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Letter to Editor

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New diagnostic criteria for multiple sclerosis in patients with clinically isolated syndromes: Some questions could be raised during clinical practice

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Montalban et al. reported the new magnetic resonance imaging (MRI) diagnostic criteria for multiple sclerosis (MS) in patients with clinically isolated syndromes.[1] In the past decades, several diagnostic criteria for MS have been developed and used according to demonstration of lesions disseminated in space and time. The European Multicenter Collaborative Research Network on MRI in MS (MAGNIMS) suggested very interesting and helpful diagnostic criteria for MS in 2010. We believe that these criteria are beneficial since they enhance the way practitioners and researchers deal with clinically isolated syndromes and accelerate their decision making.

Hawkes and Giovannoni concluded that there are still some areas of misinterpretations and ambiguity in applying the McDonald's criteria for diagnosis of MS among neurologists. They clearly explained the uncertainty about definitions such as "an attack", "objective clinical evidence", and "two or more lesions". However, their survey lacks the ambiguities and questions on the interpretation of MRI lesions to fulfill the criteria for dissemination in space.[2] This could be more important as recent criteria proposed by Montalban et al.,[1] Swanton et al.,[3] and Rovira et al.[4] have tried to suggest new MRI criteria without providing a precise guideline to interpret MRI lesions. The McDonald's criteria have incorporated MRI as a sensitive tool to demonstrate dissemination in time and space. These criteria permitted an accurate diagnosis of MS before appearance of the second clinical attack and were rapidly accepted by the medical community. A constant feature of both 2001 and 2005 criteria was the use of Barkhof-Tintore criteria for dissemination in space. According to the mentioned criteria, three of the following four elements are necessary: 1) at least one gadolinium (Gd)-enhancing lesion or nine T2 hyperintense lesions; 2) at least one infratentorial lesion; 3) at least one juxtacortical lesion; and 4) at least three periventricular lesions.

The latest criteria proposed by Montalban et al. recommended one dissemination in space criterion, i.e. at least one asymptomatic T2 lesion in two of the four locations (juxtacortical, periventricular, infratentorial, and spinal cord) considered characteristic for MS in previous MRI criteria.[1] The

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common point in all MRI-based criteria is to find lesions in different parts of the central nervous system regardless of their size and shape. Considering the newly proposed and previously approved criteria, the following questions will still remain to be answered:

1. If a lesion is touching the cortex in one side and attached to the ventricle on the other, should we consider it as juxtacortical or periventricular?

2. If a lesion is attached to the fourth ventricle, should we consider it as periventricular, infratentorial or both? And if this lesion is enhanced in corresponding T1 with contrast can it be considered as enhancing, periventricular and infratentorial?

3. Regarding Barkhof-Tintore criteria, can we accept enhancing optic nerve lesions as a Gd-enhancing lesion to fulfill the criteria?

4. How can we incorporate diffuse involvements of spinal cord in MS? Can we accept them as one lesion or more?

5. Longitudinal extensive cord lesions may split into two or three smaller lesions in follow up MRI. Should we still consider them as one lesion?

We believe that such guidelines for lesion depiction on MRI must have precise definition in order to cover the questions and controversies in MRI application for MS diagnosis. A more comprehensive questionnaire regarding the above-mentioned questions may show more ambiguity of McDonald's criteria for MS diagnosis among practicing neurologists.

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