

Application notes on data acquisition protocols for free breathing liver dynamic 3D imaging sequence

For GEHC 1.5T, GEHC 3T, Philips 1.5T, Philips 3T, Siemens 1.5T and Siemens 3T systems

Purpose: These protocols are to be used for the acquisition of dynamic contrast-enhanced 3D liver images in free breathing.

Description: Three protocol files (PDF) are provided, one for each vendor (Siemens, Philips and GE). The same protocols can be run on both 1.5T and 3T systems. Each protocol consists of 3D SPGR sequences for VFA T1 mapping and a dynamic 3D SPGR sequence. The 3D SPGR sequence defined in this protocol allows rapid volume acquisition (< 2sec) in order to minimise breathing motion artefacts. Multiple 3D images are acquired at each flip angle to improve SNR for T1 mapping.

Application:

- (i) For VFA T1 mapping:
 - a. Setup six variants of the protocol 'XXX_FB_SPGR_VFA_15' with flip angles (in degrees) = 15, 25, 2, 5, 10, 20.
 - b. Ensure that the sequence using flip angle = 25° can be run with the given TR. Otherwise, increase the TR on all sequences. If TR is too high (increases scan time), drop flip angle = 25 and re-calculate necessary TR for a maximum flip angle of 20.
 - c. Ensure that the receiver gain is fixed to that set for flip angle = 15° and remains unchanged for all further scans.
- (ii) For dynamic scan: Modify the TR to match the above, make no additional scan preparations, and run.