Comparison of three fat suppression sequences for the detection of vertebral detection. Turbo STIR, phase contrast gradient-echo, and MISTEC-Chopper after gadolinium injection

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Résumé en anglais	**OBJECTIVES:** Assess three fat suppression sequences used to search for spinal metastases: TurboSTIR, phase contrast gradient-echo, and MISTEC-Chopper after gadolinium injection. **MATERIAL AND METHODS:** A prospective study was conducted in 10 patients with primary neoplasia. MIR sequences acquired (1 Tesla) were TurboSTIR, T1 spin-echo with and without gadolinium injection, phase contrast gradient-echo and M-Chop after gadolinium injection. Signal intensity in normal bone marrow, metastatic tissue, and subcutaneous fat as well as background noise was measured. Signal-to-noise (S/N) ratio was determined. Lesion borders, artefacts, and extent of detected lesions were determined quantitatively. Bone marrow signal intensity was also recorded. **RESULTS:** S/N ratio was best with gradient-echo which identified well the borders of lesions within the hemopoietic marrow. For lesions located in high-fat marrow (as in post-radiation marrow), the high intensity signal of the lesion confounded with the fat signal. TurboSTIR gave effective fat signal suppression and was particularly useful for yellow marrow, less so for red marrow. This technique confounded cell proliferation with perilesional edema (enlarging lesion extention). In one case, this sequence did not detect a small lesion visible with the two other sequences. This sequence was sensitive to artefacts (especially vascular artefacts) which can produce false nodular images. M-Chop gave good suppression of vertebral fat tissue (better for yellow marrow) but subjective detection of lesions was more difficult. **CONCLUSION:** The phase contrast gradient-echo sequence after gadlinium injection appeared to be the best sequence excepting cases of post-trauma (radiotherapy or chemotherapy) fat transformation of the marrow where the TurboSTIR sequence could be preferred.
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