

Whole Body Bone Protocol

Version History, Similar Studies & Variations

- 1.1 - 11/08/04 - added graphics, indications
- 1.0 - 11/05/04 - initial writing
- Bone Spect

Indications

- Musculoskeletal trauma, avascular necrosis, primary benign and malignant bone lesion and bone metastases.
- Evaluation of the response of Paget's disease to treatment
- 3 phase variant is primarily used for reflex sympathetic dystrophy and osteomyelitis

Contraindications

- No barium studies for 48 hours prior to imaging.

Equipment & Supplies

- Camera with a LEHR or LEUF collimator, preferably with wholebody capabilities
- 18 - 35 mCiTc-99m-methylene diphosphonate (MDP)
- Angiocath (if performing a three-phase study)

Preparation

- Pre-hydration does not improve image quality
- Explain the test fully to the patient, including times to return and hydration instructions
- Patient should drink approximately 1 liter of fluids during the first hour post-injection.
- The patient should void frequently between injection and imaging times to reduce radiation dose.
- Patient to void bladder before imaging

Administration

- If performing the 3-phase variation, prepare the dynamic acquisition, as below. Position the patient, and have another technologist begin the acquisition as you inject the RP into a peripheral vein.
- The injection site should be removed from any site of discomfort, if possible.

Acquisition

- For the flow images, acquire a two-step series of dynamic images
 - 1 second a frame for 60 frames, with a 128 x 128 x 16 matrix labeled DYNAMIC
 - 60 seconds a frame for 8 frames, with a 128 x 128 x 16 matrix
- All static images should be 300 sec, 1000 kcounts, 256 x 256 x 16 matrix
- Whole body images should be 12 cm/min or less, 512 x 2048 x 8 matrix. Step-and-shoot wholebody images should be at 180 sec a stop.
- The patient position and field of view depend on the area of interest
 - Include both sides of the body for comparison
 - Whole body views are routine.
 - Lower extremity pictures alone may be performed if the area of interest is in the femur or below and no other indications (e.g. cancer, arthritis) are present and the patient is under forty years of age.
 - The humerus should be included in the whole body view if possible
- Make sure that you mark the RIGHT side when doing spot pictures of the knees or ankles.

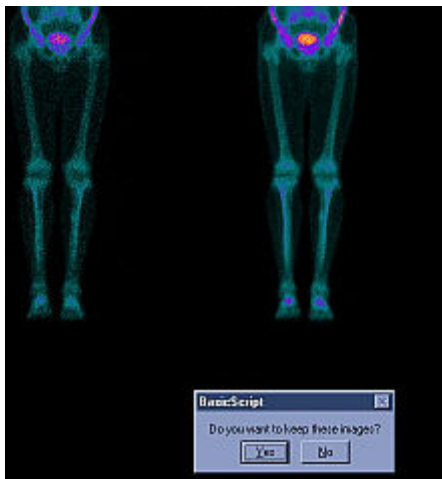
Required History

- All sites of pain, duration of pain, and whether caused by trauma

- Surgical history for the last two years
- History of cancer, including type, date of diagnosis, related surgeries, last chemotherapy, last radiation therapy and site of radiation therapy.
- History of trauma (even if no fractures occurred) within the last two years
- History of diabetes and RSD

Processing

- The study may be stored under several files. (See the example to right where “Bone” and “Wholebody” are in separate files).
- Perform patient rename on **all portions** of study individually.
 - This ensures the accession number is assigned to the study.
- Select patient and all pictures taken for that patient.
- Include dynamic flow pictures, if acquired.
- Open up the **MVH Whole Body protocol**.
- Enter accession number and techologist initials if prompted.



- If you are asked to adjust the matrix, do so. You will have the opportunity to review the adjusted images and decide if you wish to keep them (illustrated to the left).
- Adjust the rotation and image intensity of the images as needed. To use the **Rotate**, **Intensify**, and **DelIntensify** buttons, click on the image you wish to alter. A red box will surround the image, and then press the appropriate button.
- To mask an image, first select the leftmost whole body image, or any spot image. Click **Mask Selected**. Draw your ROI. Click **Proceed**. You have the opportunity to review the change. If you approve a mask on a whole body image, it will be applied to both images of that projection.



- To move the Whole Body images up or down left click on the **Pan and Zoom** tab.
- Check the **Direct Interaction** checkbox.
- While **Direct Interaction** is checked, Left click and hold to move an image up or down. Right click and hold to zoom and unzoom an image.
- When all desired changes are made, uncheck **Direct interaction**.
- Screen Cap the whole body page.
- Left click on **Save Whole body Results**.
- If a three phase study is being performed, click on the **Dynamic** processing tab (the rightmost computer)
- Several delay spot images will be shown. Select the delay image that matches the position of the flow (i.e., #1, #2...etc). Select nothing if there is no matching delay image.
- Compress the images to 3 sec/frame.
- Left click on **OK**.
- Adjust and rotate the images as with the delay images.
- Screen Cap this page.
- Left click on **Save Dynamics**.
- **Exit** protocol.



Hand in Study

- Send the saved **mvhboneresults_wb** and **mvhboneresults_dyn** to the Inbox using the MVH bone protocol.
- Send the screen captures to PACS.
- Do NOT send the physician the statics, dynamic, and whole body separately.