Conclusions

COVID-19 vector vaccine associated acquired neuromyotonia is a rare condition, but its early recognition and treatment is the key for a favorable prognosis.

Disclosure: Dr. Shivangi has nothing to disclose. Dr. Singh has nothing to disclose. Dr. Singhvi has nothing to disclose. Dr. Bansal has nothing to disclose. Dr. Gupta has nothing to disclose.

Medusa-head Antibodies-More than Cerebellar Ataxia: Report of Two Cases

Lei Liu, Jingxiao Zhang

Objective

To report an anti-metabotropic glutamate receptor 1 (mGluR1) encephalitis case present with cerebellar ataxia and a paraneoplastic retinopathy and optic neuropathy case with anti-inositol 1,4,5-trisphosphate receptor type 1 (ITPR1) antibodies.

Background

Medusa-head antibodies refer to a group of autoantibodies with a staining pattern resembling a Gorgon's head, caused by binding of IgG to Purkinje cell somata and dendrites in tissue-based assay. Although these antibodies often related with cerebellar ataxia, increasing cases presented or accompanied with encephalopathy or peripheral neuropathy have been reported.

Design/Methods

Cases report.

Results

Case 1: A 48-year-old woman presented with acute dizziness and unsteady gait developed head titubation, repeated language and calculation impairment. Her neural antibodies were negative with commercial kits. Further investigation showed serum and CSF "Medusa head" staining pattern of Purkinje cell in rat cerebellum. An in-house cell-based assay proved the existence of anti-mGluR1 antibodies. One-year follow-up revealed serum antibodies titers dramatically decreased and CSF antibodies negative after using steroids and intravenous immunoglobulin, but still left prominent cerebellum atrophy and severe cerebellar deficits. Case 2: Two years ago, a 61-year-old man presented with painless nasal defects of right eye, photopsia and progressed to 1 m/FC within 3 days. A similar episode happened 7 months ago in his left eye. Prior malignancy including renal carcinoma and lung adenocarcinoma discovered seven and four months ago, respectively. On admission, visual acuities were OD 50 cm/FC and OS 1 m/FC. There was a right RAPD. MRI showed bilateral optic nerves atrophy. Serum AQP4, MOG and paraneoplastic antibodies were all negative. ITPR1 antibodies were proved by tissue-based assay and Euroimmun cell-based assay. He didn't accept immunotherapies and was discharged.

Conclusions

Besides cerebellar ataxia, anti-mGluR1 antibodies may also cause encephalopathy symptoms. Our findings indicate a possible role of autoimmunity to ITPR1 in the pathogenesis of paraneoplastic retinopathy and optic neuropathy and expand the panel of diagnostic markers for this condition.

Disclosure: Dr. Liu has nothing to disclose. Dr. Zhang has nothing to disclose.

Testing for N-type Voltage Gated Calcium Channel Antibody has Limited Utility in Evaluating Patients With Suspected Lambert-Eaton Myasthenic Syndrome

Masoud Majed, Anastasia Zekeridou, Vanda Lennon, Sean Pittock, Andrew McKeon, Christopher Klein, Divyanshu Dubey, John Mills

Objective

To determine if testing for N-type voltage-gated calcium channel antibody improves diagnostic performance of serological testing for Lambert-Eaton Myasthenic Syndrome.

Background

Patients with suspected autoimmune neuromuscular junction transmission disorders are commonly tested for both P/Q-type (VGCC-P/Q) and N-type (VGCC-N) voltage-gated calcium channel antibodies to aid the diagnosis of Lambert-Eaton Myasthenic Syndrome (LEMS).

Design/Methods

This retrospective cross-sectional study included 93 patients diagnosed at Mayo Clinic with LEMS based on electrodiagnostic findings, clinical presentation and positive serology for VGCC-P/Q and/or VGCC-N.

Results

Forty-five patients (48.4%) were female, of median age 61 years (range 11- 99). Twenty-five (26.9%) were positive for both VGCC antibody types (reference interval <0.04 nmol/L [VGCC-N] and <0.03 nmol/L [VGCC-P/Q]); 67 (72.0%) were positive for VGCC-P/Q only and one (1.1%) was positive for VGCC-N only. The single VGCC-N positive only result [VGCC-N = 0.10 nmol/L; VGCC-PQ = 0.02 nmol/L] was from a patient with classic LEMS presentation and no evidence of malignancy by Chest CT. The prevalence of VGCC-N only positivity was lower than in the healthy population or other disease control populations. VGCC-P/Q antibody titers were higher in patients who had detectable co-existing VGCC-N antibody (median titer 1.58 versus 0.39 nmol/L, P = 0.02) and there was a positive correlation (r = 0.762, P < 0.001) between VGCC-N and VGCC-P/Q titers in double positive cases. Dual positivity did not significantly increase the likelihood of an underlying cancer (40.9% versus 30.1%, P = 0.33).

Conclusions

Testing for VGCC-P/Q antibodies alone is sufficient in the serological evaluation of suspected LEMS cases. Inclusion of VGCC-N antibody testing does not improve diagnostic performance. A positive VGCC-N antibody did not significantly increase the risk of paraneoplastic LEMS.

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CAR-T Cell-Mediated B Cell Depletion in Central Nervous System Autoimmunity

Sasha Gupta, Milos Simic, Sharon Sagan, Jason Duecker, Chanelle Shepherd, Raymond Sobel, Stephen Hauser, Wendell Lim, Michael Wilson, Scott Zamvil

Objective

Evaluate chimeric antigen receptor (CAR)-T cell mediated B cell depletion in experimental autoimmune encephalomyelitis (EAE).

Background

CAR-T cells are autologous T cells expressing a non-MHC target antigen specific receptor. We tested whether anti-CD19 CAR-T cells, which more thoroughly deplete human B cell populations than monoclonal antibodies (mAbs), recapitulated the beneficial effects of B cell depletion in EAE.

Design/Methods

Anti-CD19 CAR-T cells or control T cells that overexpressed green fluorescent protein were transferred into female wild-type C57BL/6 mice that had been pretreated with cyclophosphamide. EAE was induced by immunization with either recombinant human (rh) myelin oligodendrocyte protein (MOG) (B cell-dependent) or MOG peptide (p) 35-55 (B cell-independent). Mice were evaluated daily for clinical signs of EAE and weekly for peripheral B and T cell counts. B cell levels, T cell immune modulation and histology were assessed at peak disease and at termination.

Results

In rhMOG-induced EAE, clinical scores and histologic lymphocyte infiltration were reduced in mice treated with cyclophosphamide and either anti-CD19 CAR-T cells or control T cells. B cell depletion was observed in peripheral lymphoid tissue and in the central nervous system (CNS) of mice treated with anti-CD19 CAR T cells, similar to effects of anti-CD20 mAbs. There was no difference in T cell modulation including Th1 or Th17 populations, but there was a trend towards increase in Treg populations in the periphery and CNS in the anti-CD19 CAR-T cell and control T cell treated animals. Clinical scores and histology did not differ among treatment groups in p35-55-induced disease.

Conclusions

Anti-CD19 CAR-T cells thoroughly deplete B cells peripherally and within the CNS. Treatment also results in less severe rhMOG-induced disease, but it was independent of B cell depletion. Our results are consistent with human data indicating that anti-CD19 CAR-T cells deplete B cells across compartments, suggesting that they may hold promise for progressive MS.

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A Rare Neuromyelitis Optica Mimic: Primary CNS Histiocytic Sarcoma

David Rogawski, Jeffrey Nirschl, Jamie McDonald, Esther Nie, Nicholas Schwartz, Hannes Vogel, Brian Scott, Carl Gold, Lucas Kipp

Objective

NA.

Background

NA.

Design/Methods

NA.

Testing for N-type Voltage Gated Calcium Channel Antibody has Limited Utility in Evaluating Patients With Suspected Lambert-Eaton Myasthenic Syndrome

Masoud Majed, Anastasia Zekeridou, Vanda Lennon, et al.

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