Transcript Details

This is a transcript of a continuing medical education (CME) activity. Additional media formats for the activity and full activity details (including sponsor and supporter, disclosures, and instructions for claiming credit) are available by visiting:
https://reachmd.com/programs/cme/advancements-in-mri-technology-improved-diagnosis-and-monitoring-of-ms/17839/

Time needed to complete: 1h 04m

ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Advancements in MRI Technology: Improved Diagnosis and Monitoring of MS

Announcer:
Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

Prior to beginning the activity, please be sure to review the faculty and commercial support disclosure statements as well as the learning objectives.

Dr. Weinstock-Guttman:
I'm Bianca Weinstock-Guttman, Professor of Neurology at the Jacobs School of Medicine and Biomedical Sciences in Buffalo, New York. And we'll talk today about the Advancements in MRI Technology: Improved Diagnosis and Monitoring of MS.

The diagnosis of MS relies on multiple clinical, imaging, and fluid indicators that are evaluated in the context of the latest 2017 McDonald diagnostic criteria, which provides improved accuracy compared to previous iterations. Joint neurological and radiological expertise are necessary in determining key diagnostic aspects of supporting the dissemination in space, DIS, and dissemination in time, DIT, of the underlying pathology. The definite MS diagnosis remains, though, dependent on the neurological and radiological expertise in excluding alternative diagnosis.

In 2021, a consensus report by three major MS organizations, Magnetic Resonance Imaging in MS, MAGNIMS; Consortium of MS Centers, CMSC; and North American Imaging in MS, NAIMS, consolidated earlier MRI guidelines and provided updated recommendations on how and when to use MRI for MS diagnosis, prognosis, and treatment monitoring.

There is a clear standardized initial brain protocol including using at least 1.5 or 3T, Tesla, and a standardized initial spinal cord protocol. As for the follow-up imaging to establish multiple sclerosis diagnosis when the first MRI does not fulfill the criteria, brain MRI is recommended every 6 to 12 months in the CIS and subclinical multiple sclerosis the radiologically isolated syndrome with risk factors for conversion to MS and paraclinical features of multiple sclerosis. Showing DIT on a follow-up MRI does not require the detection of gad lesion because DIT can be based exclusively on the detection of the new T2 vision.

There is a new standardized image interpretation and reporting is recommended including the number of lesions and location. Knowledge about definition of lesion types is crucial and warning signs against the diagnosis of multiple sclerosis should be recognized. As you can see on the right side, we have the central vein specific for a lesion in MS. Or on the right side, you'll see nonspecific lesion, that's seen for example in migraine. Separate identification of cortical lesions, together with juxtacortical lesion based on standard images, is recommended. As you can see, in the left side we have the MRI criteria per McDonald 2017, where we have to have one lesion in at least two of the four locations, we have the initial juxtacortical, periventricular, infratentorial, and the spinal cord, on the right side, the cortical lesions.

MRI timing. Obtain a baseline MRI with gad if required before starting or switching disease-modifying treatment. Obtain a new baseline MRI usually at 3 to 6 months after treatment onset to avoid misinterpretation of lesion that develop before therapeutic onset. And give a longer interval to be considered in patients who are treated with disease-modifying therapy that are low acting. Obtain yearly brain MRI while the patient is on the disease-modifying treatment. But consider longer intervals in clinically stable patients after the first few years of treatment, particularly if safety monitoring is not required. In patients who show MRI disease activity that is not associated with clinical activity on a follow-up scan, consider a new MRI scan without gad 6 months later. Use of gad contrast agents is optional and not

recommended for all clinical situations, especially to have a previous MRI and if you have a T2 increased lesions load, you can use it as a reference scale and the follow-up MRI should not use gad. So use of gad only judiciously is known to have concerns of difficulty on elimination.

Novel MRI approaches are being incorporated in diagnostic setting, conduct of clinical trials, and also recent studies, the central vein may be considered for including in the new diagnosis criteria. Other specific MRI lesions are described and used only in the research or clinical trial assessment. So, we have the chronic activation, so-called CALs, have recently garnered attention and might represent the imaging correlate of smoldering inflammation. CALs can be detected as slowly-expanding lesion and that in conventional T2 and T1 weighted sequences using serial MRI or as a paramagnetic rim lesion, the PRLs. The PRLs are usually detected on susceptibility-based MRI sequences, as phase-imaging, susceptibility-weighted imaging, SWI, and quantitative susceptibility mapping, QSM. These lesions reflect ongoing tissue loss, and their presence has been proposed as an MRI marker of chronic inflammatory activity. However, their identification is not yet standardized, lasting long time, and thus, cannot be routinely recommended in clinical evaluation. Foci of leptomeningeal gad enhancement are more frequently seen in patients with secondary progressive MS than the patients with other types of MS. However, once apparent, the foci are generally constant over a long period of time, and no effect of disease-modifying treatments has been shown on the size or number of foci.

Thank you very much for listening.

Announcer:
You have been listening to CME on ReachMD. This activity is jointly provided by Global Learning Collaborative (GLC) and TotalCME, LLC. and is part of our MinuteCE curriculum.

To receive your free CME credit, or to download this activity, go to ReachMD.com/CME. Thank you for listening.