

Whole body low dose CT for multiple myeloma assessment.

Technique:

A few details about the technique used should be given, including number of detectors, slice thickness, anatomy scanned (e.g., skull to proximal tibial metaphyses), and whether MPRs were performed. If prominent artifacts degrade significantly the image quality in certain parts of the anatomy, this should be specifically stated- eg

Recommended technical parameters.

Whole body low dose plain CT should be performed from the cranial vault to at least proximal metaphysis of the tibia on a multidetector scanner with 16 detector rows or more, using kv 120 and 50 to 70 mAs. The collimation must be set between 0.5 and 1.5 mm and images are reconstructed in bone and soft tissue algorithm. Sagittal MPRs of the bone algorithm images of the whole spine and additional MPRs reconstructed parallel to the long axis of the femora and humeri are performed.

Table for technical parameters:

Number of detector rows	16 or more
Scan coverage	Cranial vault to proximal tibial metaphysis (include humeri in the field of view)
Tube voltage(kV)/time-current product (mAs)	120/50–70a
Collimation	0.5–1.5 mm
Reconstruction convolution kernel	Sharp, high-frequency (bone) and smooth (soft tissue). Alternatively, one middle-frequency kernel for all images
Iterative reconstruction algorithms	Yes (to reduce image noise and streak artifacts)
Thickness/increment of axial slices	2/1 mm or 3/1.5 mm
Multiplanar Reconstructions (MPRs)	Yes (sagittal, coronal and parallel to long axis of proximal limbs).

Different tube parameters (e.g., 140/14–25 or a low voltage approach) are acceptable as long as they produce images of diagnostic quality with low effective patient dose

Indication : Primary / response assessment

Clinical information/Prior imaging studies

Findings:

Skull:

Spine: Cervical –

Thoracic-

Lumbar-

Sacral-

Upper limbs-

Ribs-

Sternum:

Scapula:

Pelvic bones-:

Lower limbs:

Visceral assessment:

Extramedullary disease:

Other findings:

Bones should be commented upon for-

- Osteolytic lesion - presence / absence, size of main lesions

-Focal and/or diffuse intramedullary hyperdensities of the femora and humeri - present / absent, if present the location, size, density and presence/absence of significant endosteal scalloping

-Extraosseous soft tissue with spinal compromise if any

-Increased fracture risk due to the presence of extensive osteolysis, especially in weight-bearing bones such as those of the lower spine and lower limbs should be mentioned.

-Fractures and associated complications

Conclusion

A clear summary statement should highlight the most important findings regarding overall disease status. It should include number and distribution of osteolyses, presence/absence of extraosseous soft tissue masses, likelihood of cord/nerve root compression, number of focal medullary deposits in the appendicular skeleton, presence/absence of diffuse medullary disease in the appendicular skeleton and a comment on vertebral compression fractures and/or vertebral fracture risk.

Appropriate recommendations.

Reference:

Recommendations for acquisition, interpretation and reporting of whole body low dose CT in patients with multiple myeloma and other plasma cell disorders: a report of the IMWG Bone Working Group

LA Moulopoulos, VassilisKoutoulidis et al.

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