#424

Neuromyelitis Optica Spectrum Disorder in Active Duty Service Members

Jon P. Williams, DO, PhD[1,2,3], Jonathan Galli, MD[1,2], Keith A. Groshans MD[4], David E. Horvat MD[4], Sharon Austin PhD[2], Sean J. Pittock MD[5], John W. Rose MD[1,6], Noel G. Carlson PhD[1,6,7], John E. Greenlee MD[1,2], M. Mateo Paz Soldan MD PhD[1,2], Nathan T. Tagg[4,8], and Stacey L. Clardy MD PhD[1,2,6]

1. University of Utah, Department of Neurology, Salt Lake City, UT. 2. George E. Wahlen Department of Veterans Affairs Medical Center, Salt Lake City, UT. 3. US Air Force Institue of Technology, 4. Walter Reed National Military Medical Center
5. Mayo Clinic Neuroimmunology Laboratory, Rochester, MN, 6. University of Utah, School of Medicine, Salt Lake City, UT. 7. University of Utah, Department of Neurobiology and Anatomy, Salt Lake City, UT. 8. Uniformed Service University of Health Sciences

SALT LAKE CITY

Objective

To characterize patients with neuromyelitis optica spectrum disorder (NMOSD) in the Department of Defense (DoD) population

Background

- NMOSD is an astrocytopathy with an associated serum autoantibody to the aquaporin 4 water channel resulting in secondary demyelination[1,2]
- NMOSD preferentially involves the optic nerves, spinal cord and circumventricular organs
- NMOSD is associated with additional comorbid autoimmunity[3,4]
- The incidence of NMOSD among military personnel is unknown; the overlap of NMOSD with other autoimmune conditions has not been defined in this population

Design and Methods

- Approved U of Utah/VA IRB # 90978
- Comprehensive query of patient records in the DoD for relevant diagnostic codes (ICD-9 341.0 and ICD-10 G36.0) between Jan 1 2010 and August 1, 2017
- Review of patient records via Joint Legacy Viewer, AHLTA, and Essentris, the DoD electronic medical record

Funding

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Results

- Identified **131** unique patients within the DoD system with a ICD code documented in the medical record at least once
- Of these patients, 39 were confirmed as service members; the remainder were dependent beneficiaries
  - 17 met 2015 diagnostic criteria for NMOSD[5]
    - Patients were categorized as:
      - NMOSD with documented AQP-IgG seropositivity: 15
      - Seronegative NMOSD: 2
  - 22 did not meet diagnostic criteria for NMOSD:
    - Alternative diagnoses: 15
    - Insufficient evidence to determine diagnosis: 7

- **Of the 17 patients meeting diagnostic criteria for NMOSD:**
  - **Sex**:
    - Female: 9
    - Male: 8
  - **Ethnicity**:
    - African American: 6
    - Caucasian: 6
    - Asian: 1
    - Hispanic/ Latino: 1
    - Other: 2
    - Unknown: 1
  - **Average age of onset**: 39.3
  - Range of ranks from junior enlisted (E3) to officers (O4)
  - DoD follow up ranged from 6 to 168 months
  - Average modified Rankin scale (mRS) at final follow up: 2

- Of the 22 patients not meeting diagnostic criteria diagnoses included:
  - Demyelinating disease/ multiple sclerosis (7), isolated myelitis (4), isolated optic neuritis (3), mixed connective tissue disorder (1), insufficient data (7)

Figure 1: Clinical Events

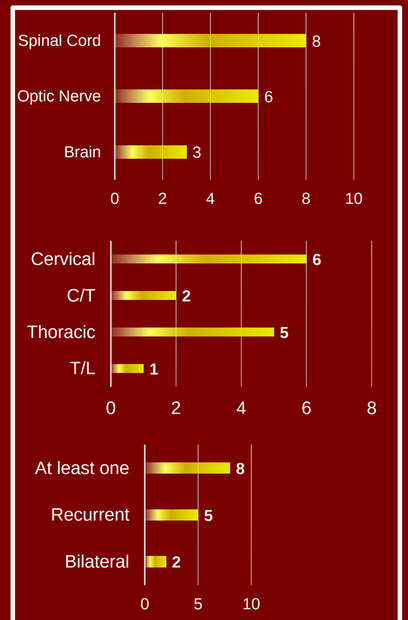

Figure 1. Clinical events in DoD patients diagnosed with NMOSD. Top panel is presenting symptoms. Middle and bottom panels represent distribution of longitudinally extensive transverse myelitis, and documented cases of optic neuritis, respectively, at any time since presentation. The x-axis is number of patients for all panels.

Figure 2: CSF characteristics

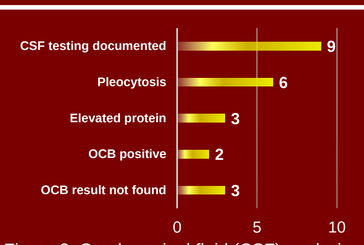

Figure 2. Cerebrospinal fluid (CSF) analysis of DoD patients meeting diagnostic criteria for NMOSD. *OCB*, oligoclonal bands.

Figure 3: Treatment exposure

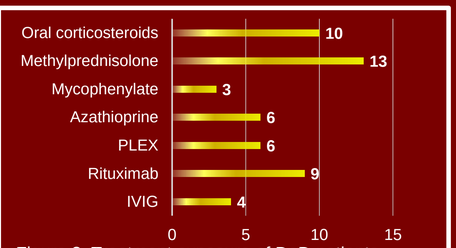

Figure 3. Treatment exposure of DoD patients meeting diagnostic criteria for NMOSD. *PLEX*, plasma exchange; *IVIG*, intravenous immunoglobulin.

Figure 4: Clinical outcomes

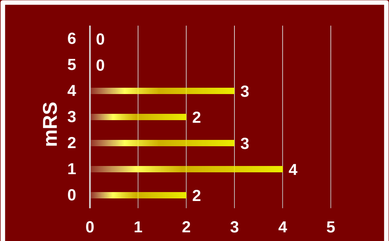

Figure 4. Modified Rankin Scale at most recent follow up for DoD patients meeting diagnostic criteria for NMOSD.

Conclusions

- This is a first-ever characterization NMOSD in the DoD population.
- Demographics and clinical characteristics agree with prior reports[6], with the exception of sex ratio, which may reflect a unique influence of this population.
- The study is limited by the time range (2010–2017) of analysis, and will benefit from further evaluation of additional DoD cases prior to 2010.

References

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