Fat-saturated 3D-T1W-SPACE

Fat-saturated 3D-T1W-SPACE refers to a specific type of magnetic resonance imaging (MRI) sequence that is commonly used in medical imaging.

The "fat-saturated" component of the sequence means that the image has been processed in a way to remove the signal from fatty tissue, which can otherwise obscure certain structures or lesions.

The "3D" component refers to the fact that the sequence produces a three-dimensional image, as opposed to a two-dimensional image.

"T1W" refers to the type of contrast used in the image acquisition, which emphasizes the differences in tissue relaxation time between different types of tissues.

Finally, "SPACE" stands for Sampling Perfection with Application optimized Contrasts using different flip angle Evolution, which is a type of MRI sequence that uses a combination of radiofrequency pulses and gradients to produce high-resolution images with high signal-to-noise ratio.

In summary, "fat-saturated 3D-T1W-SPACE" is a type of MRI sequence that produces high-quality, three-dimensional images with good contrast between different types of tissues, by removing signal from fatty tissue and using optimized pulse sequences.

Algın et al. retrospectively reviewed 3-tesla contrast-material enhanced Magnetic resonance imaging cisternography exams of 22 patients with suspected CSF leakage in 4 years. The presence of the artifacts on 3D-T1W data was evaluated using a 4-point scale (0: none; 1: minimal; 2: moderate; 3: prominent). Agreements between CSF leakage results of the 3D-T1W sequences and consensus decisions were evaluated via kappa values. Artifact scores were analyzed by Fisher's exact test.

The most compatible techniques with the consensus diagnoses were fat-saturated 3D-T1W-SPACE and 3D-T1W-VIBE sequences. The most artifact containing the 3D-T1W sequence was 3D-MPRAGE.

Fat-saturated 3D-T1W-SPACE and 3D-VIBE are more successful for cerebrospinal fluid fistula diagnosis compared to 3D-MPRAGE. 3D-SPACE has lower artifact scores compared to 3D-VIBE and 3D-MPRAGE sequences [1].

[1]

Algın O, Koç U, Ayberk G. Feasibility of 3D T1W sequences in contrast-material enhanced MR cisternography at 3T. Turk J Med Sci. 2022 Dec;52(6):1943-1949. doi: 10.55730/1300-0144.5542. Epub 2022 Dec 21. PMID: 36945976.

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