

Case Report: Cortical Dysplasia

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Patient history

12-year-old girl presented after inconclusive scan at an outside institution. The patient was scheduled for a standard Epilepsy scan on our 1.5T MAGNETOM Avanto using a standard Head Matrix coil. The patient was then referred to the 3T MAGNETOM Trio and examined using the 32-channel Head Matrix coil.

Sequence details

The images obtained are from a 1.5T MAGNETOM Avanto with software version *syngo* MR 13 (MPRAGE 0.7 mm isotropic voxels) and from a 3T MAGNETOM Trio with software ver-

sion *syngo* MR B15 (MPRAGE 0.7 mm isotropic, 0.9 mm isotropic voxels using Water Excitation (WE), DarkFluid 3D SPACE and lipid suppressed 135 ms TE single voxel MR spectroscopy – MRS)

Image findings

The patient presented with migraines and 1.5T MR demonstrated a left frontal lesion possibly a cortical dysplasia or developmental tumor (DNET).

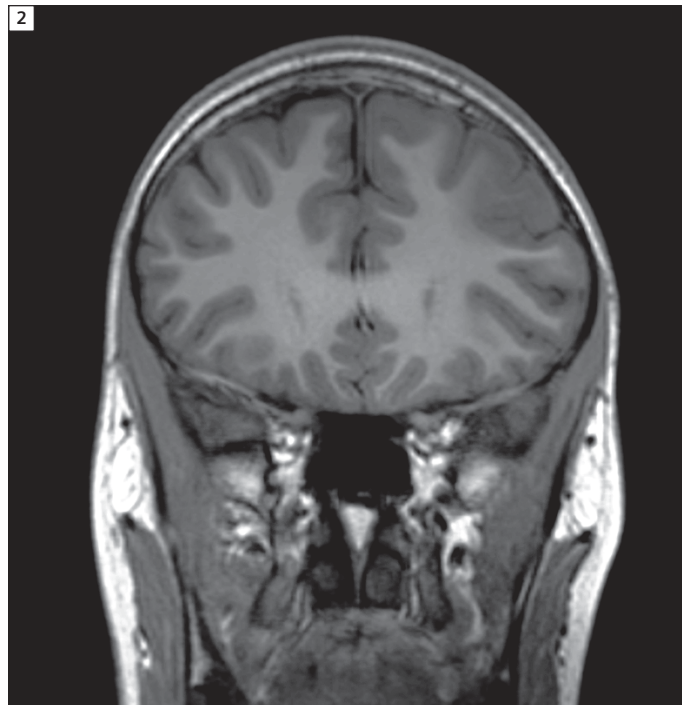
3T MR demonstrates a focally thickened cortical ribbon with blurring of the grey/white matter interface. The MR appearances are that of a cortical malformation.

Discussion

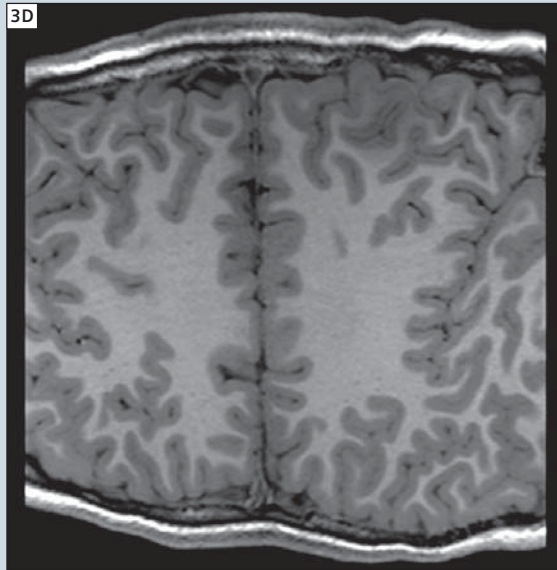
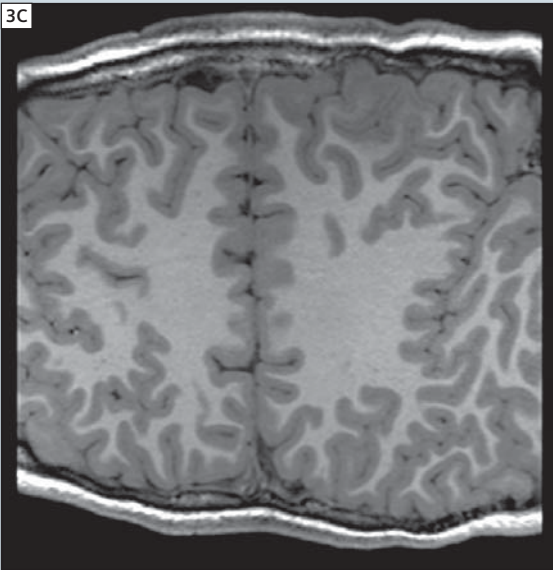
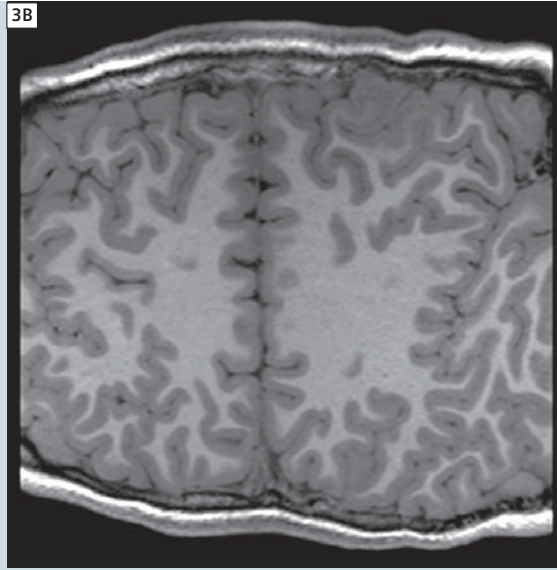
The images obtained using the 1.5T MAGNETOM Avanto clearly show the lesion but the increased signal-to-noise ratio (SNR) of the 32-channel Head Matrix coil and 3T (MPRAGE and 3D SPACE) provide the radiologist with a level of anatomical detail that enables a diagnosis with a higher degree of sensitivity and specificity.



1 MPRAGE image with 0.7 mm isotropic voxel, acquired using a 1.5T MAGNETOM Avanto system, demonstrating the left frontal lesion.



2 Corresponding MPRAGE image acquired using a 3T MAGNETOM Trio and the 32-channel Head Matrix coil. The focally thickened cortical ribbon and the blurring of the grey/white matter interface are clearly visible.



3 The acquisition of a highly resolved 3D dataset also enables the radiologist to perform a detailed retrospective interactive multiplanar evaluation of the whole brain. In figures 3A–D the reformatted DarkFluid 3D SPACE images are shown, displaying the disorganization of the left frontal cortical layer in detail.

3E standardized coronal and 3F sagittal reformation of the acquired T2-weighted syngo SPACE images.