

August 24, 2005

TO: MRI Technologists  
FROM: Henry Z. Wang, M.D., Ph.D.  
RE: MRS of Brain Tumors

MRS of brain tumors will consist of a single voxel obtained at short TE and long TE and a single multi-voxel 2D MRS obtained at long TE. After contrast has been administered, obtain axial localizer images without any obliquity through the tumor mass. If perfusion images have been done, use the perfusion images to avoid areas of susceptibility effect seen as areas of signal loss.

Do the following for single voxel MRS:

1. Use the localizer images to place a single voxel of 20mm by 20mm over the tumor. If the tumor is much larger than the voxel, place the voxel over the segment of enhancement which is the thickest.
2. Run the single voxel sequence at short and long TE. At the end of PRESCAN, the water suppression should be close to 99%. If not, run the PRESCAN again. If still not near 99%, adjust the area of interest further away from any areas of susceptibility.
3. After the scan has been completed, go to the browser window and highlight the series that contains the single voxel data. Then and then click on **FuncTool2**.
4. When the window "Select a localizer image or series" appears, highlight the localizer series and click "ok".
5. A window will appear titled "Select a protocol". Click on "SVQ". Place the cursor over the window in the lower right hand window which displays the voxel location overlay. Press "S" on the keyboard to save the image.
6. Exit the FuncTool program.
7. Repeat the procedure for any other voxel data not in the same location.

Do the following for the 2D multi-voxel MRS:

1. Using the localizer images, prescribe a large area of interest to include the mass lesion and as much of the brain as possible while avoiding areas of susceptibility. Again, if perfusion has been performed, use the perfusion images for guidance.
2. Run the multi-voxel sequence. At the end of PRESCAN, the water suppression should be close to 99%. If not, run the PRESCAN again. If still not near 99%, adjust the area of interest further away from any areas of susceptibility.
3. After the scan has been completed, go to the browser window and highlight the series with the 2D MRS data. Then click on **FuncTool2**.
4. When the window "Select a localizer image or series" appears, highlight the localizer series and click "ok".
5. A window will appear titled "Select a protocol". Click on "Brain". Place the cursor over the upper left-hand window which displays the multi-voxel MRS overlay. Press "S" on the keyboard to save the image.
6. Exit the FuncTool program.
7. The multi-voxel MRS overlay should be filmed as a single frame on one sheet of film.

Hopefully, these instructions will make everyone's work easier. Let me know if anyone has any further suggestions.