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Letter to the Editor

AQP4 antibody-positive NMO spectrum disorder associated with Takayasu arteritis

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Dear Editor,

Neuromyelitis optica spectrum disorder (NMOsd) is an aggressive autoimmune condition characterized by optic neuritis and longitudinally extensive transverse myelitis (LETM) [1]. Specific autoantibodies directed against aquaporine 4 (anti-AQP4) are present in more than 70% of the cases [2]. Association with various other systemic autoimmune diseases have been reported, mostly systemic lupus erythematosus and Sjögren's syndrome [3]. Takayasu arteritis is a rare large-vessel vasculitis in which granulomatous inflammation involves mainly the aortic arch and its branches. It occurs predominantly in young women of Asian origin [4]. Here we report the first case of Takayasu arteritis associated with NMOsd.

A 40-year-old female laboratory assistant of Korean descent consulted for belt-shaped waist pain. She had no significant past medical history, did not consume any medication or drugs, and as she was adopted the family medical history was unavailable. Over the next few days, progressive lower extremity paresthesia and weakness developed associated with bladder dysfunction. By the fifth day she was unable to stand and was admitted to our hospital. Physical examination was marked by muscular weakness scored initially at M3/5, but worsening 48 h later to a paraplegic syndrome. She also had sensory pain loss and a girdle sensation reaching from the legs to the Th4 dermatome but no signs for optic neuritis. Stretch reflexes were brisk in both the upper and lower extremities. Plantar reflex showed a bilaterally extension response. The remaining physical findings were unremarkable.

Laboratory work-up showed an elevated white blood cell count (10.8 G/l) with a predominance of neutrophils, erythrocyte sedimentation rate and C-reactive protein level were normal. Serological tests for Lyme disease, syphilis and viral infections (EBV, VZV, CMV, HIV, HSV) were negative or not contributive, and Quantiferon test was negative. CSF analysis showed elevated leucocyte count (136 M/l) with a predominance of monocytes and 35% of plasmocytes, increased protein (1.21 g/l) and normal glucose levels. The presence of type 4 oligoclonal bands suggested systemic IgG synthesis in the absence of intrathecal synthesis. Gram stain and subsequent culture of CSF were negative as were PCR testing for Herpes 1–2, VZV, Herpes 6, and enterovirus. Anti-AQP4 antibodies were detected in both serum and CSF, while anti-MOG antibodies were not present in the CSF. Moreover, elevated ANA titers were found (1:1280), with negative screening for anti-SSA, anti-SSB, anti-RNP, anti-SM, anti-Scl-70, anti-Jo-1, anti-dsDNA, and other serum autoantibodies including anti-MAG and ANCA. Head MRI was normal and no clinical evidence for systemic lupus erythematodes or Sjögren-Syndrome was found. Based on the finding of an LETM extending from C6 to the conus medullaris in spinal MRI (Fig. 1A–C) and given the presence of anti-AQP4 antibodies, a diagnosis of NMOsd was made (Wingerchuk criteria 2015) [1]. In addition, CT scanning revealed bilateral pulmonary embolism, mural thickening of the left carotid artery, brachiocephalic trunk, right renal artery, and superior mesenteric artery, the latter also showing stenotic and aneurismal lesions (Fig. 1D–G). Taken together with her age and clinical presentation, a diagnosis of Takayasu arteritis was made (ACR criteria 1990) [5].

The patient was treated by anticoagulation, i.v. methylprednisolone 500 mg/day for 5 days, followed tapering doses of oral corticosteroids, IVIG (0.4 g/kg/day for 6 days), and rituximab 1000 mg every 6 month). After 3 months of neurorehabilitation she returned home, able to walk with a cane, and went back to work. After one year, under the treatment with rituximab, the patient walked without aid but was still suffering from neurogenic pain and slight spasticity; follow-up spinal MRI showed regression of the inflammatory lesion (Fig. 1H), but anti-AQP4 antibodies in the serum were still positive.

This case demonstrates the coexistence of Takayasu arteritis and NMOsd. It is estimated that about one third of patients with NMOsd suffer from an additional autoimmune diseases [3]. The presence of NMOsd and coexisting connective tissue diseases are not necessarily mutually exclusive diagnoses, especially in patients who are anti-AQP4-IgG seropositive. Although, several neurologic manifestations associated to Takayasu's arteritis have been reported, like vertigo, syncope, headache, convulsions and stroke [6]; to date, LETM or recurrent optic

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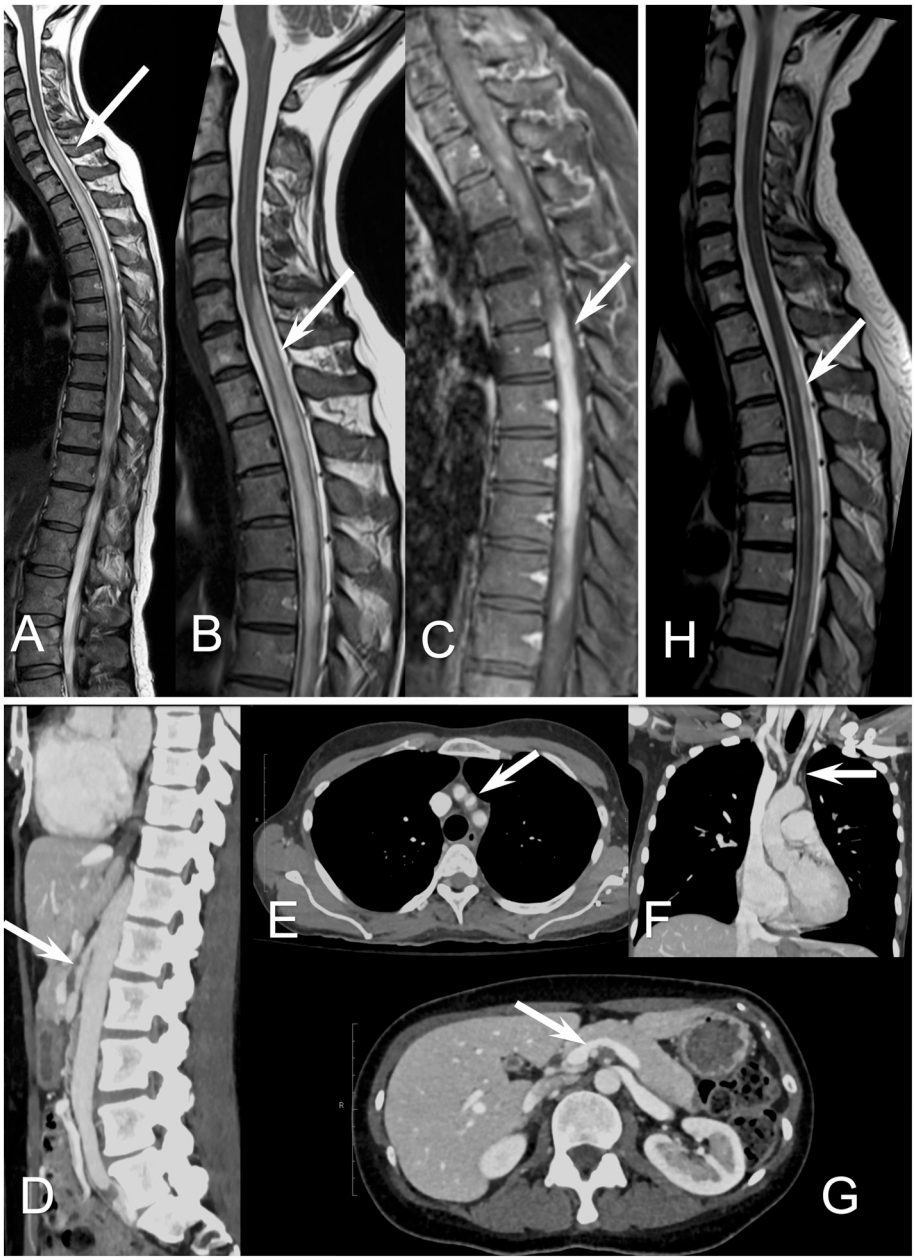

Fig. 1. Magnetic resonance image (MRI) of the patient's spine, and computed tomography of the patient's thorax and abdomen. (A) Spinal sagittal T2-weighted image show high signal from C6 to the conus medullaris, as well as (B) the cervical sagittal T2- weighted image, both confirming a longitudinally extensive transverse myelitis that (C) in the post-gadolinium T1-weighted image displays heterogeneous contrast enhancement from Th3 to Th8. (D) The thoracic-abdominal computed tomography shows mural thickening of the mesenteric superior artery, (E and F) the brachiocephalic trunk, and (G) right renal artery, confirming the presence of Takayasu arteritis. (H) Follow-up after one year: the spinal sagittal T2-weighted image shows regression of the inflammatory lesion.

neuritis have not been described.

The presence of anti-AQP4 antibodies constitutes a sensitive and highly specific serum marker of NMOsd. We confirmed the presence of anti-AQP4 antibodies in an external laboratory (Neuroimmunology lab, Oxford UK), and over the one-year follow-up all five samples stayed positive for anti-AQP4 antibodies (in serum immunofluorescence assay using transfected cells with a titre of 1:10), even after the start of rituximab therapy.

The reason for the coexistence of two autoimmune disorders is not fully understood but there might be a general predisposition for developing autoimmunity [3]. Moreover, connective tissues disorders as well as vasculitis induce tissue damage and an inflammatory environment that may promote anti-AQP4-Antibody mediated pathology [7].

In conclusion, patients with NMOsd can present with other autoimmune disease, and here we report the first case of concurrent Takayasu arteritis, necessitating aggressive immunosuppressive therapy.

References

[1] D.M. Wingerchuk, B. Banwell, J.L. Bennett, et al., International consensus diagnostic criteria for neuromyelitis optica spectrum disorders, Neurology 85 (2015) 177–189.
[2] V.A. Lennon, T.J. Kryzer, S.J. Pittock, A.S. Verkman, S.R. Hinson, IgG marker of optic-spinal multiple sclerosis binds to the aquaporin-4 water channel, J. Exp. Med. 202 (2005) 473–477.
[3] B. Zhang, Y. Zhong, Y. Wang, et al., Neuromyelitis optica spectrum disorders without and with autoimmune diseases, BMC Neurol. 14 (2014) 162.
[4] A. Hata, M. Noda, R. Moriwaki, F. Numano, Angiographic findings of Takayasu arteritis: new classification, Int. J. Cardiol. 54 (Suppl) (1996) S155–S163.
[5] W.P. Arend, B.A. Michel, D.A. Bloch, et al., The American College of Rheumatology 1990 criteria for the classification of Takayasu arteritis, Arthritis Rheum. 33 (1990) 1129–1134.
[6] A. Rodriguez-Pla, G. de Miguel, J. Lopez-Contreras, J.M. de Llobet, J. Llauger, C. Diaz, Bilateral blindness in Takayasu's disease, Scand. J. Rheumatol. 25 (1996) 394–395.
[7] D.M. Wingerchuk, B.G. Weinshenker, The emerging relationship between neuromyelitis optica and systemic rheumatologic autoimmune disease, Mult. Scler. 18 (2012) 5–10.

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