

Imaging of the Hippocampus

Dr Matthias Koepp, MRI Department, National Society for Epilepsy, Chalfont St Peter, London, United Kingdom

Abstract

This case shows an epileptic patient with a tumor in the hippocampus of the left temporal lobe. The fast spin echo (FSE) T2 sequence is the sequence of choice to image this area. However, this sequence can suffer from patient movement. The PROPELLER™ HD T2 sequence could be the perfect solution.

The system used in this article is GE Healthcare's Signa® HD 3.0T 16-channel platform, High Density Element Brain Coil.

Introduction

Imaging lesions in the hippocampus of epileptic patients can be very difficult because of patient movement. Clinicians need very high resolution images with good tissue contrast to see the internal structures of the hippocampus. High resolution T2 FSE images can take up to eight minutes and are very prone to motion artifact.

The PROPELLER HD T2 sequence is an excellent solution, due to its unique way of filling k-space; it can correct for patient movement and produce images rich in signal of the hippocampus.

Patient History

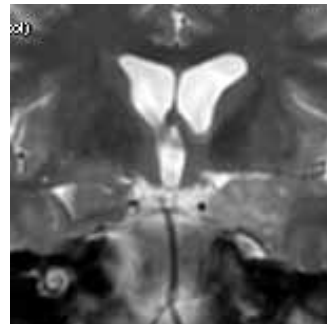
This is an epileptic patient referred for scan of the temporal lobes. This patient has a lesion situated in the left hippocampus.

Technique

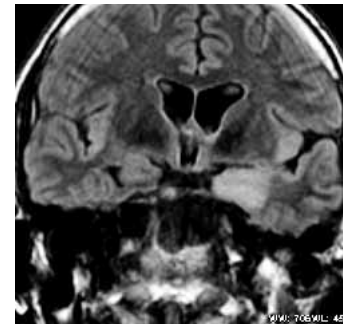
This site uses four sequences to image the temporal lobes: oblique T2 FSE, oblique PROPELLER HD T2 FSE, oblique T2 FSE FLAIR and oblique 3D fast spoiled gradient echo. For this report the parameters used for the T2 FSE, T2 FSE FLAIR and the T2 PROPELLER HD FSE are displayed.

FSE T2 parameters used: TE 78ms, TR 2000ms, ETL 14, BW 25 kHz, FOV 22cm, matrix 256x256, 1NEX, 5mm slice thickness.

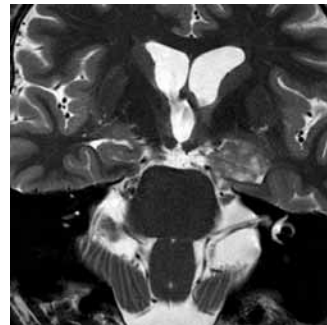
FSE T2 FLAIR parameters used: TE 145ms, TR 11002ms, BW 31 kHz, FOV 22cm, matrix 256x224, 1NEX, 5mm slice thickness.



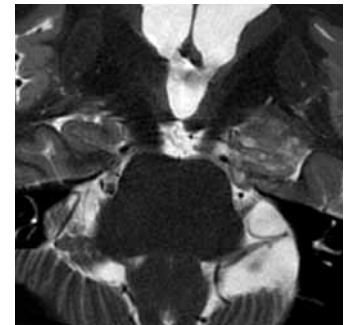
Oblique T2 FSE



Oblique T2 FLAIR



Oblique T2 PROPELLER HD



Oblique T2 PROPELLER HD

FSE T2 PROPELLER HD parameters used: TE 128ms, TR 5000ms, BW 50 kHz, FOV 22cm, matrix 512x512, 2mm slice thickness, 1.5NEX.

Findings

The high resolution PROPELLER HD images clearly showed a lesion involving the whole of the amygdala and all of the visible part of the hippocampus.

Conclusion

Neuroradiologists at the National Society for Epilepsy believe the PROPELLER HD T2 sequence could be an excellent sequence for imaging the hippocampus and temporal lobe. ■