**Reasons for a False-Positive Pet Scan**

Positron emission tomography (PET) is an imaging modality used to acquire a three-dimensional image of the body. A pet scan is obtained by injecting a combination of a radioactive isotope and glucose. This imaging technique is most useful for oncology purposes because malignant tumors are very metabolic and rapidly absorb the glucose. Due to the metabolic activity and glucose absorption, malignant tumors are very evident on a PET scan, making this modality extremely useful in diagnosing and treating various forms of cancer. However, glucose may be absorbed by mechanisms of the body other than malignancy which could lead to a false positive study and lessen the sensitivity of the PET scan.

Infection/Inflammation

According to Jung Min Chang M.D., there are several non-malignant, infectious conditions that may lead to a false positive PET scan. Many common infections, both fungal and bacterial, could absorb the glucose component of the PET scan injection and generate a false positive result. Sarcoidosis (a condition of swelling of the lymph nodes, lungs and liver), and radiation pneumonitis (inflammation of the lungs caused by radiation therapy for lung cancer) are among the conditions that may lead to a false positive PET scan. Individuals who must undergo PET scanning should provide a complete, detailed medical history to insure proper interpretation of the PET scan images.

Tumor Vaccine

According to a study published in the British Journal of Radiology by R. L. Jones, BSc, MRCP, a tumor vaccine for colorectal cancer can provide a false positive PET scan. Carcinoembryonic antigen (CEA) is an antigen found in many tumors of the intestinal tract. Approximately 90 percent of colorectal tumors contain CEA. A vaccine known as Cea/Vac has been developed to treat and protect against tumors containing CEA. Cea/Vac is administered by intradermal injection, very similar to a TB skin test. The study revealed a false positive PET scan in patients in the region of the axilla (armpit), liver and the lung in patients who are undergoing Cea/Vac therapy. Once Cea/Vac treatment was terminated, the PET scan returned to normal.

Exercise

According to Science Daily, any form of exercise prior to a PET scan may result in a false positive study. The glucose component of the PET scan injection will migrate to areas of high metabolic activity. Cancerous tumors are very metabolic and recently exercised muscles are also very metabolic. Physical exertion prior to a PET scan may lead to glucose being absorbed in the muscles, which can be misinterpreted as a cancerous tumor. Any physical activity within 48 hours of a PET scan should be documented to allow for proper interpretation of the exam.