Acute Onset Ataxia and Dysmetria in Adolescent Patient with Cerebellar Lesion

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Case Presentation

- A 16 year old female patient with recent COVID-19 infection presented to outside hospital with 1 week and 3 day histories of headache and L sided weakness and discoordination respectively
- Head CT showed focal hypodense cerebellar lesion in L hemisphere*, unremarkable MRA and labs, transferred to Children's Hospital ED with concern of stroke
- On exam, she had intact cranial nerves and sensation, reduced muscle strength with stuttering effort on L extremities, LLE crossed adductor sign, and prominent dysmetria on left side
- MRI Brain wo contrast at CHNOLA showed hyperintense well-circumscribed peripherally enhancing lesion of the left superior cerebellum adjacent to the vermis and fourth ventricle with minimalmass effect on fourth ventricle
- Patient remained afebrile and well besides mild fatigue. CSF showed increased lymphocytes.
- Patient improved on intravenous steroids after three days with mild LE weakness and dysmetria remaining.
- After patients' departure, her CSF tested positive for oligoclonal bands, concerning for inflammatory disease
- Patient completed outpatient steroid taper, weakness and dysmetria greatly improved, and is following outpatient with child neurology team

* Radiologic interpretation and report are inconsistent with description of lesion as poorly vs. well circumscribed.

Approach to Acute Ataxia and Dysmetria

- Initial workup includes a thorough H and PE, brain imaging, angiography (suspected stroke), CBC, CMP, UDS, and LP in cases suspicious for infectious or inflammatory cases [1, 2].
- Neoplastic, infectious, CV causes were unlikely due to lack of systemic systems, incongruent imaging, unremarkable labs, lack of fever or other symptoms, leading to a conclusion of post-infectious/inflammatory etiology
- Determining exact etiology of post-infectious or inflammatory cause is not necessary clinically as high-dose steroids are generally recommended for treatment

Discussion

- Etiology is thus more helpful to determine progression of disease and any possibly future risks, such as recurrence
- As patient had COVID-19 infection, post-infectious neurologic sequalae (ADEM, cerebellitis) were considered
- ADEM and cerebellitis has been linked to COVID-19, though often presents with nausea, vomiting, and multifocal or bilateral, diffuse cerebellar lesions respectively [6, 7]
- Viral infections such as COVID-19 have also been shown to generate clinically isolated neurological syndromes (CIS) such as this patient's, which can then recur and lead to further inflammatory disorder diagnoses (8)

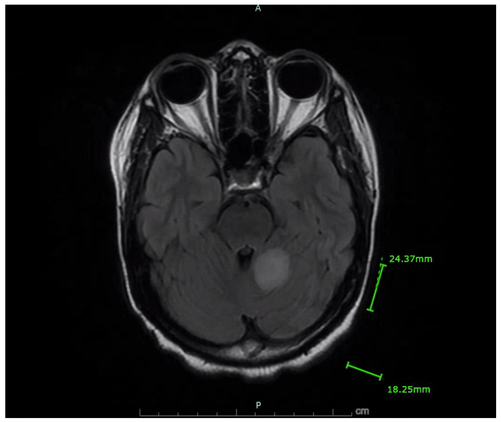

Figure 1: MRI Brain wo contrast, T2 FLAIR prior to treatment

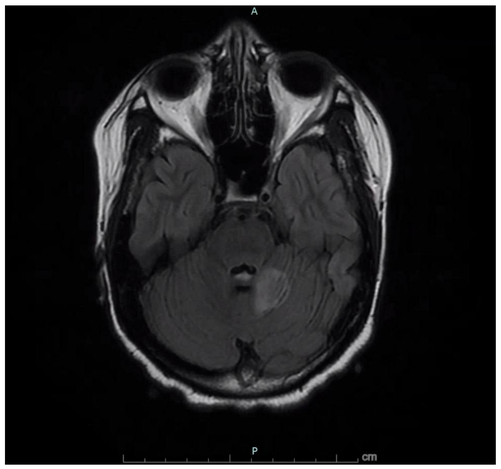

Figure 2: MRI Brain wo contrast, T2 FLAIR after 3 days of treatment

Discussion Continued

- Patient was negative for several markers of inflammatory disorders such as MOG-IgG, AQP-4-IgG, IL-2, ACE, but was positive for >2 oligoclonal bands in CSF
- Presence of oligoclonal bands in CSF in patient with a CIS is concerning for recurrence of demyelinating lesions and possibly a future multiple sclerosis diagnosis [9, 10]
- Though rare, demyelinating lesions such as in multiple sclerosis can cause mass effect that eventually subsides with treatment such as this lesion [10]
- Furthermore, COVID-19 infections have been temporally linked to MS onset and exacerbation warrants outpatient monitoring and patient education on both MS and other inflammatory disorders [11,12].

Conclusion

- This case highlights both the diversity of etiologies causing acute ataxia and dysmetria in children and the diversity of post-infectious neurologic sequalae causing ataxia and dysmetria
- Additionally, it proves that although inflammatory or post-infectious causes are often treated non-specifically, further exploration of etiology can provide insight into disease prognosis and risk of other inflammatory disorders

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