CLINICAL CHALLENGES IN DEFINING NEUROMYELITIS OPTICA SPECTRUM DISORDERS: A CASE REPORT

Maria Elisa Morelli, Antonio Bosco, Arianna Sartori, Alessio Bratina, Lucia Tesolin
Alessandro Dinoto, Paolo Manganotti
Neurological Clinic
Azienda Sanitaria Universitaria Integrata di Trieste - *Department of Medical, Surgical and Health Sciences*
University of Trieste – TRIESTE – Italy

Purpose

To discuss clinical challenges in defining and managing a «probable» Neuromyelitis Optica Spectrum Disorder.

Introduction

The newly introduced diagnostic criteria for Neuromyelitis Optica Spectrum Disorders[1] (NMOSD) demonstrated a higher sensitivity compared to the previous ones, due to a wider range of clinical pictures recognised as typical. However, the identification of aquaporin-4 immunoglobulin G (AQP4-IgG) remains a key criterion, that can be considered unnecessary when stringent clinical and magnetic resonance imaging (MRI) features are fulfilled. In this perspective, although the new diagnostic criteria allow to increase the number of NMOSD, seronegative patients remain a diagnostic challenge, with important therapeutic implications[2]. About 450 patients are clinically followed up and treated in our Multiple Sclerosis center in Trieste, and every year about 2-3 NMO/NMOSD are diagnosed.

Case description

We report a case of a 35-year old man, born in Bangladesh. On April 2015 he presented a bilateral optic neuritis and, four days later, an asymmetric paraparesis with bladder dysfunctions. MRI evidenced nonspecific cerebral white matter (WM) lesions and 3 contrast-enhanced spinal lesions, each extending less than 2 vertebral segments (VSs) (*Figure 1a-d*). The patient was treated with intravenous (i.v.) steroids with partial motor improvement. Serum and liquoral AQP4-IgG, oligoclonal bands (OBs), as well as autoimmune and viral screening tests resulted negative. On May, the patient had a new worsening of the previous symptoms. MRI showed significant enlargement with ring-constrast-enhancement of a parietal subcortical WM lesion, in absence of typical WM and cortical MS lesions, and confluence of two of the spinal lesions with an extension <2 VS (*Figure 2a-f, 3a-c*). The patient was treated with plasma exchange and a second cycle of i.v. steroids with gradual improvement of motor symptoms. Anti-myelin oligodendrocyte glycoprotein (MOG) IgG and newly tested AQP4-IgG were negative. A treatment with Rituximab (1 g i.v. every two weeks) was started, with no evidence of new clinical events or other MRI lesions in the following months (*Figure 4*). Re-treatment choices were made in order to ensure a maintenance regimen of RX infusions every 6-9 months, with a contemporary monitoring of CD19/20+ B cell count in order to have a marker of either the immunosuppression state of the patient and the therapeutic efficacy of Rituximab (*Figure 5*).

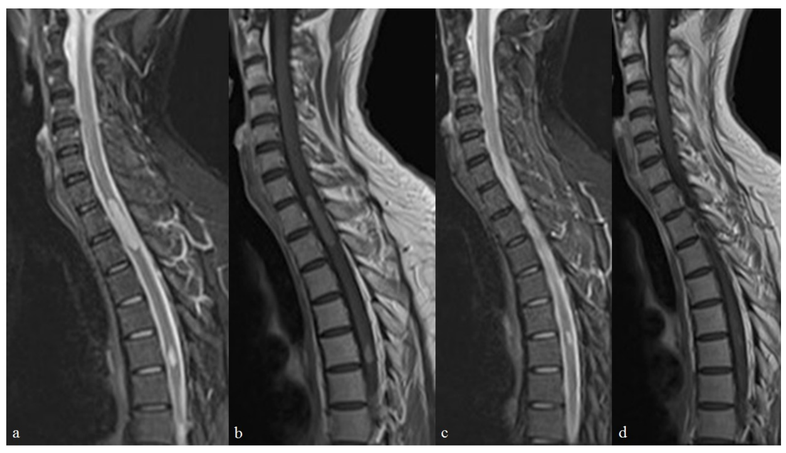

Figure 1a-d. Spine MRI of the 5th May 2015 showing 3 WM lesions, one of 2 VSs (34 mm, D1-D2), another one of 1 VS (14 mm, D5) and another one <1 VS (8 mm, D6), all of them with constrast-enhancement.

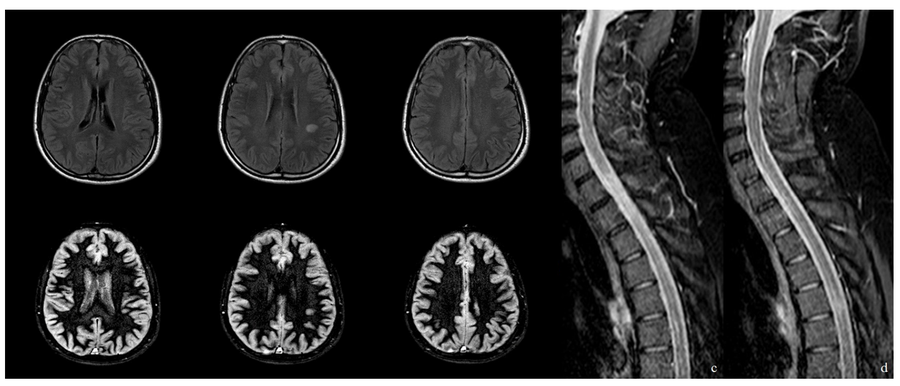

Figure 4. Brain and spine MRI the 31th August 2015 showing dimensional reduction of the left parietal subcortical WM lesion (11x15mm) and thickening (with stable lenght) of the spinal lesion at level D5-D6, with stability of the other brain and spinal lesions, in absence of brain gray matter (GM) lesions (at Double Inversion Recovery (DIR) sequence) or constrast-enhancements.

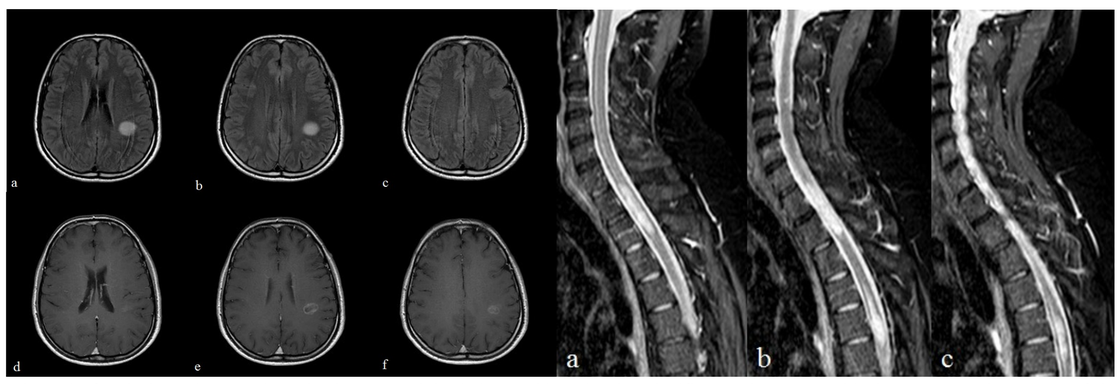

Figure 2a-f and Figure 3a-c. Brain and spine MRI of the 26th May 2015 showing significant enlargement with ring-contrast-enhancement of the previous lesion located in the left parietal subcortical WM (23 millimeter), in association with ring-contrast enhancement of the spinal lesion at level D1-D2 (not showed) and increase in extension of the spinal lesion located between D4-D5-D6 (35mm, a length equal to 2 VSs) with ring-contrast-enhancement (not showed).

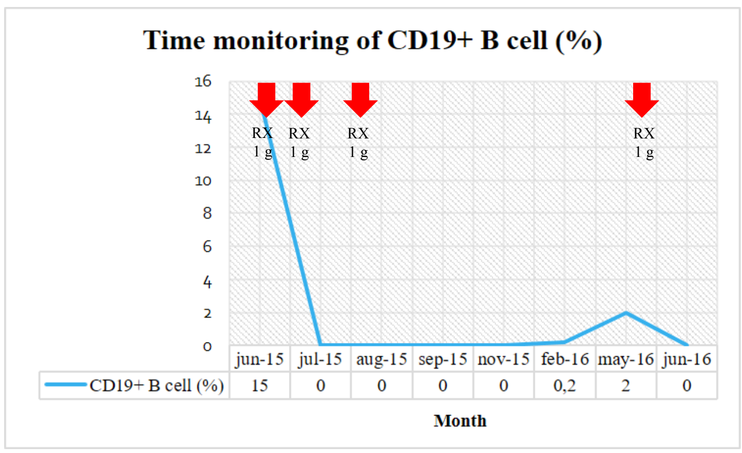

Figure 5. Time monitoring of CD19+ B cells (%) during the induction and the maintanance phase of therapy with Rituximab.

Conclusion

Even in absence of AQP4-IgG and transverse myelitis longitudinally extending ≥3 VSs, the simultaneous presentation of bilateral optic neuritis and myelitis of 2 VSs, without typical radiological MS features, raised a strong suspect of NMOSD. In these borderline cases, NMOSD should probably always be considered and treatment with monoclonal antibodies against B lymphocytes may constitute a prudent therapeutic option in order to be effective also in possible atypical MS[3].

References

1. *Wingerchuk, D. M. et al. International consensus diagnostic criteria for neuromyelitis optica spectrum disorders. Neurology (2015).*
2. *Juryńczyk, M. et al. Status of diagnostic approaches to AQP4-IgG seronegative NMO and NMO/MS overlap syndromes. J. Neurol. (2016).*
3. *Trebst, C. et al. Update on the diagnosis and treatment of neuromyelitis optica: recommendations of the Neuromyelitis Optica Study Group (NEMOS). J. Neurol. (2014).*