DATA BLITZ PRESENTATIONS (recent and in progress important studies)

Anti-Titin Antibodies are Frequently Observed in Patients with Myasthenia Gravis who Experienced the Recurrence of Thymoma - K Kim Seoul, South Korea

Titin is a structural protein in skeletal muscle (what people generally call muscle). Anti-titin antibodies are associated thymus tumors, thymomas. This group reported that people who had antibodies that target titin were more likely to demonstrate a recurrence of thymoma after surgical removal of the thymoma compared to people who did not titin antibodies. The findings suggest that the presence of titin antibodies in people with thymoma may indicate more aggressive thymus tumors that are more likely to reappear after surgical resection.

Reflex Algorithm for Improving Accuracy of Myasthenia Gravis Autoantibody Testing -

P Paul Mayo Clinic, Rochester, MN

This study was designed to find what combination of AChR antibody testing techniques combined with EMG testing was best for determining if a person has MG or a thymus tumor. They found that a combining two types AChR antibody determination increased the likelihood that a positive truly indicated that a person had MG and that a negative test ruled out MG. Antibody techniques were not better than imaging tests such as MRI for detecting thymoma. This presentation may lead to improved antibody testing.

Proteomic Profiling May Reveal Novel Biomarkers for Myasthenia Gravis -

F Hussain Univ. of Edmonton, Canada

Proteins are important biological molecules that contribute to the structure and metabolism of cells. Proteins exist in the membranes defining the boundary of a cell, inside a cell in the fluid (called cytosol) and organelles (such as the nucleus, which contains DNA; mitochondria, which are the cell's energy factories and ribosomes which are involved in converting the genetic code into the production of proteins). In contrast to the genome, or the DNA of a cell, the proteome of a cell varies in response to the activity of a particular group of cells. It is likely that the proteomic profile of a group of cells will change if those cells come under immune attack. An important search in MG is to find markers (biomarkers) that indicate: 1) the level of activity of immune attack in MG and 2) if an intervention such as medication is reducing the level of the immune attack. Biomarkers can quickly indicate whether an intervention for MG is effective. The researchers found three proteins measured in blood specimens that may be biomarkers for the presence and activity level MG. Further studies are needed, but the findings are very encouraging.

Knowledge and Perceptions of the Covid-19 Pandemic Among Patients with Myasthenia Gravis – Y. Li Duke Univ., Durham, NC

During the current COVID-19 pandemic, people who may have compromised immunity, such as people with MG receiving immune-suppressant treatments such as prednisone, mycophenylate (CellCept) azathioprine (Immuran), IVIG, PLEX or monoclonal antibody treatments such as Eculizumab or Retuximab are concerned about their risk of getting COVID and the severity of disease if they develop COVID. This study looked into what information sources people with MG use. The reported study group was 75 patients

with a diagnosis code for MG in the Duke Health System who completed the survey. Non-presidential federal government sources (80%), local healthcare providers (55%), state government (33%) and patient organizations such as MGFA (29%) were considered the most trusted information sources. Patients were taking recommended precautions during the pandemic and remained very concerned (69%) about COVID-19.

Impact of a Myasthenia Gravis Drug-Disease Interaction Clinical Decision Support Tool on Provider Prescribing - M Barra Mass. General Hosp., Boston, MA
The electronic medical record (EMR) has the potential to reduce the likelihood that a clinician mistakenly prescribes a medication that may worsen MG. These researchers developed a tool that can be incorporated into the EMR to flag prescriptions for medications that can worsen MG. The medication checker was studied over a 6 month period. It reduced the incidence of prescribing potentially dangerous medications and was well accepted by the clinicians using the EMR.

The Duke Myasthenia Gravis Clinic Registry: Description and Demographics - D Sanders Duke Univ., Durham, NC
The Duke Myasthenia Gravis (MG) Clinic Registry has been collecting information on people with MG since 1980. The Duke MG research and care giving team are reviewing the data collected over the past 40 years to see if they can identify patterns of MG presentation and responses to treatment that will be useful to other care providers.

The Myasthenia Gravis Inebilizumab Trial (Mint): Design of Randomized, Placebo-Controlled Phase 3 Study of an Anti-Cd19 Monoclonal Antibody in Generalized Myasthenia Gravis - R Nowak Yale, New Haven, CT
An approach to treating MG is to suppress the immune B cells that produce the disease-causing antibodies. CD20 is a marker that identifies some of the B-cells produce MG causing antibodies. The monoclonal antibody ("mab" as the end of drug name indicates that is a monoclonal antibody, which is produced by cells in tissue culture). Rituximab is a monoclonal antibody treatment that has been effective for people with AChR-MG and MuSK-MG. CD19 is expressed in a wider range of B cells than CD20, including on CD20-negative antibody-secreting cells. Inebilizumab is a monoclonal antibody that depletes CD19+ B cells. Here is a planned study on the clinical utility of Inebilizumab. The study will be a randomized, double-blind, placebo-controlled, parallel-group study. They plan to enroll 172 people with AChR-MG and 80 MuSK-MG patients. I look forward to future reports on the outcome of this study.

Two-Year Post-Marketing Safety Experience of Eculizumab in Patients with Generalized Myasthenia Gravis in the United States - S Muley, Phoenix, AZ
Eculizumab was approved in 2017 by the US FDA for the treatment of acetylcholine receptor antibody-positive generalized myasthenia gravis (gMG), based on data from a large phase 3 clinical trial. This study examined how the treatment has fared when used for people with MG who were not in a closely overseen clinical trial. The overall frequency of adverse events confirmed by the persons healthcare provider was less than one (0.73) event per person during a year of treatment. The frequency of adverse events was comparable to that found in clinical trials. About 1/3 adverse events were

considered serious. In addition to discussing this treatment with your healthcare provider, a person considering taking a treatment such as eculizumab should talk with providers who have experience administering the treatment and several people who received the treatment.

Muscle-Specific Tyrosine Kinase Chimeric Autoantibody Receptor T Cells (MuSK-Caart) As A Precision Cellular Immunotherapy for Antigen-Specific B Cell Depletion in MuSK Myasthenia Gravis (MG) - S Oh, Philadelphia, PA)
This study focused on a specific treatment strategy for MuSK-MG. T-cells can interact with B-cells, which produce antibodies in several ways. T-cells can modulate the actions of B-cells and T-cells are able to attack and kill B-cells. The technique used is to create a population of T-cell lymphocytes that are sensitized specifically to attack and destroy B-cells that produce antibodies to MuSK. The advantage of this strategy for depleting B-cells is that it specifically targets disease-inducing B-cells. The strategy of this study was based upon clinical success using chimeric antigen receptor T cells to treat B-cell mediated cancers. This was a successful laboratory study that could lead to clinical studies of the treatment strategy employed in this study.