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Purpose: MRI of some pathological changes may be hidden by the powerful signals of fat and water. Simultaneous suppression of water and fat signals (SSWF) may be useful for visualization of such changes. Estimation of diagnostic possibilities of such MR images is the aim of this study. **Methods and Materials:** 96 patients with different diseases of brain, head, abdomen, and pelvis were the subjects of this study, which was performed on a 0.5 Tesla MR-scanner (TOMIKON S50, Bruker). The pulse sequences utilized were: SE, GRE (T1-W), FLAIR, STIR and SSWF. For SSWF, we used a double IR pulse sequence: 180° -TIw- 180° -TIf- 90° -FID, where TIw =1300 ms, TIf =80 ms (united two IR pulse sequences – FLAIR and STIR). **Results:** As pathological changes usually possessed intermediate longitudinal relaxation times (that is $0.1s < T1 < 1s$), they gave a strong signal in SSWF mode. The signal/noise ratio was comparable with that of the FLAIR sequence. Because strong background signals were suppressed, the dynamical range of receiver was expanded, creating favorable conditions for weak signal acquisition. SSWF method simplified the tissue differentiation in studies of the paranasal sinuses, the optic nerve and especially the meninges and skull base pathology. We applied the SSWF mode for visualization and morphometric measurements of cerebral tumors and haematomas because it simplified the graphical treatment of images for MIP reconstruction and volume rendering. This method was also useful for investigations of abdomen and pelvis.

Conclusion: The SSWF technique gives additional possibilities in MRI diagnostics and is a worthwhile subject for further investigation.

Topic (Complete): Physics in Radiology**Presentation/AV (Complete):****I understand that only digital projection material will be allowed. :** Yes**This abstract is related to emergency radiology. :** No**Status:** Complete

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