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EPI-NEWS

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IN THIS ISSUE: ACUTE FLACCID MYELITIS (AFM)

TITLE: Acute Flaccid Myelitis

Introduction

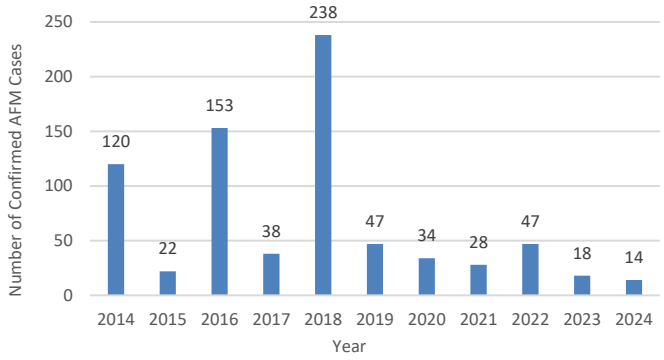
Acute flaccid myelitis (AFM) is a clinical syndrome that can cause acute respiratory failure and paralysis, and it can be characterized by acute onset of flaccid limbs and spinal cord lesions.[1,2] It is a disabling, polio-like condition that mainly affects children under the age of 18, and the clinical presentation can mimic several other neurological illnesses.[3] While uncommon, AFM is a known possible complication of infection with certain viruses such as enteroviruses, adenoviruses, flaviviruses (West Nile virus, Japanese encephalitis virus), and non-polio enteroviruses (EV-D68, EV-A71).[4] However, the exact cause of AFM is still unknown, which underscores the importance of timely reporting, testing, and surveillance.

Epidemiology

According to the CDC, there have been 759 confirmed cases of AFM in the United States since surveillance began in 2014.[3] Laboratory and surveillance data suggest that enteroviruses may be a common cause, as EV-D68 was associated with peaks during 2014, 2016, and 2018 [Fig. 1].[2] However, the number of AFM cases has remained low from 2019-2024, including when increases in EV-D68 have been observed.[3] While an increase in EV-D68 was again observed in 2022, it is still unclear why AFM cases did not increase or follow a similar pattern to the previous years when a rise in EV-D68 was observed.[3] Nonpharmaceutical interventions likely reduced the number of respiratory infections which may have led to a decreased incidence of AFM.[3]

Demographic and clinical characteristics among confirmed reported cases indicate the majority of cases are under the age of 18, with 94% in 2018, 92% in 2019, and 91% in 2020 for percentage of total cases observed in this age group.[3] Moreover, hospitalization of cases were 98% in 2018 and 2019, and 100% in 2020.[3] These statistics further highlight the urgency of admission because cases likely need advanced support.

Figure 1: Confirmed AFM Cases Reported to CDC 2014-2024



Source: Centers for Disease Control and Prevention. AFM Cases & Outbreaks https://www.cdc.gov/acute-flaccid-myelitis/cases/index.html

Peaks in 2014, 2016, and 2018 did not persist on a similar pattern in 2020 or 2022 [Fig. 1], and current trends do not indicate when to expect the next increase in cases in the United States, thus continuous monitoring is highly advised.[3]

Signs & Symptoms

Clinicians should be aware that symptoms can be subtle, and clinical presentation is similar to poliomyelitis.[3] Most patients with AFM have a prodromal illness manifesting with fever and respiratory symptoms (cough, rhinorrhea, pharyngitis, or asthma-like illness).[2] Gastrointestinal symptoms such as vomiting or diarrhea are less frequent.[2] Due to the rapid progression of illness, clinicians should admit patients immediately as patients could require assistance with breathing.[3] The severity of symptoms and limb weakness can range from mild to complete paralysis. Symptoms have been identified as follows:

Most severe symptoms:[1]

- Respiratory failure, requiring mechanical ventilation

- Serious neurologic complications like body temperature changes and blood pressure instability

Common symptoms:[1]

- Sudden onset of arm or leg weakness and is more proximal than distal
- Loss of muscle tone and reflexes in affected limbs

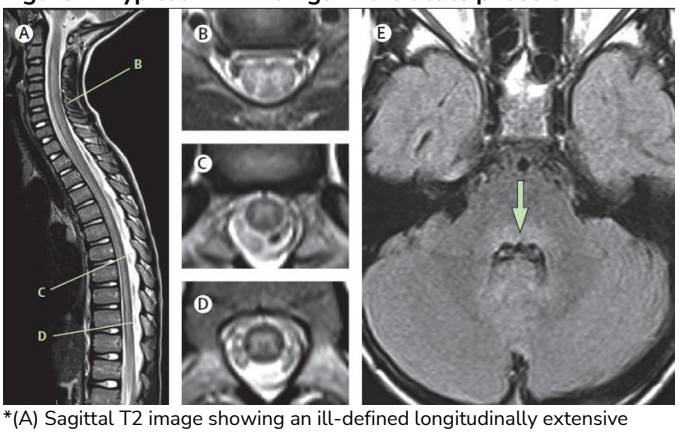
Less common symptoms:[1]

- Difficulty moving eyes or drooping eyelids
- Facial droop or weakness
- Difficulty with swallowing or slurred speech
- Pain in arms, legs, back, or neck

Testing, Diagnosis, and Treatment

Healthcare providers should identify the patient under investigation (PUI) for AFM with onset of limb weakness and an MRI showing spinal cord lesions in gray matter [Fig. 2].[5,6] The diagnosis of AFM can be informed by interpretation of the clinical features alongside findings of laboratory, neuroimaging, and electrophysiological tests.[6] It is advised that clinicians collect CSF, whole stool, respiratory and serum specimens as close to onset of limb weakness and freeze as soon as possible after being collected [Fig. 3].[5] Contact the local health department to coordinate specimen and information submission. Information should include neurology consultation notes, MRI images and the corresponding report.[5]

Figure 2: Typical MRI findings in the acute phase of AFM



*(A) Sagittal T2 image showing an ill-defined longitudinally extensive central/anterior spinal cord lesion. (B) Axial T2 image from C5–C6 shows hyperintensity of the entire grey matter of the spinal cord, with associated oedema and some surrounding white matter hyperintensity. (C) Axial T2 image from T7 shows asymmetric hyperintensity of the grey matter (right more than left). (D) Axial T2 image from T10 shows hyperintensity of the entire grey matter. (E) Axial FLAIR image at the level of the middle cerebellar peduncle demonstrates hyperintensity of the dorsal pons (arrow).

Source: The Lancet. Acute Flaccid Myelitis: cause, diagnosis, and management. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32723-9/fulltext

Figure 3: Specimen Collection for AFM

SAMPLE	AMOUNT	TUBE TYPE	PROCESSING	STORAGE	SHIPPING
CSF	0.15 mL, 0.5-2 mL preferred (collect at same time or within 24hrs of serum if feasible)	Cryovial	Spun and CSF removed to cryovial	Freeze at ≤-20°C	Frozen on dry ice.
Respiratory Nasopharyngeal (NP)/Oropharangeal (OP) swab	0.5 mL, 1 mL preferred (minimum amount)	N/A	Store in vial transport medium	Freeze at ≤-20°C	Frozen on dry ice.
Serum	0.5 mL, 1 mL preferred (collect at same time or within 24hrs of CSF if feasible)	Tiger/red top for collection; separate tube for shipping	Spun and serum aliquot removed to separate tube	Freeze at ≤-20°C	Frozen on dry ice.
Stool	1 gram, 10 – 20 grams preferred (2 samples collected 24hrs apart)	Sterile container	N/A	Freeze at ≤-20°C	Frozen on dry ice. Rectal swabs should not be sent in place of stool.
Please, always include whole stool specimens to help identify pathogens and rule out poliovirus.					

Source: Centers for Disease Control and Prevention https://www.cdc.gov/acute-flaccid-myelitis/downloads/job-aid-for-clinicians-508.pdf

Surveillance, laboratory testing, and subtyping are critical to better understand the likely causes of AFM.

Reporting

The list of reportable communicable diseases and reporting forms can be found at: **http://tinyurl.com/WashoeDiseaseReporting**

Report communicable diseases to Northern Nevada Public Health. To report a communicable disease, please call 775-328-2447 or fax your report to the NNPH at 775-328-3764.

Acknowledgement

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