Case Report

Superscan using F-18 FDG pet in breast cancer patient

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The SuperScan of bone scintigraphy is well-known phenomenon which is included intense activity in the bones and diminished soft tissue and renal parenchymal activity. Here we demonstrate a patient with postoperative right breast cancer of Fluorine-18 (F-18) fluorodeoxyglucose positron emission tomography (FDG PET) SuperScan showing extensive hypermetabolic lesions throughout the skeletons but only faint visualizations of the liver, renal cortex, and soft tissue, similar to the superscan of bone scintigraphy.

Keywords: FDG PET/CT, PET SuperScan, Extensive Metastasis, Breast cancer

A 42-year-old women presented with lumbar pain for 6 months. This patient had a right mastectomy due to breast cancer well differentiated mix type (invasive lobuler and ductal carcinoma) six years ago. Elevated carcino embryonic antigen (CEA) and CA15-3 were detected one year ago. The patient has been multiple treated by chemo-radiotherapy for six years. FDG PET/CT have been shown to be most helpful in staging recurrent or metastatic breast cancer and in evaluating the response of locally advanced and metastatic breast cancer to treatment (Rosen et al., 2007). Breast cancer is one of several malignancies that can result in bone metastases that are either osteolytic or osteoblastic (Rosen et al., 2007). The demonstrated images (anterior-posterior MIP (figure 1a) and left lateral MIP (figure 1b) showed intence hypermetabolic multiple lesions, enhanced FDG uptake in the skull, entire spine, chest, sternum, scapulae, pelvic bones, humeral and femoral shafts. The maximum standard uptake values (SUV) are 8.7. Renal cortex, liver and soft tissue uptake were remarkably low visualized. The faint visualization of the renal cortex and soft tissue might be the result of extraordinarily high uptake of FDG by bones. Thoracic, abdominal and pelvic computed tomography scan demonstrated multiple extensive bone metastases.

F-18 FDG PET /CT/ fusion transaxial images of thorasic (figure 2a) and pelvic (figure 2b) respectively are shown that a small hypermetabolic lesion with increased FDG uptake is appeared in dom at the level of the left lobe of liver, and than multiple costal, spinal and pelvic lesions are shown brisk, enhanced FDG uptake. The maximum standard uptake values (SUV) are 4.2. This image was evaluated in favor of metastases in patients with well differentiated mix type (invasive lobular and ductal carcinoma). The SuperScan of bone scintigraphy is defined as a bone image that looks too good. Its characteristics include intense activity in the bones and diminished renal parenchymal activity (Podoloff and Kim, 1989). The SuperScan is associated with various malignancies, and most commonly in carcinomas of the prostate, breast, lungs, and stomach (Su et al., 2006; Kim et al., 2010; Fujii et al., 2007; Kim et al., 1991). Su et al. reported the case of F-18 FDG PET SuperScan involving skeletons, similar to the superscan of bone scintigraphy (Su et al., 2006; Pour et al., 2004; Manier and Van Nostrand, 1984). The similar findings has been reported by Kim et al. cases of FDG PET superscan (Kim et al., 2010). Because of some characteristics in common with superscan on skeletal scintigraphy, similar to other cases, our case was evaluated as metabolic SuperScan.
Figure 1a. Anterior posterior MIP images is showed widespread hypermetabolic metastases.

Figure 1b. Lateral MIP images is showed intence hypermetabolic multiple lesions.
Figure 2a. A small hypermetabolic lesion is shown at the level of the left lobe of liver.

Figure 2b. Pelvic hypermetabolic lesions are shown.

REFERENCES