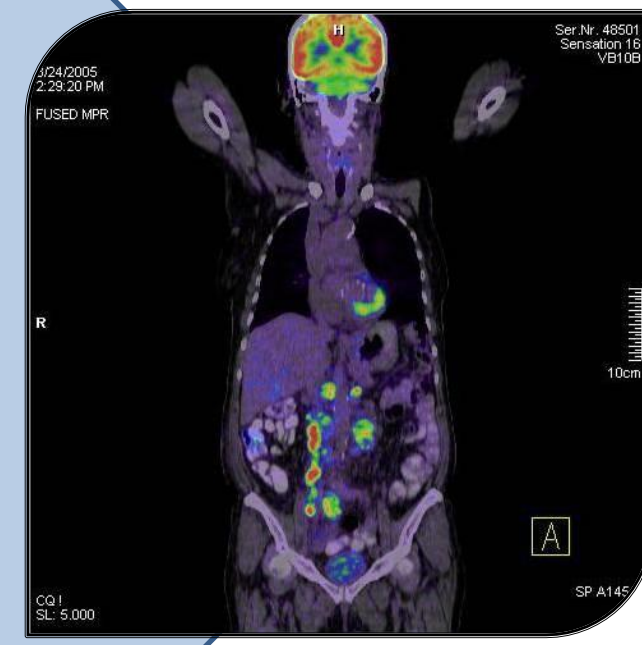


FDG-PET is a scintigraphic technique that provides three-dimensional information about the rate of glucose metabolism in the body and is a sensitive method for detecting, staging, and monitoring the effects of therapy for many malignancies.



Combined PET/CT devices provide both the metabolic information from FDG-PET and the anatomic information from CT in a single examination.

The information obtained by PET/CT has been shown to be more accurate in evaluating patients with known or suspected malignancy than either PET or CT alone or PET and CT obtained separately but interpreted together.



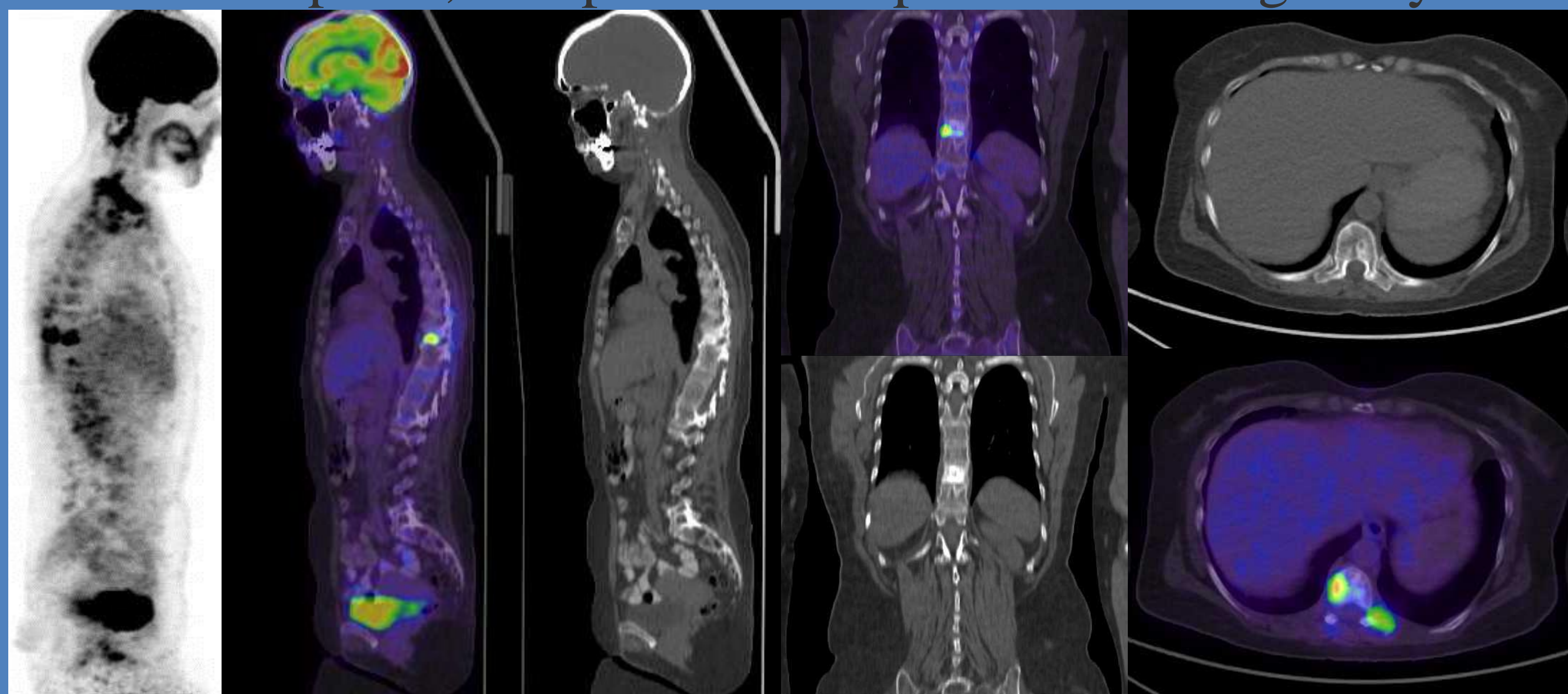
CT uses an external source of radiation to provide three-dimensional images of the density of the tissues in the body. CT images provide information about the size and shape of organs and abnormalities within the body.

- Bone metastases are the most common malignant bone tumor.
- Skeletal involvement occurs in 30%–70% of all cancer patients.
- Detection of tumor bone metastases is essential for optimal therapy.
- The purpose of imaging is to identify bone metastases as early as possible, to determine the full extent of disease, to evaluate the presence of complications that may accompany malignant bone involvement, to monitor response to therapy, and, occasionally, to guide biopsy if histologic confirmation is indicated.

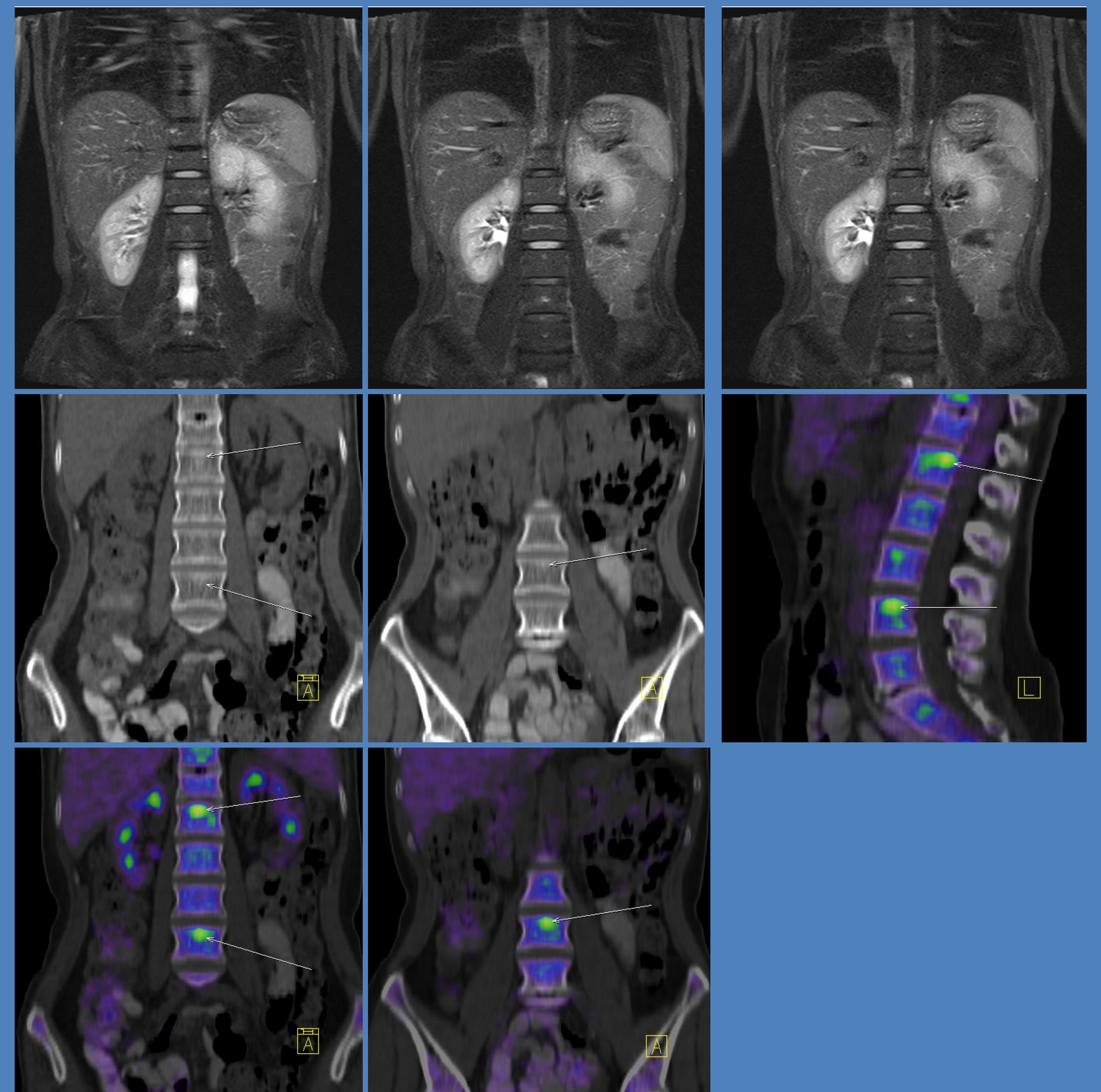
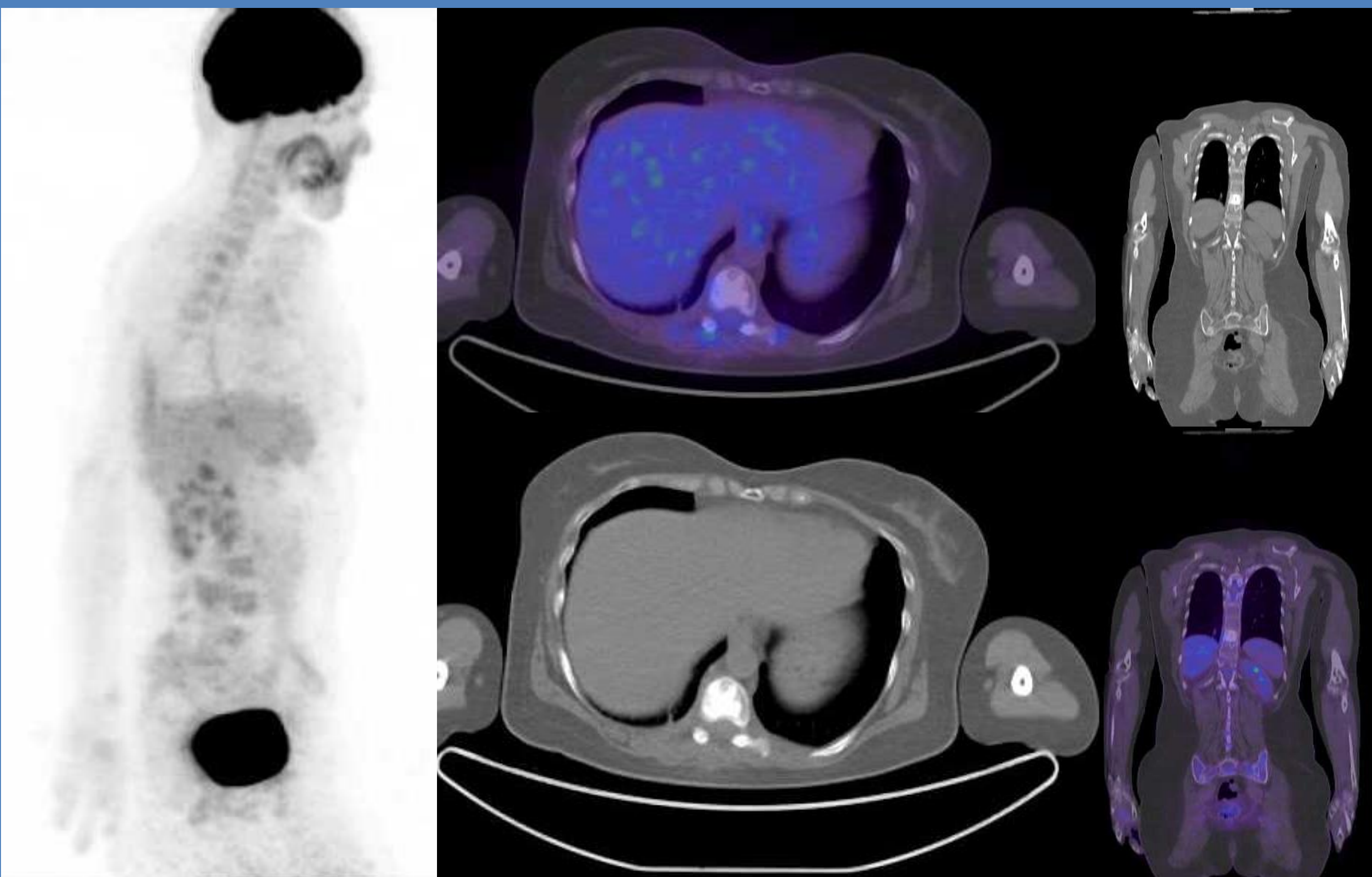
- The incidence of lytic, blastic, and mixed types of bone metastases is different in various tumor types.
- Lytic lesions may be seen in almost all tumor types.
- Bone metastases of bladder, kidney, and thyroid cancer and lesions of multiple myeloma are invariably lytic.
- Blastic lesions are frequently seen in prostate and breast cancer, occasionally in lung, stomach, pancreas, and cervix carcinomas, and infrequently in colorectal cancer.

- Bone metastases most commonly affect the axial skeleton.
- Different tumours or types of skeletal metastasis (lytic vs. sclerotic) behave differently with regard to uptake of 18FDG.
- Lytic metastases have a greater avidity for FDG.
- The reason for a greater avidity for 18FDG in lytic metastases may reflect increased glycolysis or expression of glucose membrane transporters. It might also be expected for these more aggressive metastases to become hypoxic, another factor which is known to increase 18FDG accumulation. In contrast, the relative acellularity that may occur in sclerotic metastases with comparatively smaller volumes of tumour tissue in individual lesions, may influence the uptake of 18FDG.

- 45 years / female with B-Cell Lymphoma
- after chemotherapy CT can not accurately determine if changes in the D8-D9 are disabling or relic is lymphoma.
- PET CT examination demonstrates osteosclerotic lesion with FDG uptake, compatible with persistent malignancy.



Post irradiation PET CT confirm remission of metabolic bone lesions.



- 39 year-old woman with Hodgkin's lymphoma and extranodal involvement of skeleton. IRM images shows no detectable abnormality.

DISCUSSION:

Bone and bone marrow involvement may occur in both Hodgkin's disease and non-Hodgkin's lymphoma. The skeleton is a frequent site of relapse. Bone marrow infiltration may be a site of a primary disease or more often part of a disseminated disease, found in up to 40% of patients with non-Hodgkin's lymphoma at presentation.

Bone marrow involvement in Hodgkin's disease at presentation is rare but may be seen in 5–34% of patients later during the course of disease.

Primary lymphoma of bone is almost exclusively due to non-Hodgkin's lymphoma, usually involving a single bone.

Secondary involvement of bones, mostly the axial skeleton, may be seen in both non-Hodgkin's lymphoma and Hodgkin's disease.