Acute Flaccid Myelitis_Bacterium Braves

What is Acute Flaccid Myelitis?

- Rare, neurological condition that causes unexpected muscle weakness
- Typically seen in children
- Usually linked to inflammation in the grey matter of the spinal cord
- Caused by viral infections

Pathogenic Development:

- Result of an interaction within the immune system and a viral infection.
- Virus is given the capacity to reach the spinal cord and influence paralysis behavior.
- Target anterior horn cells within the grey matter of the spinal cord.
- Trigger an autoimmune response that destroys the cells. The motor neurons influenced by the virus will rapidly express failure in muscle expression
- Note that viruses are not the only method of condition expression.

Immune System Response

- Virus spreads through CNS and directly influences the myelin sheath of the motor neurons based on the virus.
- T-cells and macrophages invade the areas in the spinal cord.
- Virus uses non-structural proteins to block signal pathways
- (Type I Interferon Response)
- Replicates in respiratory tract and nervous system
- Virus spread via retrograde transport along nerve axons

How does this contribute?

- Infection triggers cytokines and chemokine release!
- Infiltration of macrophages and CD8+ T cells
- These cytolytic CD8+ T-cells kill infected neuron cell as well as surrounding uninfected cells.
- Studies in mice found that depleting CD8+ T cells reduced paralysis.

Diagnosis

1. MRI: -An MRI scan will determine the spinal cord lesion presence. -Butterfly shaped grey matter
2. Physical symptoms: Physical exams prevent misdiagnosis as the condition is closely related to Guillain Barre Syndrome
3. Lab work: Blood, urine as well as stool samples help determine viral cause. Used to rule out other conditions

Causative Agents

1. **Enterovirus D68:** Most common virus that triggers AFM. A rare polio-like condition that causes sudden weakness
2. **Flavivirus:** A family of enveloped positive strand RNA viruses that mainly affects

animals and humans

3. **Herpesvirus:** Large family of DNA virus that cause infections in certain diseases in animals and humans

Symptoms/Signs

- Along with muscle weakness, cold and flu-like illness
- Difficulty in swallowing results in slurred speech and tight airways
- Heavy eyelids and fatigue in facial muscles as well as the body are definitive signs of the condition

Treatment Methods

1. **Rehabilitation:** Intensive muscle and joint rehab is typically started early when diagnosed to prevent extreme weakness.
2. **IVIG:** Intravenous Immunoglobulin- uses antibodies from donors
3. **Surgical Approach:** Surgical approach with neuron transfer and plasma exchange.

History

- First cases showed up around 2014 in California and Utah.
- Colorado hospitals also began to see MRI scans similar to those of patients with Acute Flaccid Paralysis.
- Specific abnormalities in MRI scans determined the differentiation.
- In September of 2014, CDC became involved and all cases were reported with specimen testing the same year.
- The name was given the same year to distinguish transverse myelitis and Guillain Barre Syndrome.
- Epidemic pattern: significant outbreaks occurring every 2 years in the late summer and fall

Current Events

- The cases have remained low since 2018.
- There was an increase of the cases in 2022
- Only 8 confirmed cases this year in 2025.
- However, the reason for the decline is unknown
- Public health officials continues to monitor cases and advise clinicians to be aware on symptoms as the next spike can occur at anytime