Delgado,carreras 2005).***prognostic results.