

ABSTRAK

**KOMPARASI HASIL CITRA TEKNIK GRAPPA DENGAN DAN TANPA
PENGAKTIFAN *MAGNETIZATION TRANSFER CONTRAST* PADA MRI
LUMBAL SEKUEN T2 qTSE SAGITAL KASUS *DEGENERATIVE DISC
DISEASE***

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Degenerasi diskus pada kasus *Degenerative Disc Disease* terlihat penurunan intensitas sinyal pada sekuen T2WI FSE MRI Lumbal. *Scan time* yang lama dan sensitif terhadap pergerakan sering menjadi masalah saat pemeriksaan pada kasus ini, dikarenakan nyeri yang dialami beberapa pasien. Sehingga diperlukan satu teknik yang mempercepat *scan time* untuk mempertahankan kualitas citra. Teknik *parallel imaging* (GRAPPA) menghasilkan gambar dengan *scan time* yang cepat, namun menyebabkan penurunan *Signal to Noise Ratio* (SNR). Sehingga diperlukan pengaturan parameter lain untuk menghasilkan citra yang optimal antara lain dengan *Magnetization Transfer Contrast* (MTC). Pengaplikasian MTC terbukti dapat meningkatkan kontras pada hasil citra antara jaringan patologis dan normal di beberapa pemeriksaan MRI.

Tujuan penelitian ini untuk mengetahui komparasi kualitas hasil citra pada pemeriksaan MRI lumbal sekuen T2 qTSE sagital kasus *Degenerative Disc Disease* teknik GRAPPA dengan dan tanpa pengaktifan MTC. Sebanyak 16 sampel yang dikumpulkan dalam kurun waktu 2 bulan yang memenuhi kriteria inklusi. Hasil citra teknik GRAPPA dan GRAPPA dan pengaktifan MTC pada masing-masing sampel dinilai kualitas citranya secara kuantitatif berdasar nilai SNR dan CNR.

Hasil dari penelitian ini menunjukkan bahwa berdasarkan nilai SNR, teknik GRAPPA dan pengaktifan MTC memiliki rerata lebih tinggi dibandingkan dengan teknik GRAPPA saja. Begitu juga dengan nilai CNR, teknik GRAPPA dan pengaktifan MTC memiliki rerata lebih tinggi dibandingkan dengan teknik GRAPPA saja. Dapat disimpulkan bahwa teknik GRAPPA dan pengaktifan MTC dapat diaplikasikan dalam pemeriksaan MRI Lumbal dengan kasus *Degenerative Disc Disease* terutama pada pasien yang tidak kooperatif.

Kata Kunci: Teknik GRAPPA, *Magnetization Transfer Contrast*, MRI Lumbal, *Degenerative Disc Disease*

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ABSTRACT

**COMPARISON BETWEEN GRAPPA TECHNIQUE WITH AND WITHOUT
MAGNETIZATION TRANSFER CONTRAST ON T2 QTSE LUMBAR MR IN
DEGENERATIVE DISC DISEASE**

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Degenerative Disc on Degenerative Disc Disease shown the loss of signal intensity in T2WI FSE sequence on MR Lumbar. Long scan time and sensitive to movement are the cause which often cause the problem during examination due to pain. So, it is needed a technique that speeds up the scan time to maintain image quality. Parallel imaging technique (GRAPPA) produces images with fast scan time, but it reduces Signal to Noise Ratio (SNR). So that parameter setting is needed to produce the optimal images, such as Magnetization Transfer Contrast (MTC) activation. The application of MTC has been shown to increase contrast in imaging between pathological and normal tissue on several MRI examinations.

The purpose of this study is to determine the comparison of image quality in Degenerative Disc Disease on sagittal T2 qTSE sequence during Lumbar MRI examination using GRAPPA technique with and without MTC activation. As many as 16 samples which qualify on inclusion criteria were collected in 2 months. Image quality between GRAPPA tech only and GRAPPA tech with MTC activation on each sample.

The results of this study indicated that based on the SNR value, the GRAPPA technique and the activation of MTC result had a higher average than the GRAPPA technique only. Reciprocally with the CNR value, the GRAPPA technique and the activation of MTC had a higher average than the GRAPPA technique only. It can be concluded that the GRAPPA technique with MTC activation can be applied on Lumbar Mri examination on Degenerative Disc Disease especially in uncooperative patients.

Key Words : GRAPPA technique, Magnetization Transfer Contrast, Lumbar MRI, Degenerative Disc Disease

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