

Case Report: Glioblastoma Multiforme

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Patient history

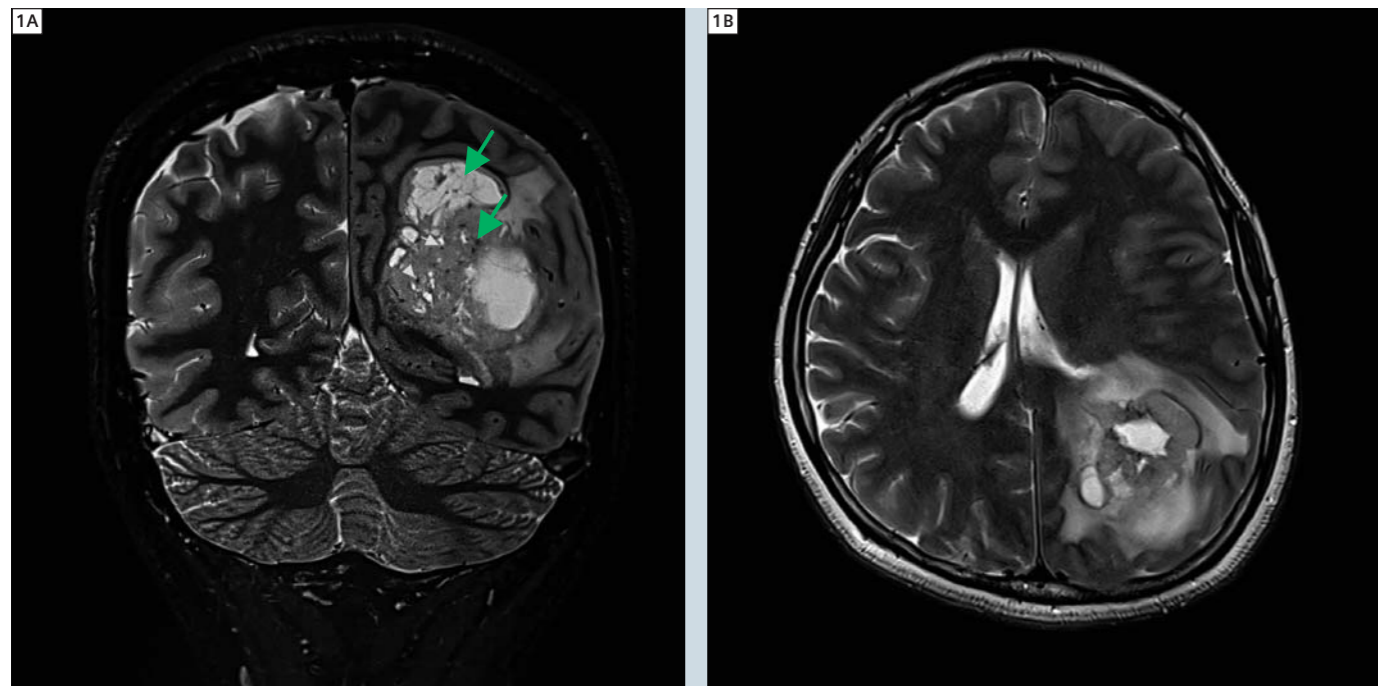
35-year-old female patient with known glioblastoma multiforme (GBM).

Image findings

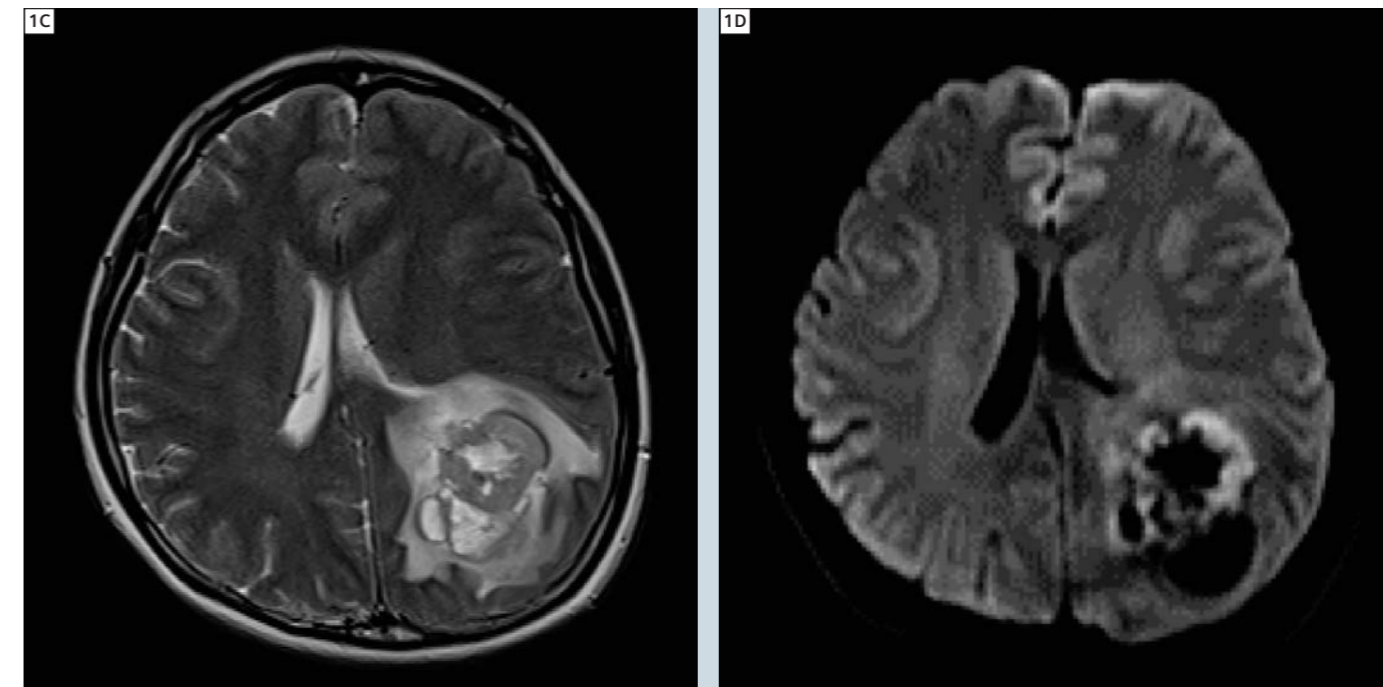
Glioblastoma multiforme with surrounding edema is seen in the white matter of the left parieto-occipital region. Coronal STIR (Fig. 1A) and transversal T2-weighted (Fig. 1B) images obtained by using a 32-channel head coil at 3 Tesla (MAGNETOM Trio, A Tim System with software version *syngo* MR B15).

Images demonstrate the multi-lobulated, intratumoral cystic components (green arrows) as well as the fine draining veins (blue arrows) in detail. A marked improvement is recognized in signal-to-noise (SNR), spatial resolution and contrast resolution on T2-weighted STIR images with a 32-channel head coil at 3T compared with conventional T2-weighted images (Fig. 1C) with a 12-channel Head Matrix coil at 1.5T (MAGNETOM Avanto).

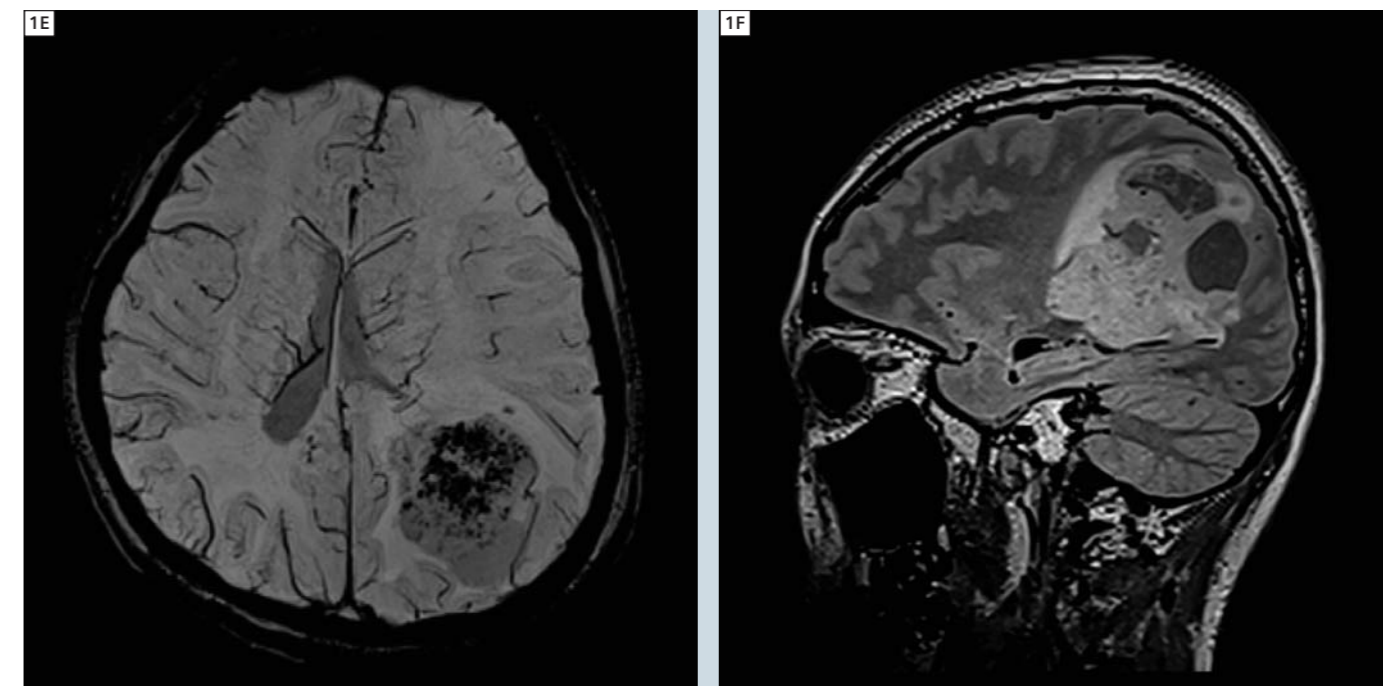
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1A, B A: Coronal T2-weighted STIR image acquired with the 32-channel head coil on a 3T MAGNETOM Trio, A Tim System. Sequence parameters: slice thickness 2 mm, 19 slices, TE 6000 ms, TR 11 ms, TI 230 ms, bandwidth 225 Hz/Px, PAT factor 2, turbo factor 11, FOV 180 x 180 mm, matrix 518 x 576, 2 averages, acquisition time: 5:43 min. B: Transversal T2-weighted Turbo Spin Echo (TSE) image acquired with the 32-channel head coil on a 3T MAGNETOM Trio, A Tim System. Sequence parameters: slice thickness 3 mm, 45 slices, TR 4500 ms, TE 96 ms, bandwidth 180 Hz/Px, PAT factor 2, turbo factor 11, FOV 220 x 220 mm, matrix 384 x 512, 1 average, acquisition time: 3:28 min.



1C, D C: Transversal T2-weighted TSE image of the same patient but acquired with a 12-channel Head Matrix coil at 1.5 Tesla. Sequence parameters: slice thickness 5 mm, 24 slices, TR 4500 ms, TE 98 ms, bandwidth 100 Hz/Px, PAT factor 2, turbo factor 10, FOV 184 x 210 mm, matrix 196 x 320, 1 average, acquisition time: 1:00 min. D: Diffusion-weighted image (*syngo* DWI) acquired with the 32-channel head coil at 3T; the high-b-value image with $b = 1000 \text{ s/mm}^2$ is shown. Sequence parameters: slice thickness 5 mm, 24 slices, TR 3000 ms, TE 77 ms, bandwidth 1420 Hz/Px, PAT factor 3, FOV 220 x 220 mm, matrix 112 x 160, 5 averages, acquisition time: 1:17 min.



1E, F E: Susceptibility-weighted image (*syngo* SWI) acquired with the 32-channel head coil at 3T; thin minimum intensity projection (thin MinIP) image (axial orientation, thickness 9.6 mm). Sequence parameters: slice thickness 1.2 mm, 81 slices, TR 28 ms, TE 20 ms, bandwidth 120 Hz/Px, PAT factor 3, FOV 230 x 230 mm, matrix 320 x 320, 1 average, acquisition time: 6:01 min. F: Sagittal 3D FLAIR *syngo* SPACE image, acquired with the 32-channel head coil at 3T. Sequence parameters: slice thickness 1 mm, 176 slices, TR 5000 ms, TE 393 ms, TI 1800 ms, bandwidth 780 Hz/Px, PAT factor 4, turbo factor 145, FOV 250 x 250 mm, matrix 516 x 512, 1 average, acquisition time: 3:46 min.