

Lesion load assessment among multiple sclerosis patient using DIR, FLAIR, and T2WI sequences

ABSTRACT

Background: Magnetic resonance imaging (MRI) is one of the diagnostic imaging modalities employing in lesion detection in neurological disorders such as multiple sclerosis (MS). Advances in MRI techniques such as double inversion recovery (DIR) made it more sensitive to distinguish lesions in the brain. To investigate the lesion load on different anatomical regions of the brain with MS using DIR, fluid attenuated inversion recovery (FLAIR) and T2- weighted imaging (T2WI) sequences. A total of 97 MS patients were included in our retrospective study, confirmed by neurologist. The patients were randomly selected from the major hospital in Saudi Arabia. All images were obtained using 3T Scanner (Siemens Skyra). The images from the DIR, FLAIR, and T2WI sequence were compared on axial planes with identical anatomic position and the number of lesions was assigned to their anatomical region. Results: Comparing the lesion load measurement at various brain anatomical regions showed a significant difference among those three methods ($p < 0.05$). Conclusion: DIR is a valuable MRI sequence for better delineation, greater contrast measurements and the increasing total number of MS lesions in MRI, compared with FLAIR, and T2WI and DIR revealed more intracortical lesions as well; therefore, in MS patients, it is recommended to add DIR sequence in daily routine imaging sequences.

Keyword: Double inversion recovery; FLAIR; T2WI; MRI; Multiple sclerosis