

Role of PET-CT in Oncology and Neurology: Interesting Cases

Arman Hassanzadeh Rad, MD

Assistant Professor of Nuclear Medicine

Tehran University of Medical Sciences

Sina Hospital

M.S of Analytical Chemistry

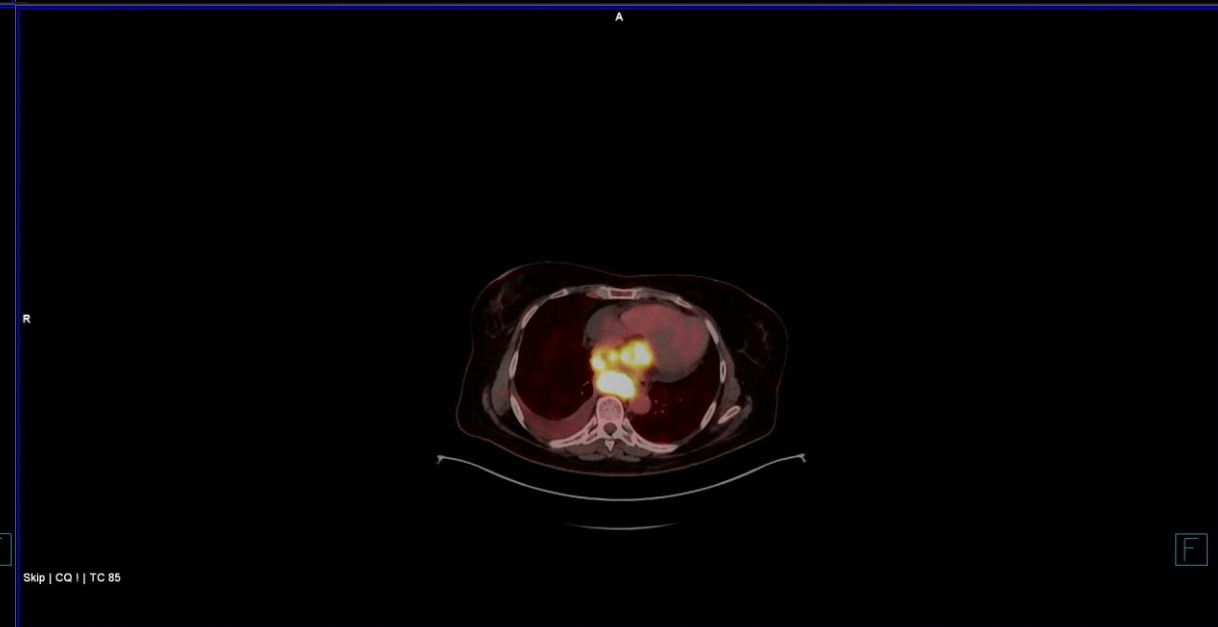
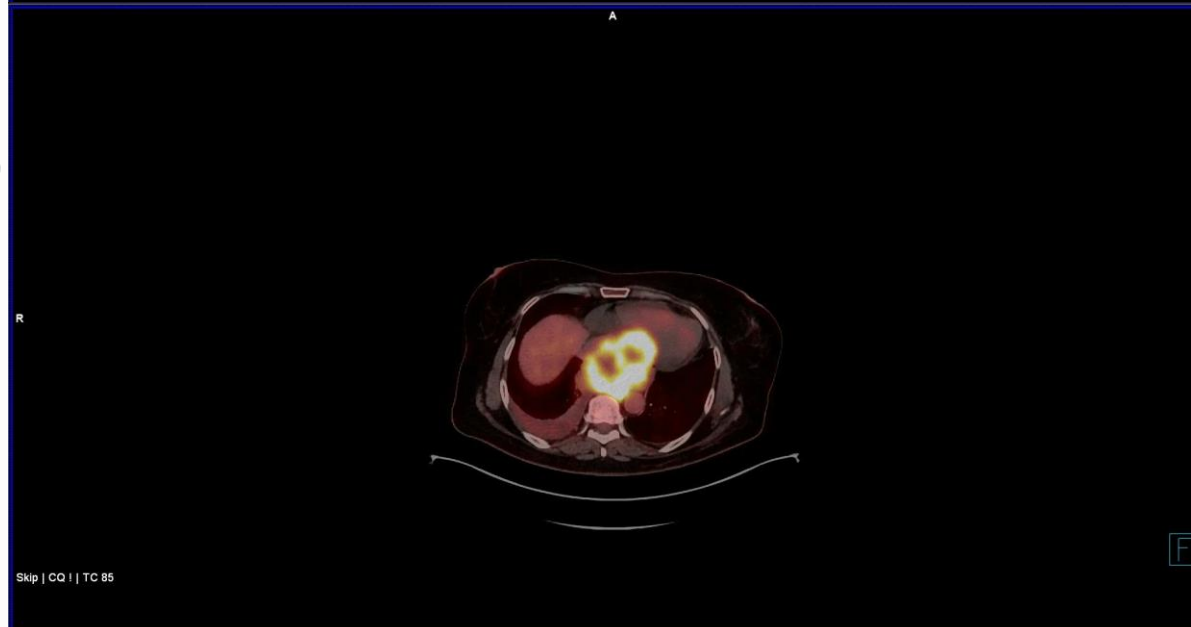
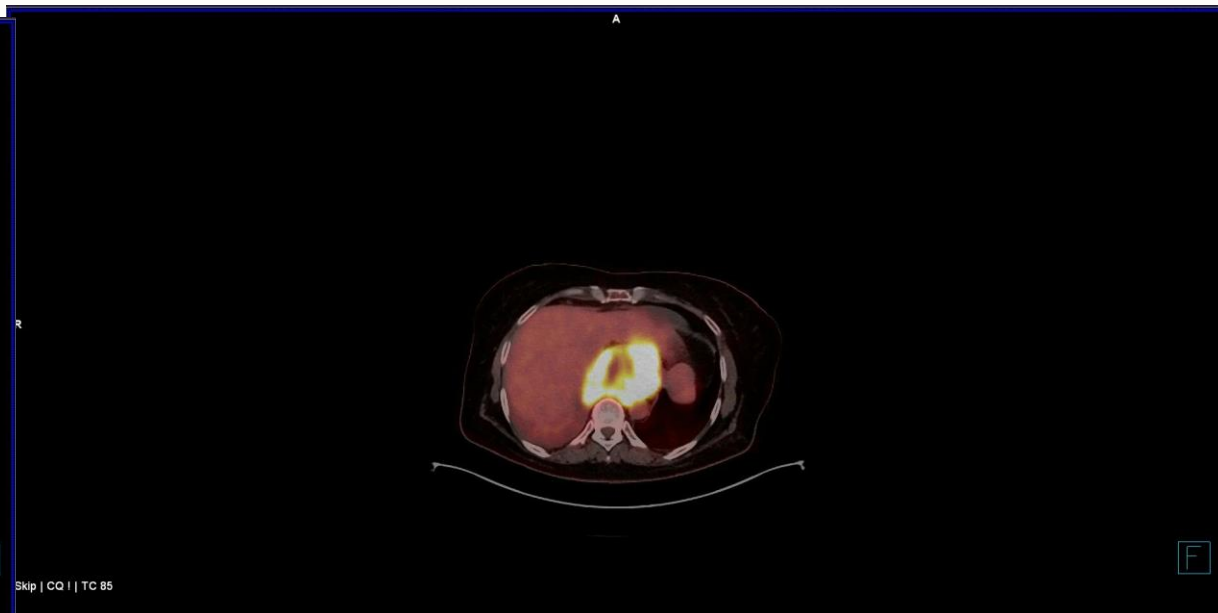
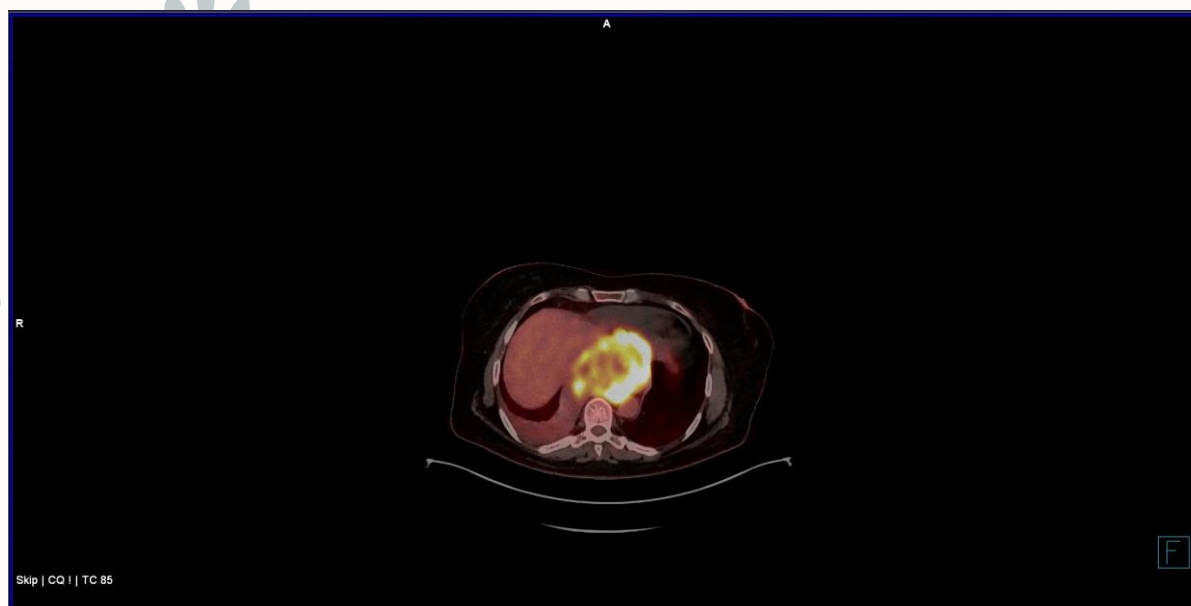
Sharif University of Technology

Case 1

- A 54 year old lady with dysphagia to solids and liquids for two months
- Endoscopic findings: Cricopharynx, upper, middle and lower thirds of the esophagus: normal
- EUS findings: Giant hypoechoic heterogeneous mass in distal part of the esophagus with compressive effect on LES (seems to be originated from the 4th layer)
- Pathologic Findings: Suggestive for Carcinoma

PET-CT Findings







SUV_{max} = 24.57

Measuring about 121 mm × 103 mm × 86 mm

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Skip | CQ ! | TC 85

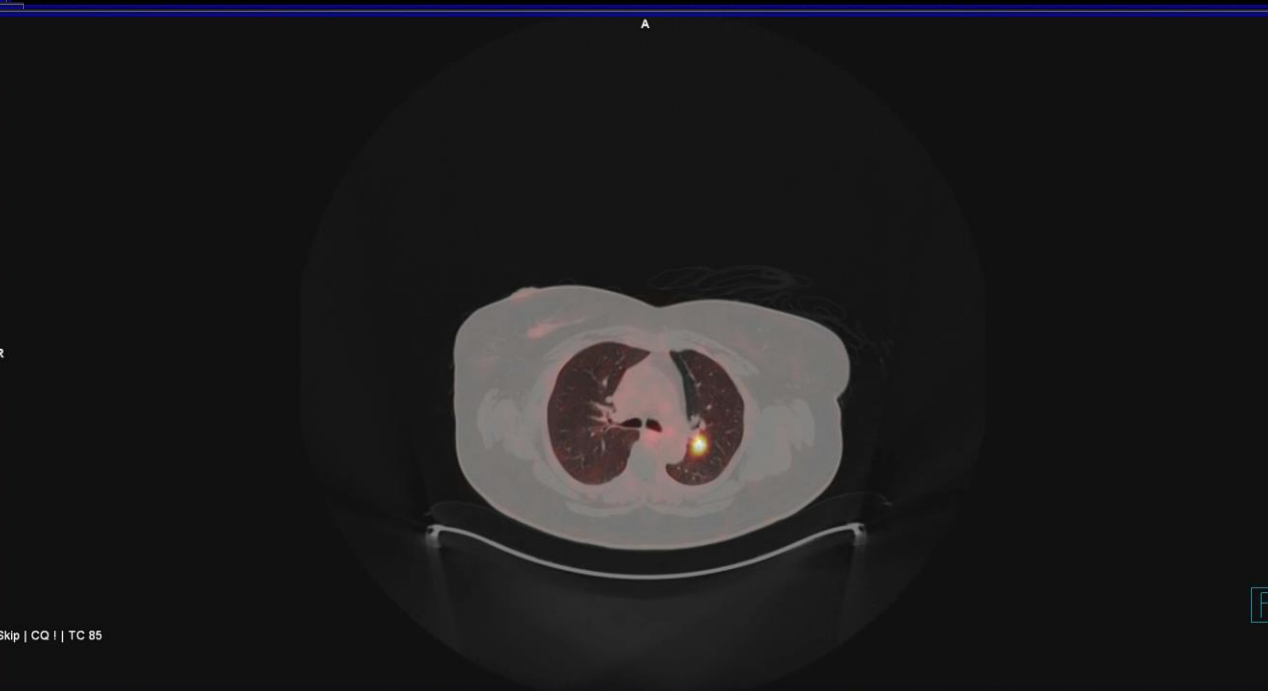
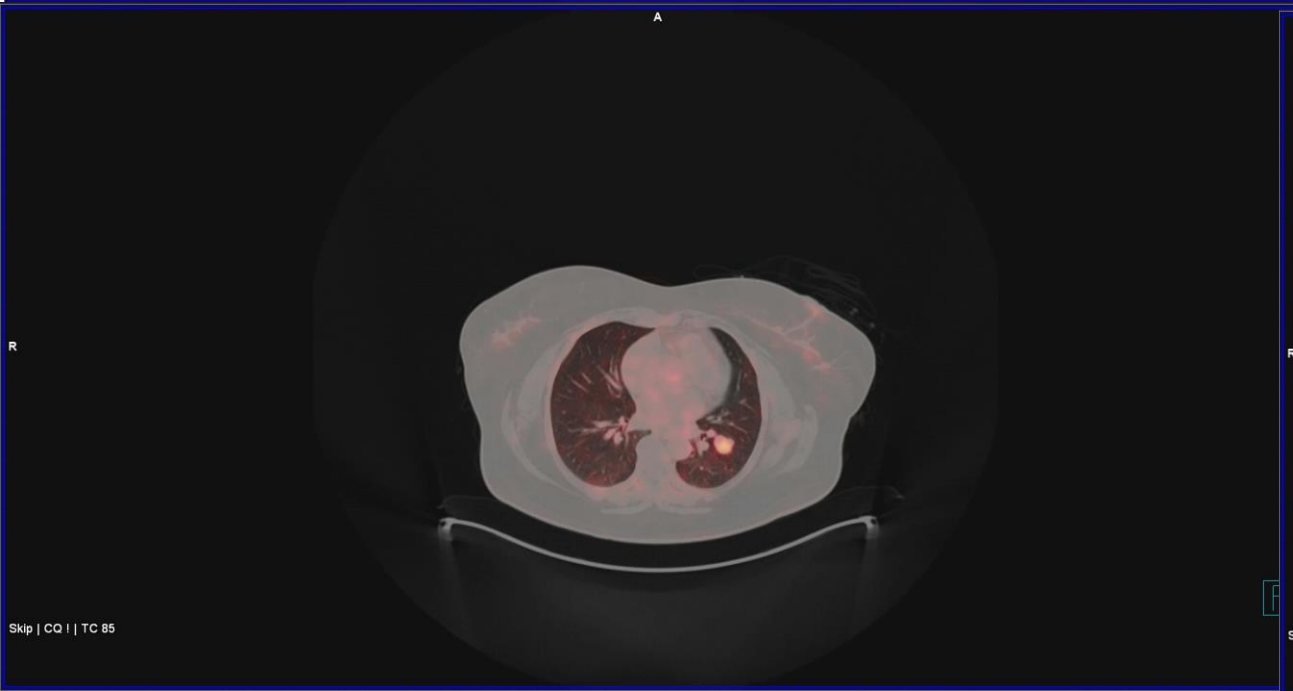
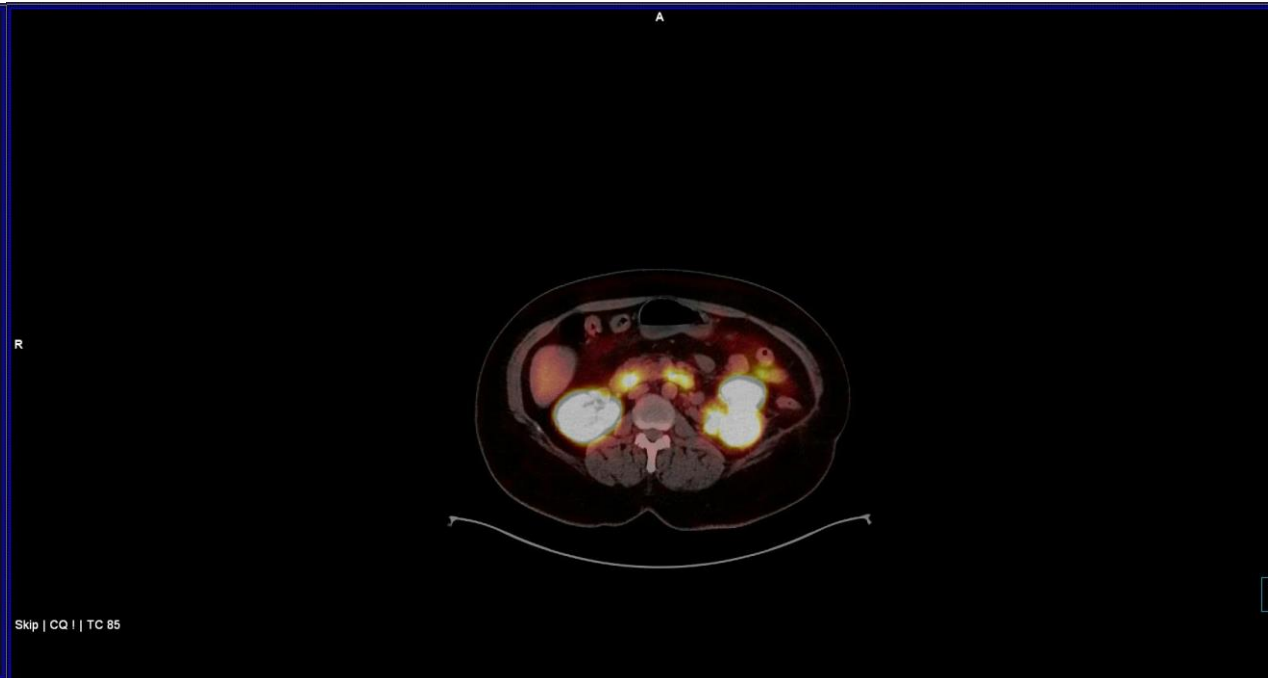
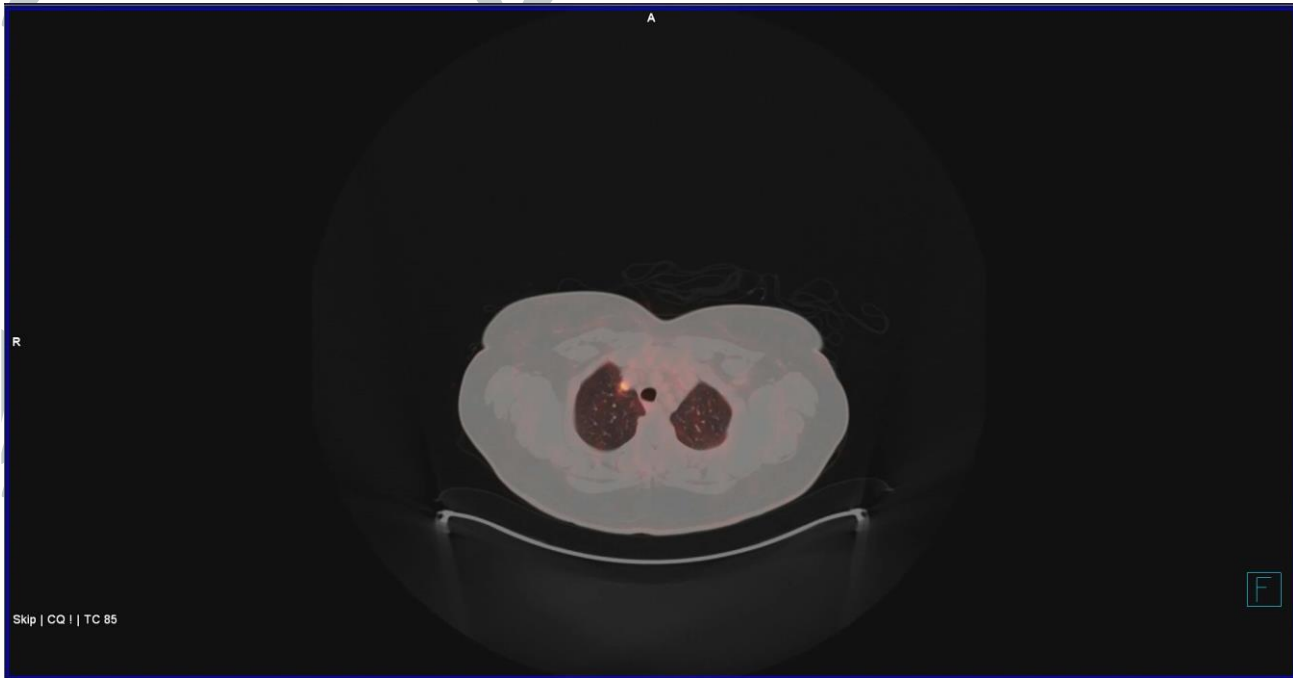
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Case 2

- A 54 year old lady with history of RCC (partial nephrectomy), referred for evaluation of recurrence because of hematuria
- Abdominopelvic CT findings: Soft tissue mass with heterogeneous enhancement in upper and middle poles of the left kidney

Findings of ^{68}Ga - PSMA PET-CT study





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- **SUVmax of the left kidney lesion= 24.57**
 - **SUVmax of the pulmonary metastases= RUL (SUVmax = 5.25), LUL (SUVmax = 15.15) and LLL (SUVmax = 5.06).**

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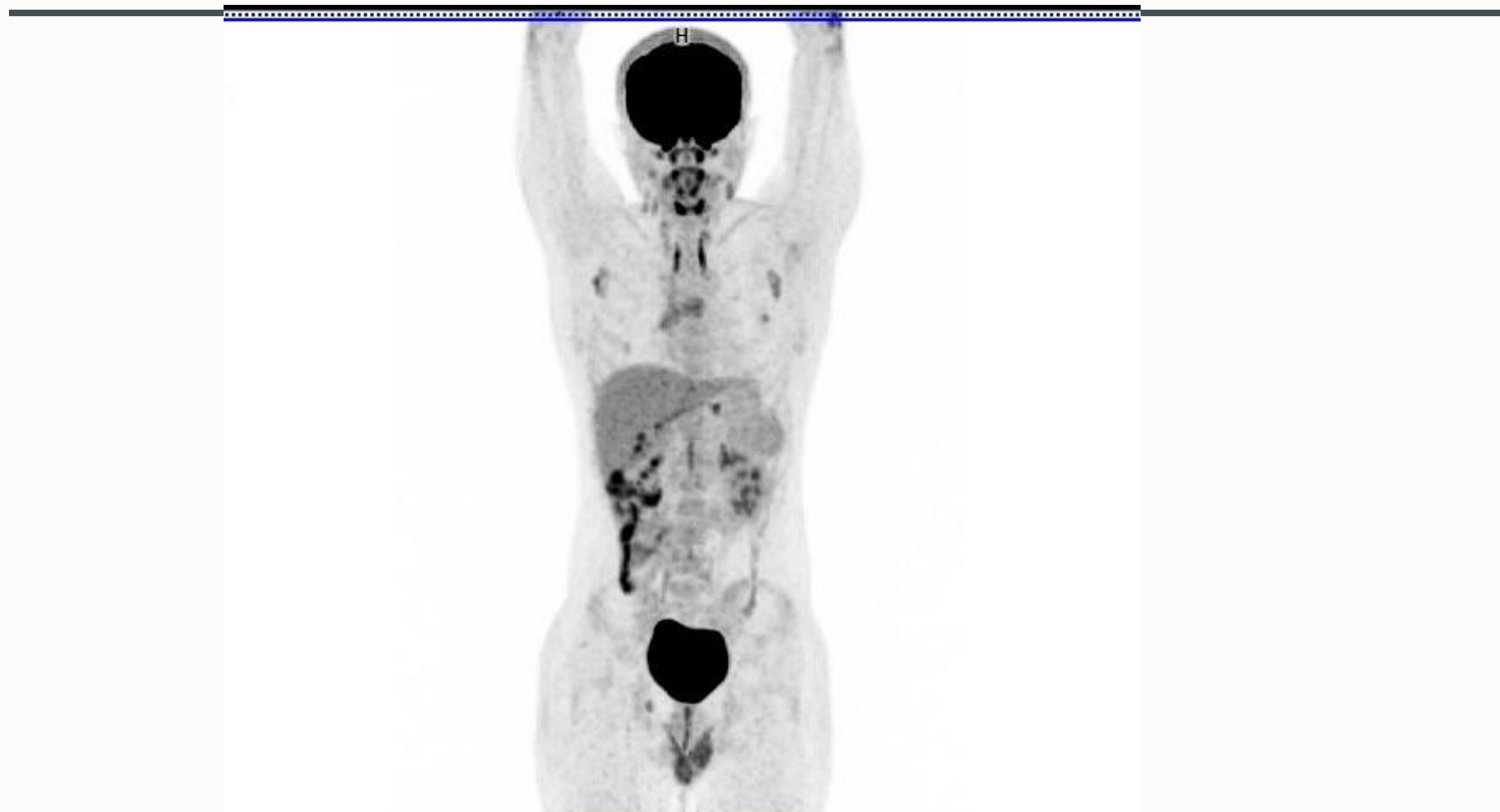
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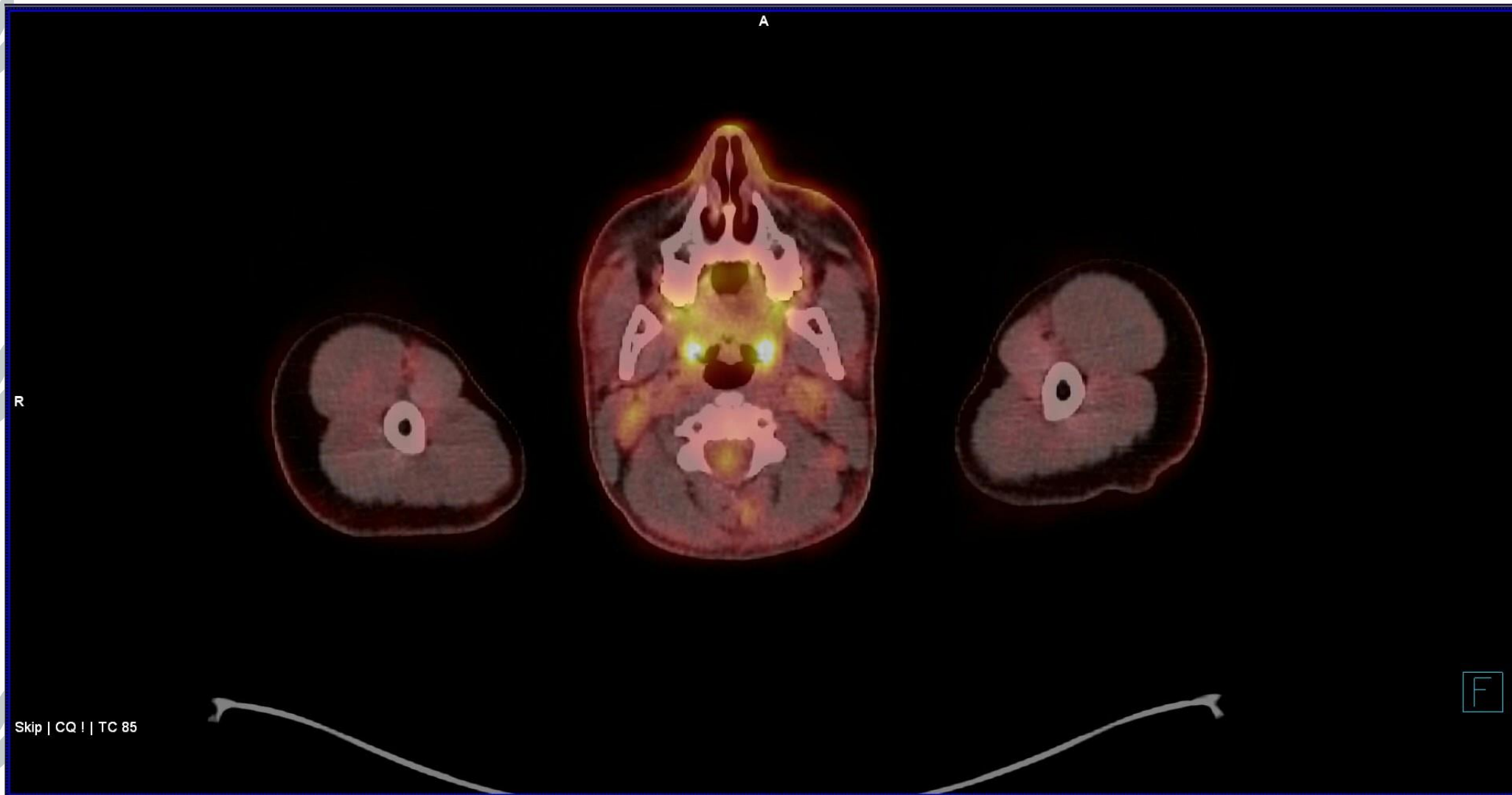
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Case 3

- A 16 year old boy with history of immunodeficiency syndrome (Hyper IgE) with calcification and dilatation of thoracic aorta in CT angiography suspicious for Takayasu Vasculitis
- CT angiography findings:
 - ❖ Thoracic aorta shows increased wall thickness and calcification
 - ❖ The ascending aorta and aortic arch are dilated
 - ❖ Circumferential wall thickening is noted in the innominate artery and left CCA
 - ❖ The left subclavian artery is occluded

FDG PET-CT Findings





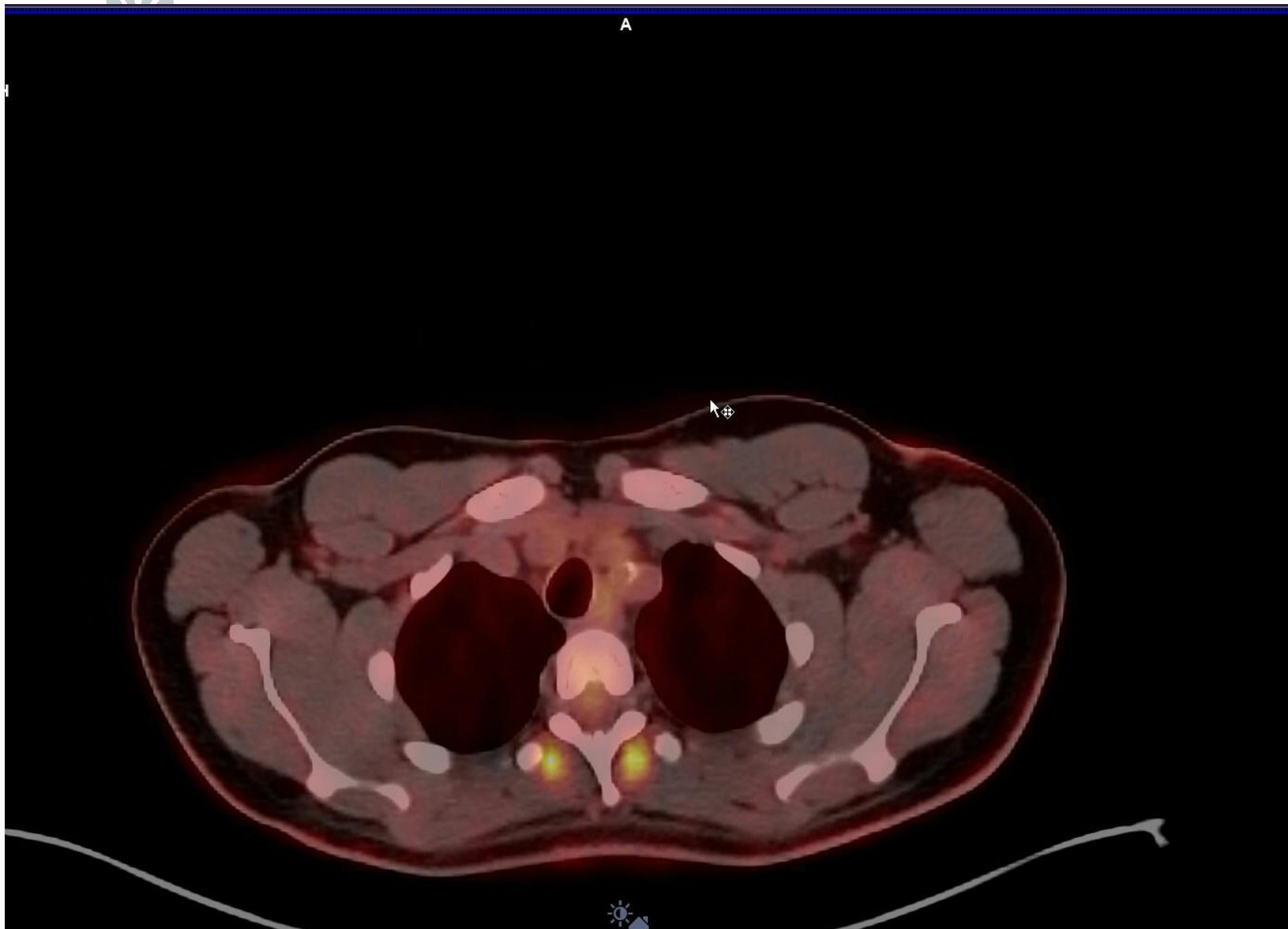
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- **Mild linear increased FDG uptake in both common carotid arteries (SUVmax = 2.71 on the right side, SUVmax = 2.93 on the left side).**
 - **Evidence of calcification and dilatation of the thoracic aorta without FDG uptake (ascending aorta, aortic arc and descending aorta).**
 - **Calcification without FDG uptake is also noted in the left subclavian artery. Mild increased FDG uptake is also noted in the innominate artery (SUVmax=2.19).**
 - **Liver background SUVmax=2.73**

Case 4

- A 71 year old lady with cardiac arrhythmia and EF=25% with evidence of suspicious sarcoidosis in CMR

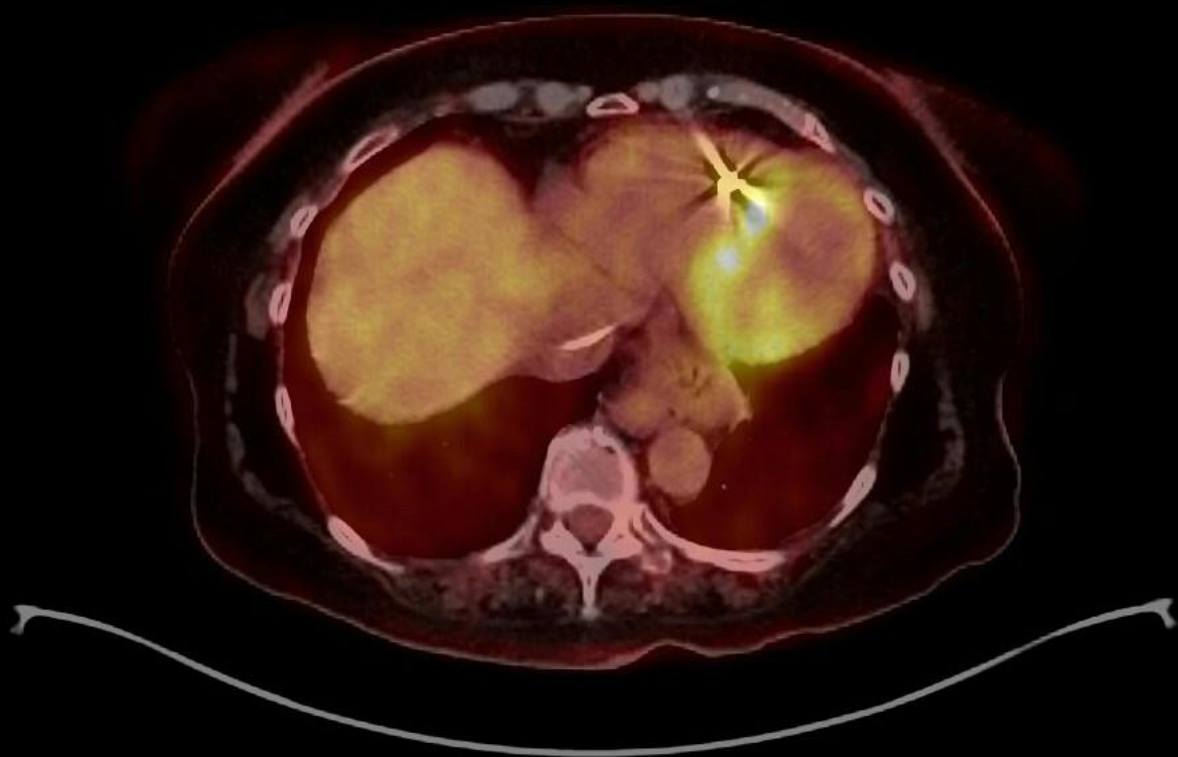
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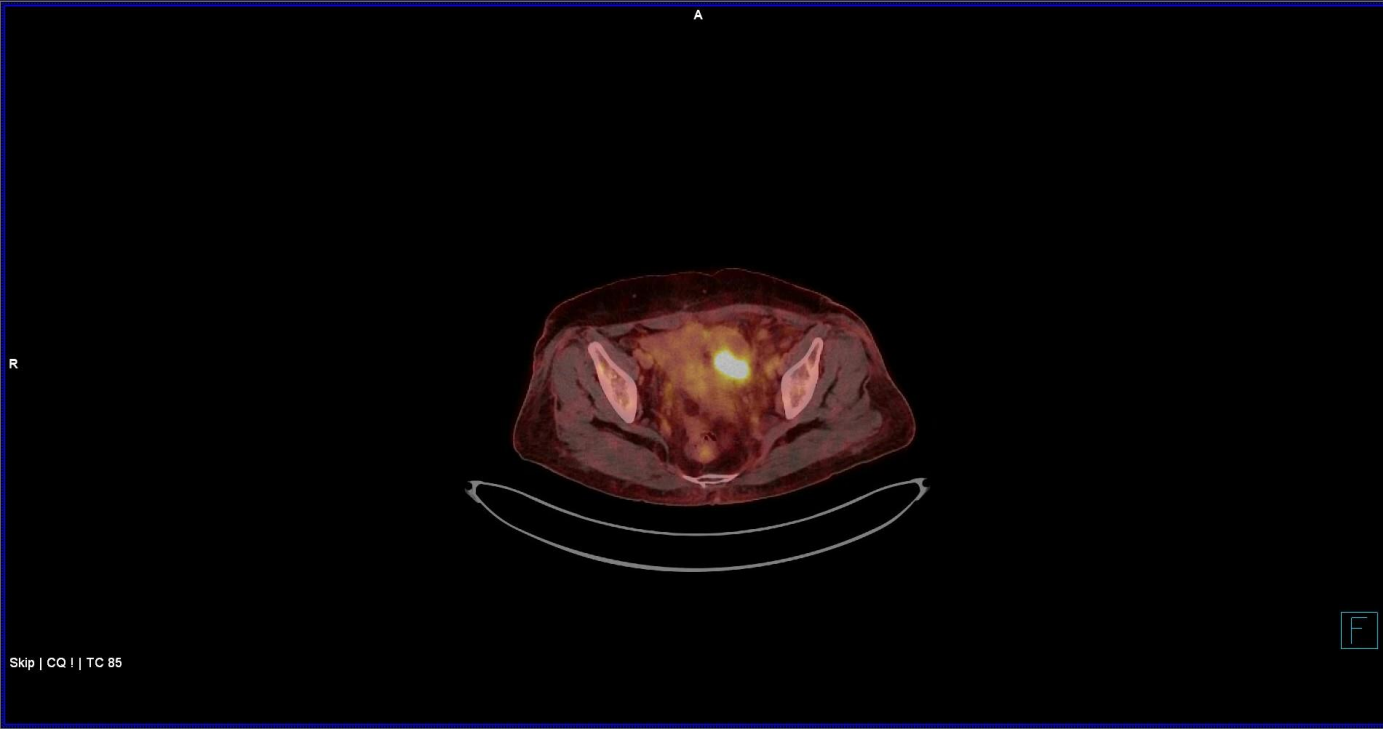
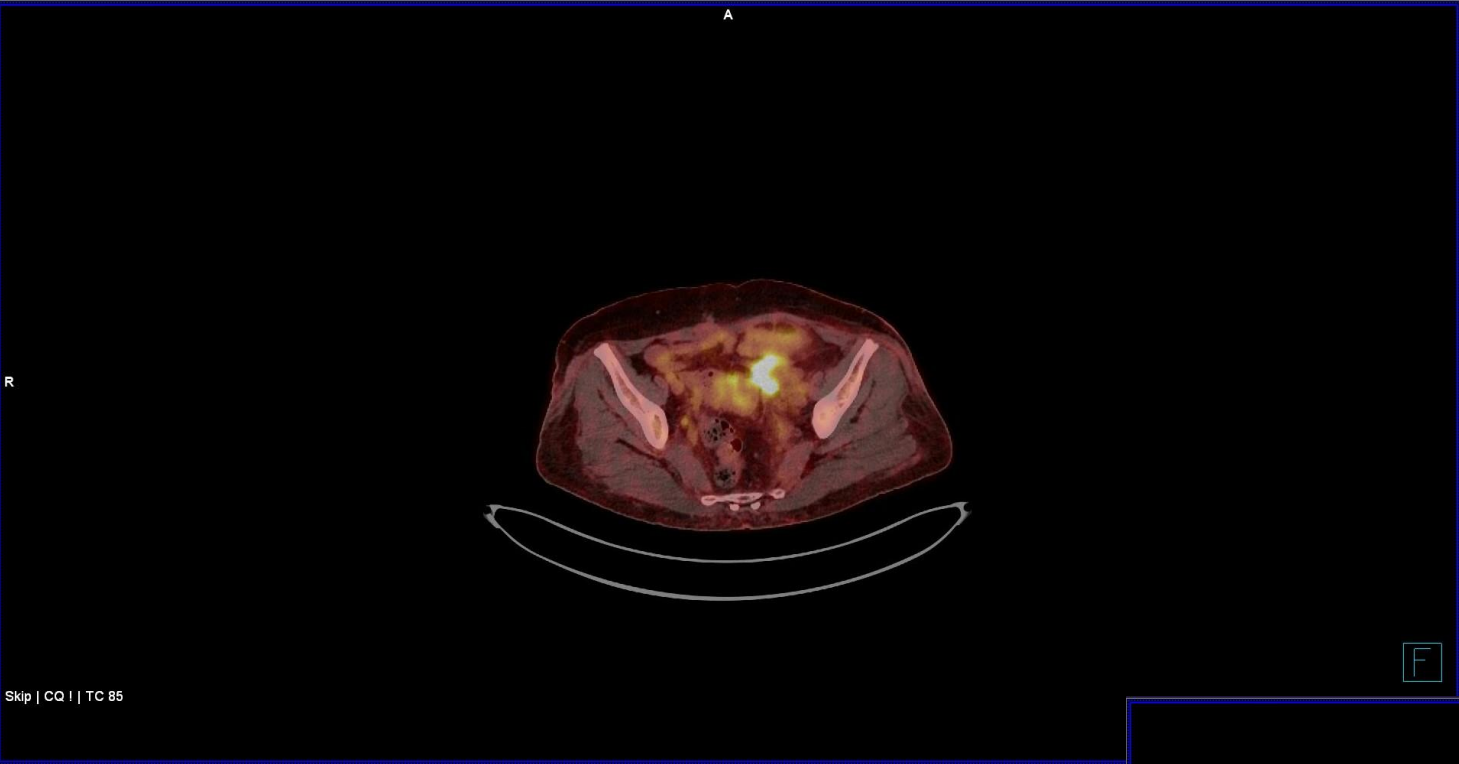
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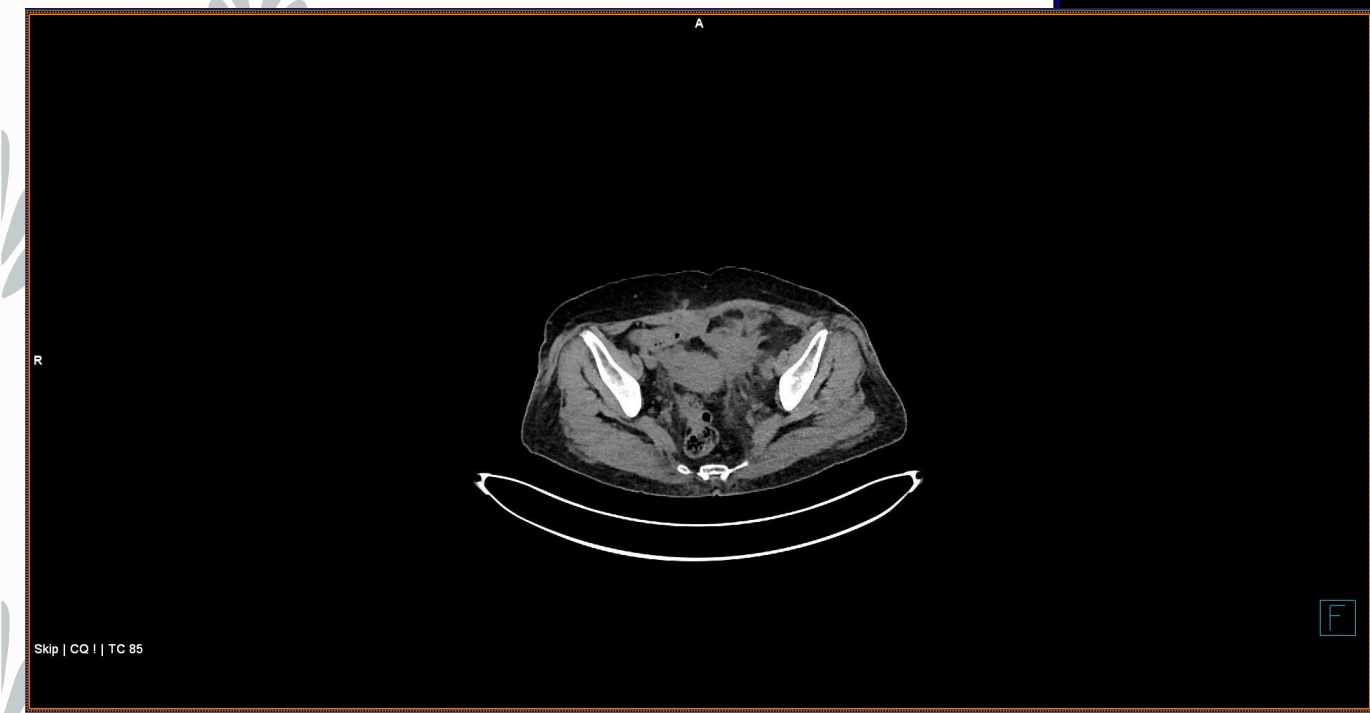
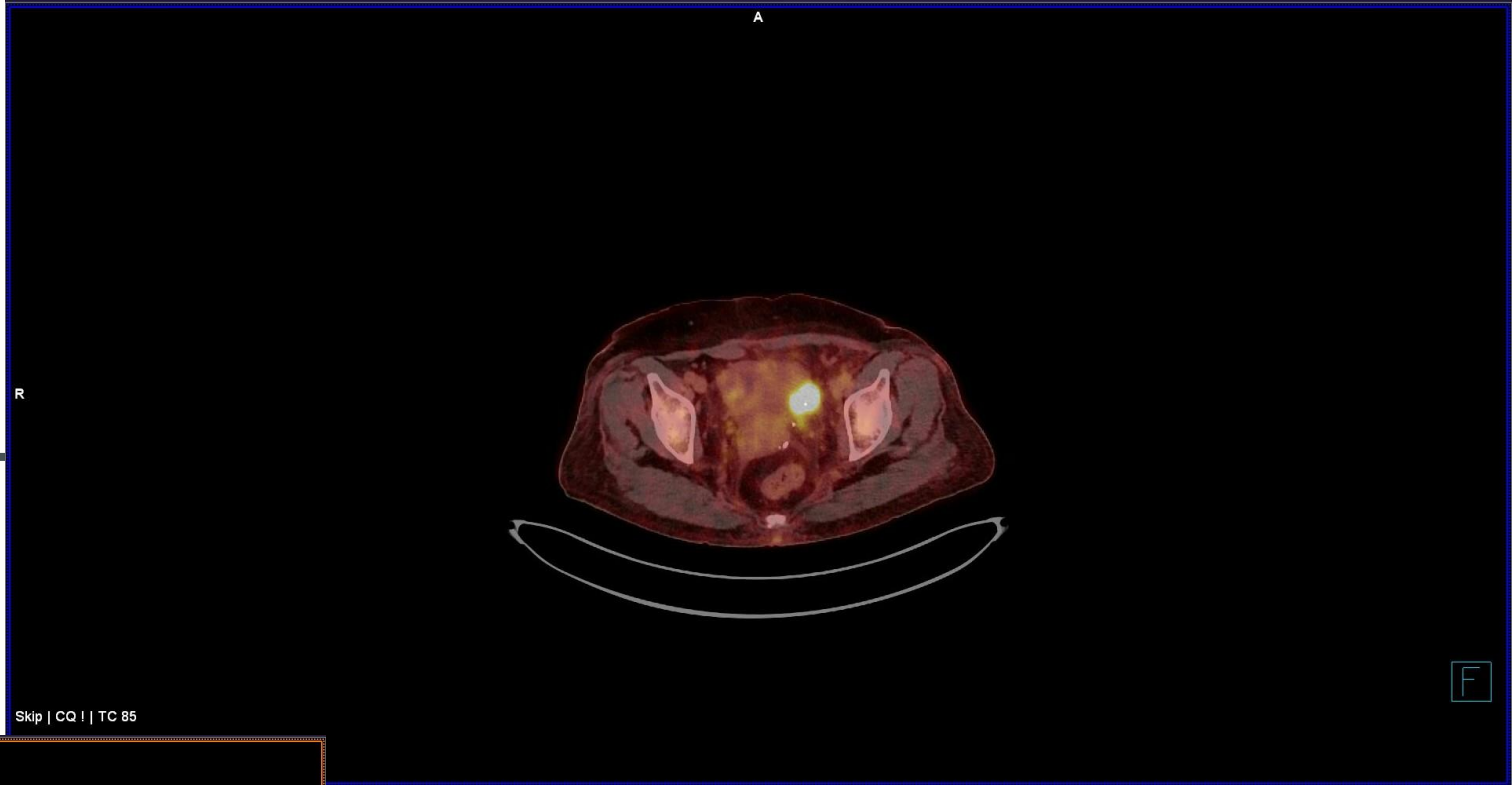


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- **Increased FDG uptake is noted in the inter-ventricular septum (SUVmax=7.35).**
 - **Focal increased FDG uptake is also noted in the inferior wall (SUVmax=4.96).**


Case 5

- A 67 year old lady with weight loss and fecaluria
- Abdominopelvic CT findings:
 - ❖ Mass like lesion in the sigmoid colon with peri-colic fat extension and invasion to distal part of the left ureter
 - ❖ Left sided hydroureteronephrosis
 - ❖ Multiple regional lymph nodes
- Colonoscopic findings:
 - ❖ Polypoid lesion in the sigmoid colon







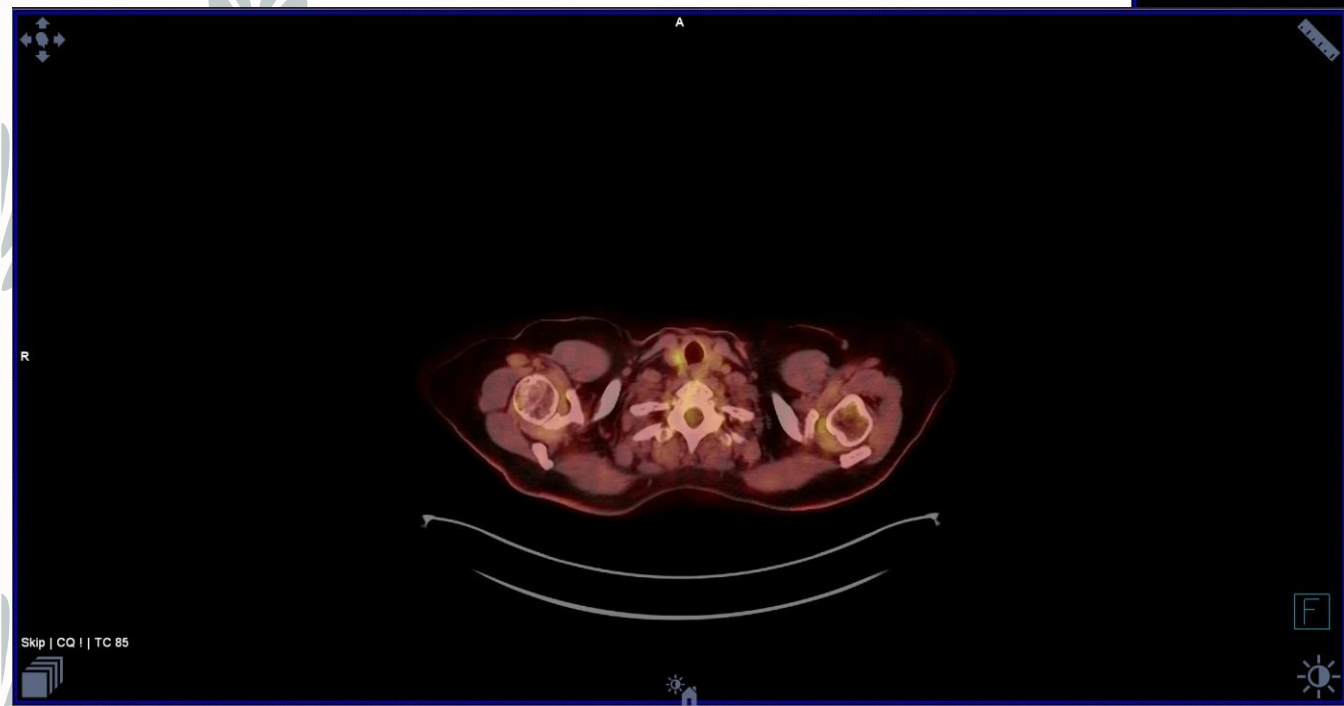
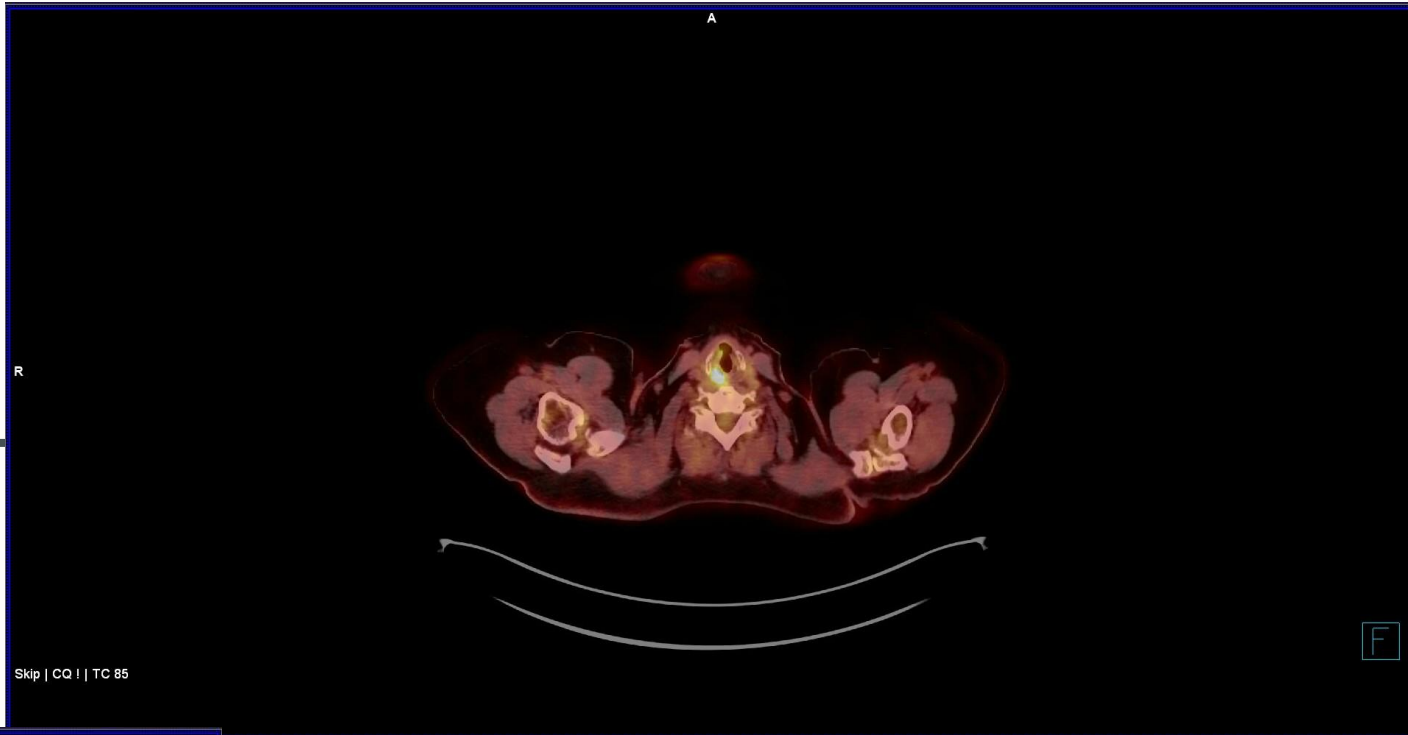
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-
- **A soft tissue lesion with intense FDG uptake is noted in the sigmoid colon encasing distal part of the left ureter (SUVmax = 16.71) causing left ureteronephrosis.**
 - **Several lymph nodes with minimal increased FDG uptake are also noted in the meso-sigmoid (SUVmax up to 1.77, MTD up to 17 mm).**

Case 6

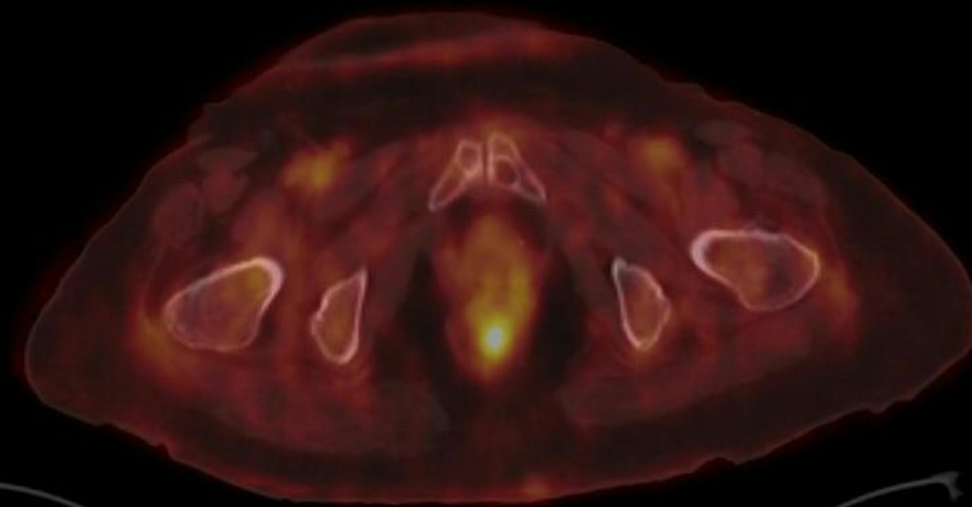
- A 71 year old lady with history of FTC with thyroglobulin=27.38 (on-levo)
- Status: Post-thyroidectomy and radio-iodine ablation therapy

PET-CT Findings





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- **A soft tissue lesion with increased FDG uptake is noted in right side of the cricoarythenoid region (SUVmax=9.77, measuring about 12 mm).**
 - **Increased FDG uptake is noted in right side of the bed of thyroidectomy (SUVmax=4.85).**
 - **Lytic lesions without FDG uptake are noticed in both pubic bones.**

Case 7

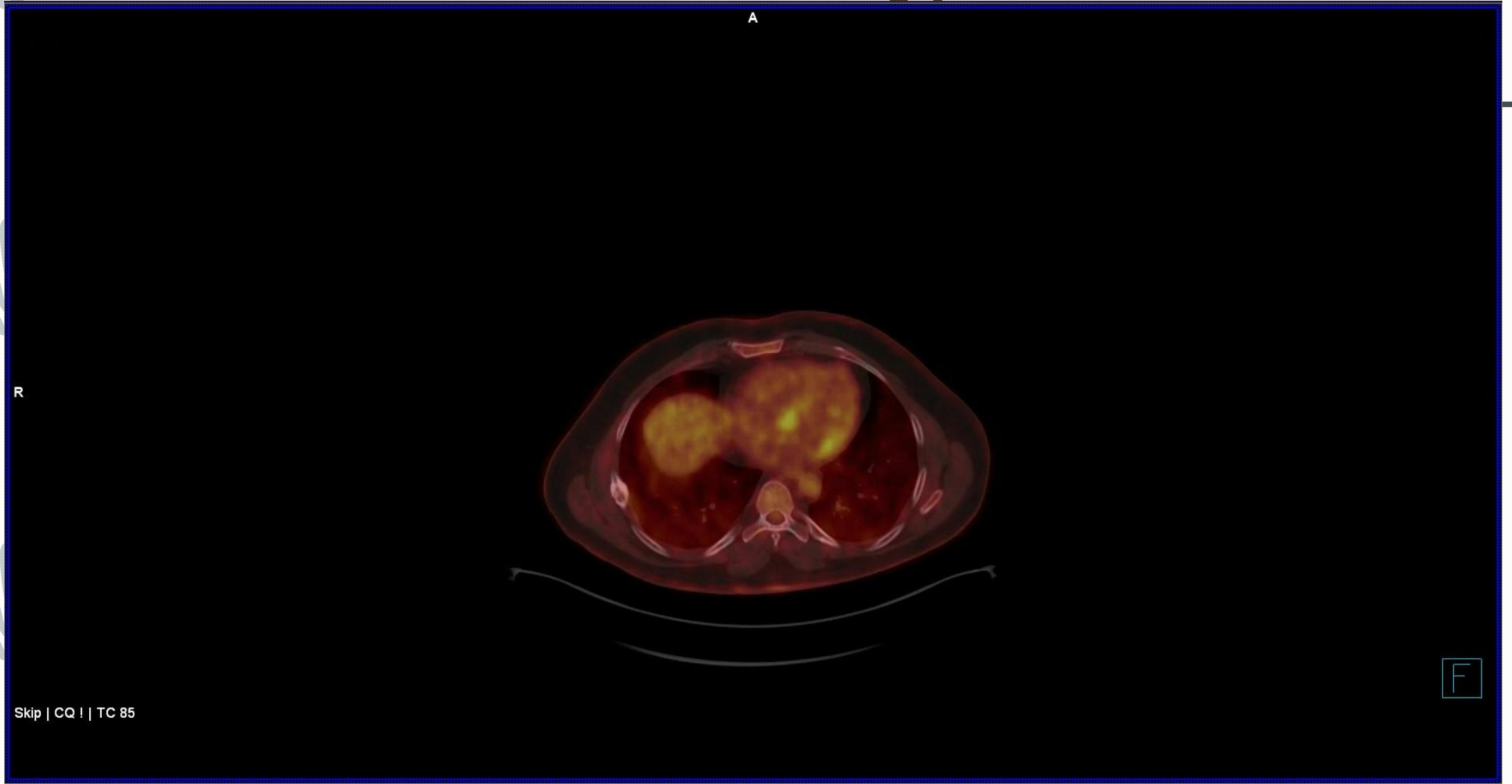
- A 53 year old gentleman with pain in right side of the chest wall
- Pathology report (after PET-CT report) from the right 6th rib lesion: Langerhans Cell Histiocytosis





➤ SUV_{max}=23.87

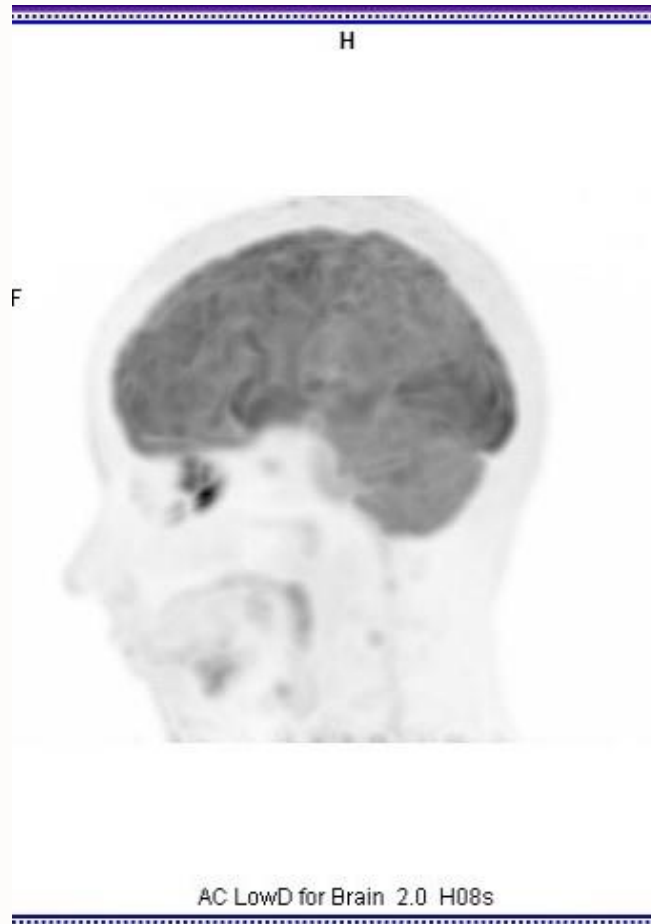
Follow up PET-CT: After Radiation Therapy



Case 8

- A 35 year old lady known case of herpes encephalopathy (after labor) with short term memory loss

Brain FDG PET-CT Findings



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1,2

4 IMA n.a. | 5 IMA n.a.
SP F423.4 | SP F423.4

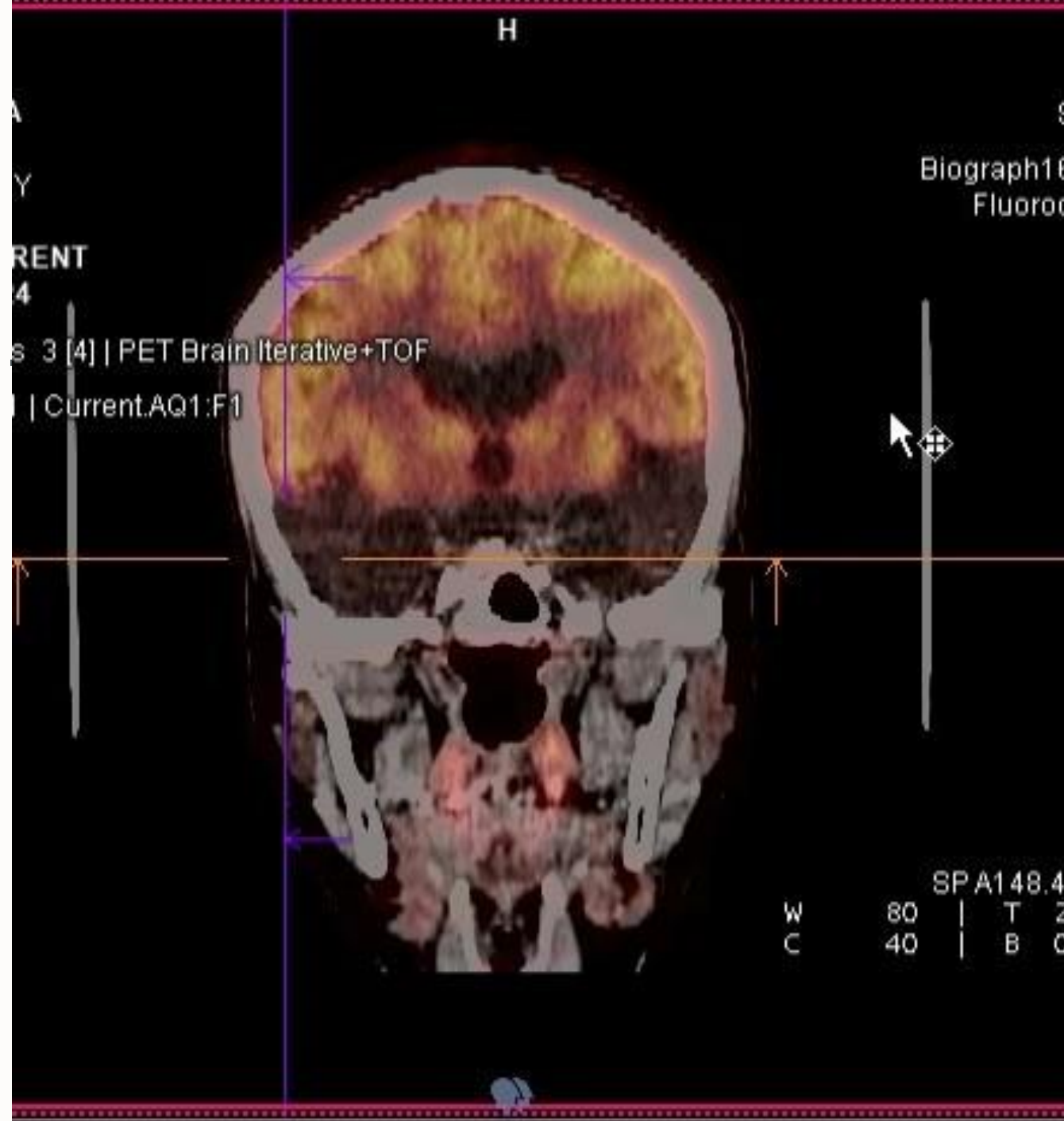


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SP F423.4 | SP F423.4

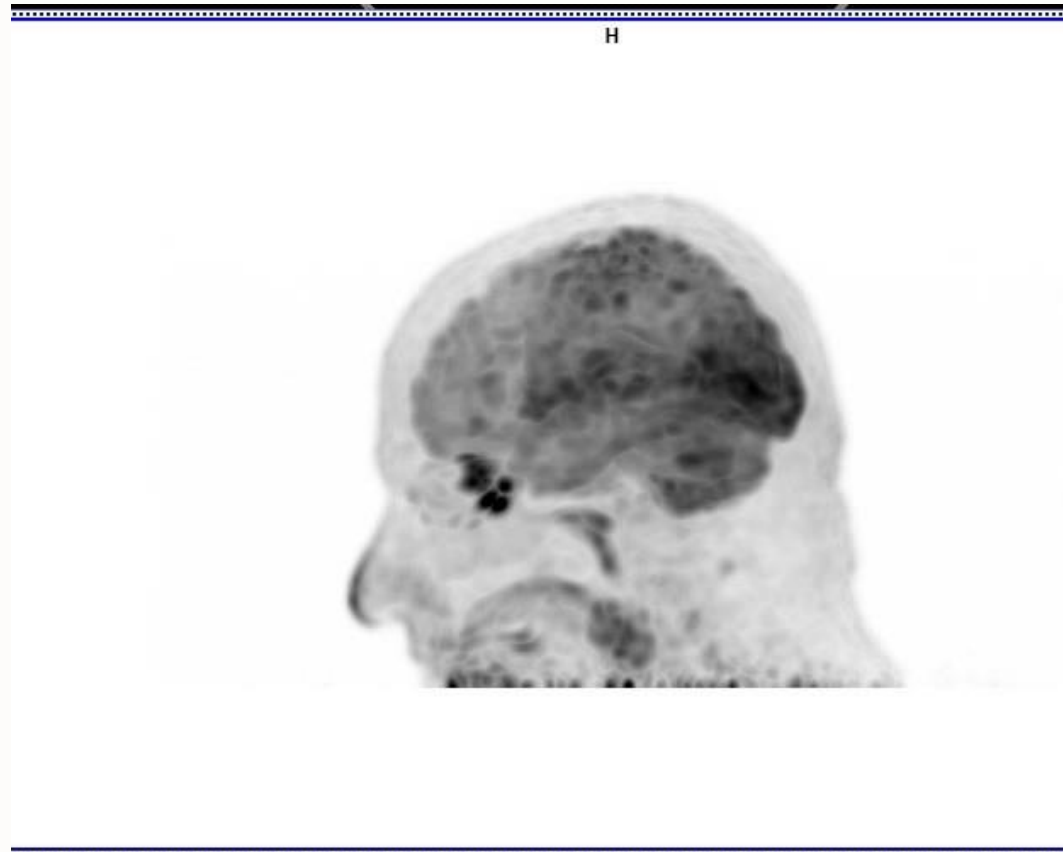


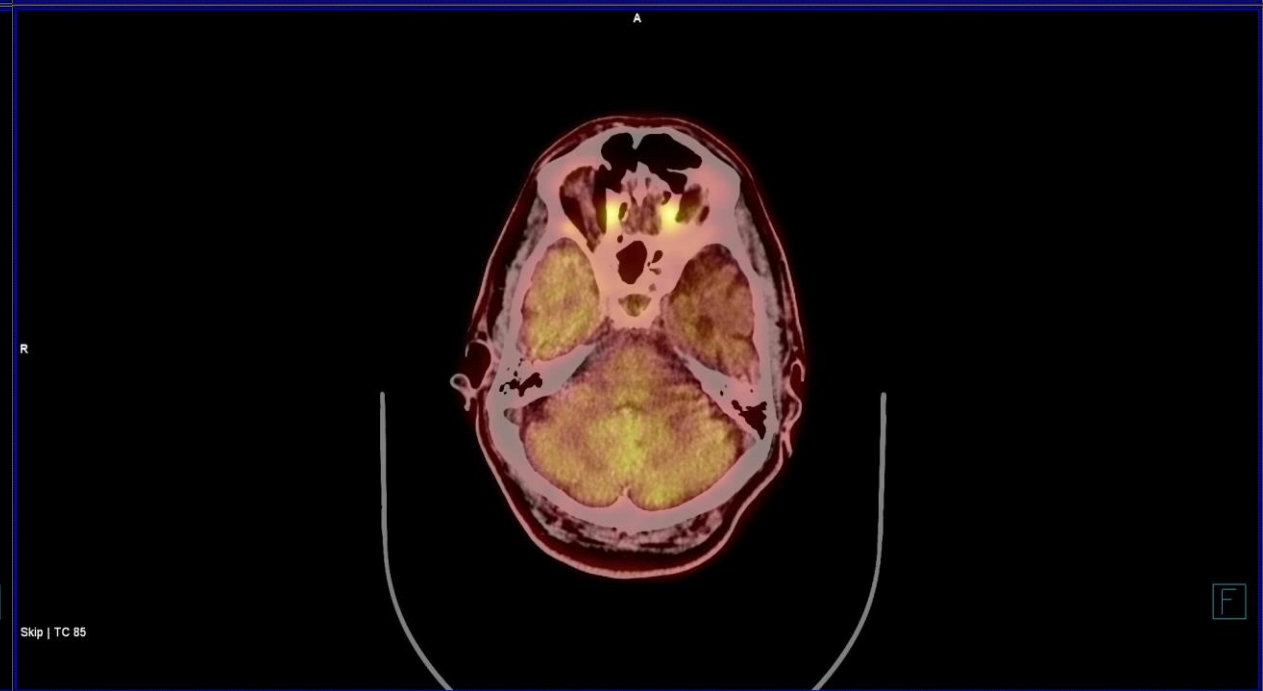
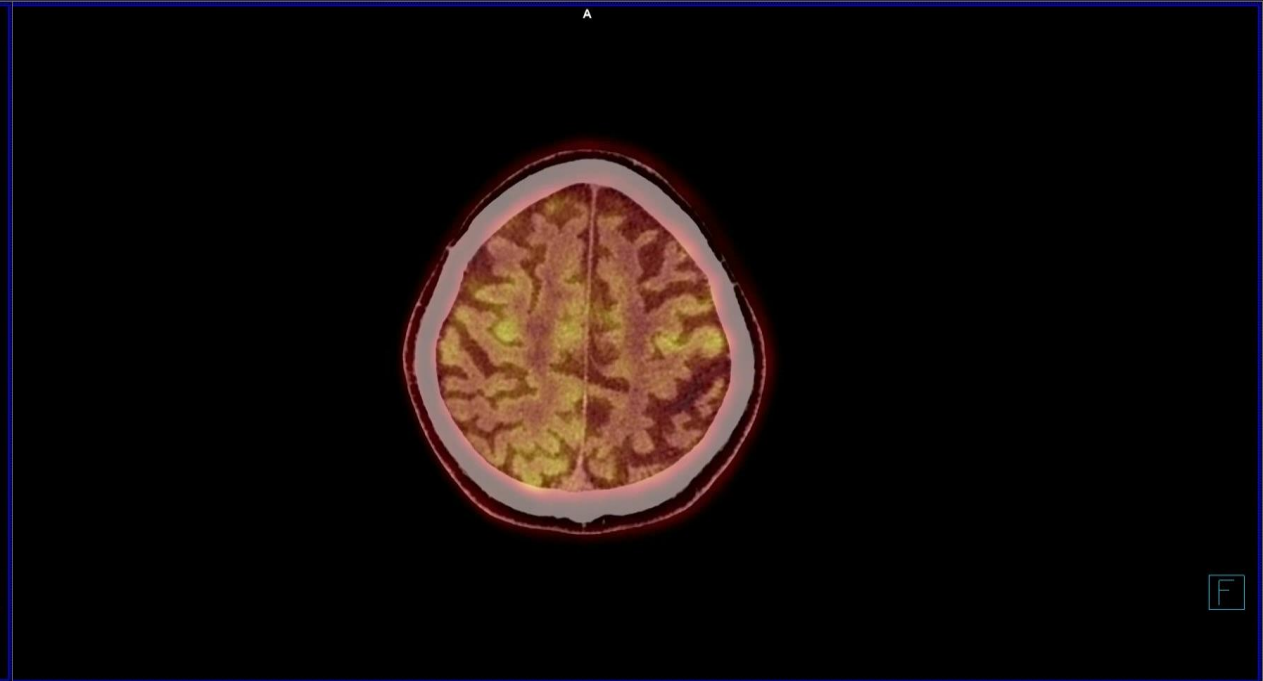
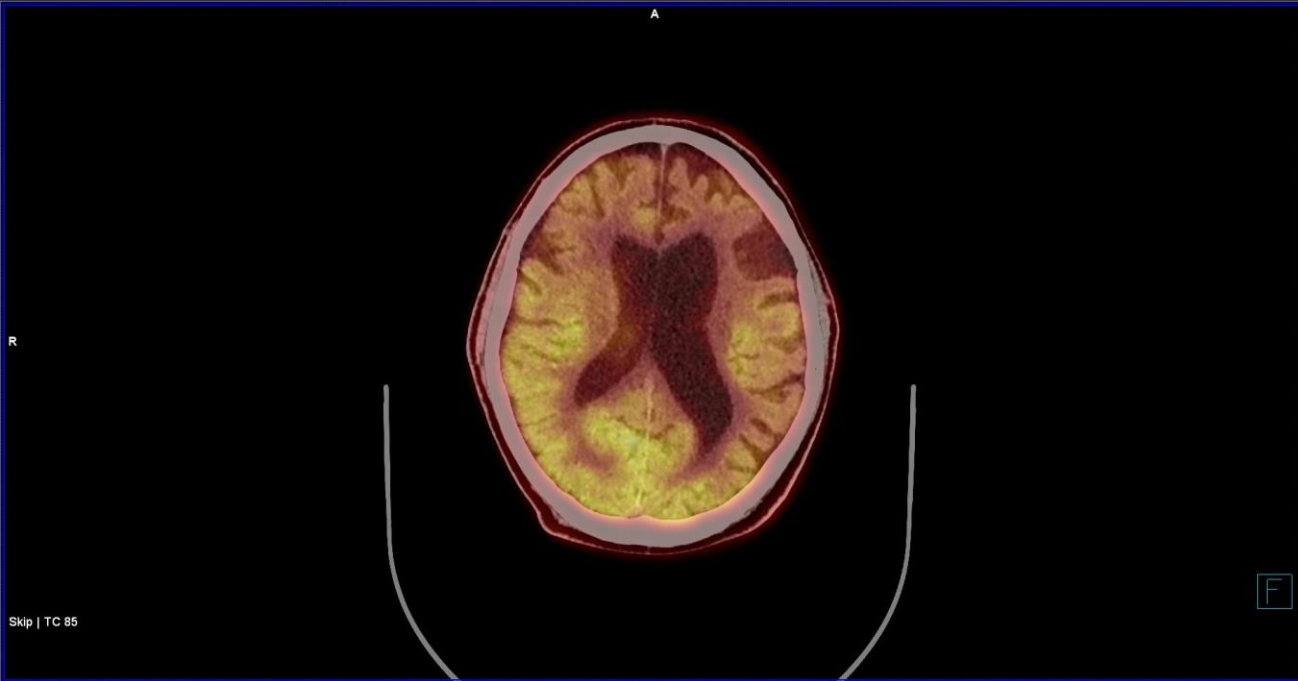


Case 9

- A 56 year old gentleman with recent memory loss and logopenic and non-fluent speech as well as aggressiveness.

Brain FDG PET-CT Findings





729743
2/6/1969, M, 56Y
Database Comparison
STUDY 2/6/2025
Fusion to CT
Database Comparison Screenshot

Fusion to Template

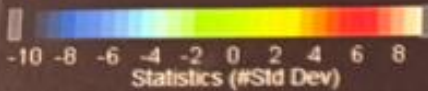
MA 1

Analysis

Anatomical Review

Color Maps

PET



Stereotactic Surface Projection

3D Volume Effect Filter Statistics

Combined AAL

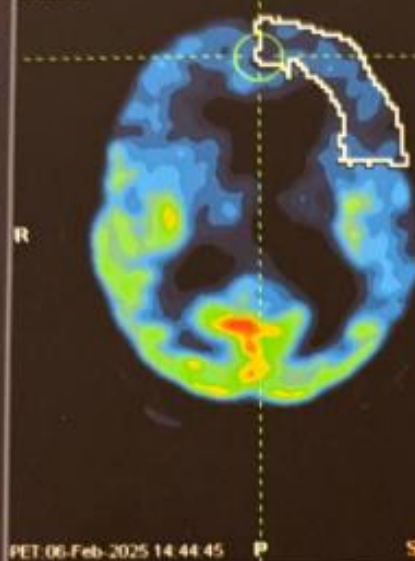
Name	Mean (Upta	# Std Dev fr
Corpus stri...	2.60	-7.0
Corpus stri...	3.70	-0.8
Frontal lob...	2.71	-20.8
Frontal lob...	2.51	-23.6
Frontal lob...	2.91	-15.7
Mesial tem...	2.95	1.4
Mesial tem...	2.65	-0.9
Mesial tem...	3.22	3.2
Occipital lo...	3.99	3.0
Occipital lo...	3.86	2.0
Occipital lo...	4.13	3.6
Parietal lob...	2.99	-10.5
Parietal lob...	2.62	-13.6
Parietal lob...	3.36	-4.9
Precuneus ...	3.43	-4.5
Precuneus ...	3.01	-8.1
Precuneus ...	3.87	-0.3
Temporal I...	3.46	-3.6
Temporal I...	3.09	-7.7
Temporal I...	3.81	-0.1

Values displayed are body weight SUVs

PET Brain Iterative+TOF ¹⁸F-Fluorine Fluorodeoxyglucose

ASGHAR HAKIM
M 056Y 06-Feb-1969
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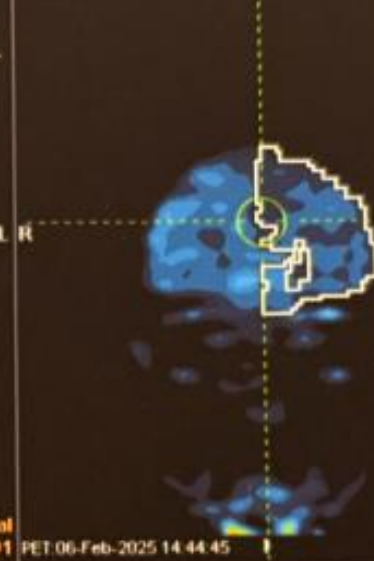
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FoV: 21.1x28.4cm
PET: W 195.45.3 L 12011.3



Axial
Slice 45/91

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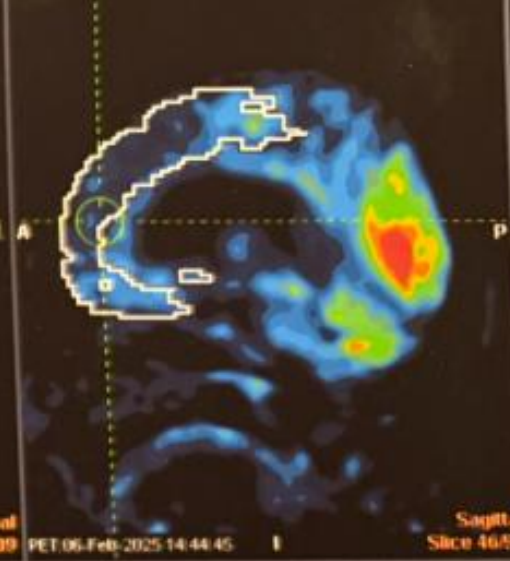
Scale: 0.38
FoV: 21.2x28.4cm
PET: W 195.45.3 L 12011.3



Coronal
Slice 20/109

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SScale: 0.38 FoV: 21.8x28.4cm
PET: W 195.45.3 L 12011.3

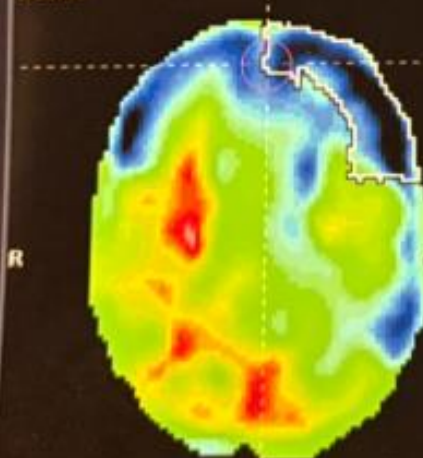


Sagittal
Slice 46/91

FDG3Bs: FDG-PET Biograph HD (SMART Neuro AC) Age Range: 46 - 79 Normalization: Whole Brain

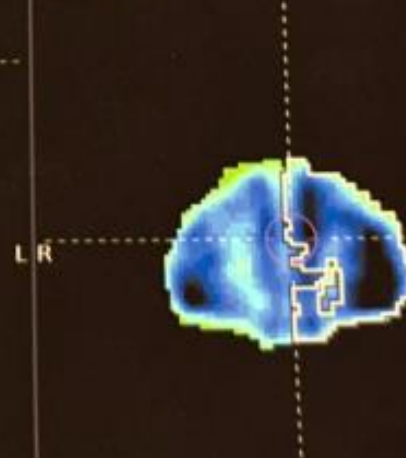
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Scale: 0.38
FoV: 21.1x28.4cm



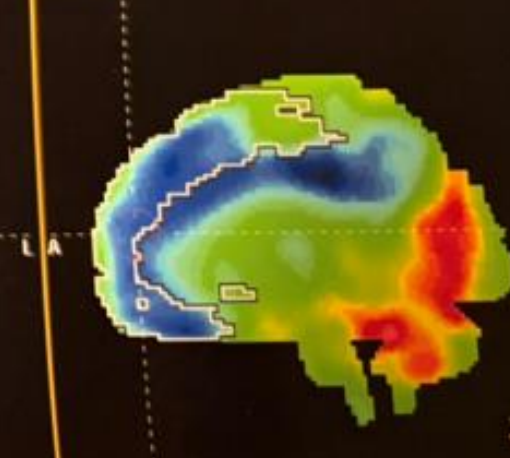
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Scale: 0.38
FoV: 21.2x28.4cm



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SScale: 0.38 FoV: 21.8x28.4cm



A decorative pattern of stylized leaves in a light gray color, arranged in two vertical columns on the left side of the slide. The leaves are simple, elongated shapes with a central vein and a small notch at the top.

Thanks for your
attention