Multiple Myeloma and Abdominal Aortic Aneurysm on Myocardial Perfusion Raw Images

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Abstract: Reviewing cine display of planar projections just after data acquisition of myocardial perfusion imaging is helpful not only for checking quality of the study but also for better interpretation of incidental findings by acquiring more helpful images. We present a patient with significant skeletal 99mTc-MIBI uptake accompanied by a large photopenic area in abdominal cavity in myocardial perfusion imaging raw images that were further confirmed as multiple myeloma and thrombotic abdominal aortic aneurysm, respectively.

Key Words: myocardial perfusion imaging, multiple myeloma, abdominal aortic aneurysm

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REFERENCES

Myocardial perfusion imaging (MPI) of a 72-year-old man with history of coronary artery disease, hypertension, and diabetes mellitus. He underwent 2-day stress-rest $^{99m}$Tc-MIBI MPI with 20 mCi $^{99m}$Tc-MIBI injection at each phase. A, Stress-rest $^{99m}$Tc-MIBI MPI. Comparison of stress and rest myocardial perfusion scan demonstrates fixed defect in the inferolateral wall with no evidence of significant reversibility indicating nontransmural myocardial infarction. B, Planar projection of left anterior oblique view in the stress phase. Diffusely intense $^{99m}$Tc-MIBI uptake in the ribs, sternum, clavicles, scapulae, and vertebrae is noted. Note that abnormal skeletal uptake of $^{99m}$Tc-MIBI could be easily missed in the splash view without review of the raw data. C, Whole-body $^{99m}$Tc-MIBI scan after rest MPI. The scan reveals diffuse and homogenous $^{99m}$Tc-MIBI uptake in the axial skeleton, humeri, and femurs. There is also a photopenic area in the midabdomen pushing the bowel loops to the periphery (black arrow). Review of rotating raw images of MPI can provide valuable information regarding quality of study and presence of incidental noncardiac pathologic findings. Because $^{99m}$Tc-MIBI is a tumor seeking agent too, abnormal uptake of this tracer should be considered as a high-risk marker for malignancy. The skeletal uptake of $^{99m}$Tc-MIBI in this patient indicated a diffuse pathologic process, which was confirmed as multiple myeloma. Diffuse skeletal uptake of myocardial perfusion agents during MPI is also reported by some authors with differential diagnosis of multiple myeloma, anemia, and polycythemia. Abnormally decreased $^{99m}$Tc-MIBI uptake should also warn the physician to rule out a significant pathology. In this patient, CT angiography confirmed the presence of a large abdominal aortic aneurysm compatible with the finding of whole-body scan. Because the prevalence of abdominal aortic aneurysm, especially in old patients, is a relatively common disorder, in case of a photopenic area in the midline of abdomen, abdominal aortic aneurysm should be included in the differential diagnoses and warrant further evaluation, especially in cases with larger defects.

Spiral CT angiography of abdomen and pelvis. Transverse (A), coronal (B), and sagittal aspect (C). Aneurysmal dilatation of abdominal aorta with a large intraluminal circumferential clot is noted just below the level of renal arteries (black arrows), measuring 16 cm in length with maximal anteroposterior diameter of 8.3 cm and transverse diameter of 8.6 cm.