Reference of the Week


Premise/Methods: 1. In adults with COVID-19 thrombogenic reactions lead to a high incidence of ischemic stroke, intracerebral hemorrhage, and other CNS imaging findings. 2. Case reports of CNS involvement related to SARS-CoV-2 in children have emerged but the prevalence and pattern of CNS involvement is unknown. 3. The American Society of Pediatric Neuroradiology initiated a call for cases to better understand the neuroimaging manifestations of COVID-19 in the pediatric population. 4. Strict criteria for case acceptance and review by multiple individuals from neurology, neuroradiology, and infectious disease were performed to assemble the collection described at length in this publication.

Findings: 1. 32 countries submitted 429 cases and 38 from 10 countries met the strict criteria required for inclusion revealing that acute-phase and delayed-phase SARS-CoV-2 infection are related to CNS abnormalities in children. 2. Cases were grouped into four categories: acute COVID-19 (category 1; 12 [32%] children); asymptomatic acute or subacute COVID-19 (category 2; eight [21%] children); MIS-C (category 3; 11 [29%] children); or indeterminate (category 4; seven [18%] children). 3. In all categories the most prevalent neuroimaging finding was an ADEM-like (autoimmune manifestations) with patchy T2 hyperintensity with or without abnormal enhancement and diffusion restriction. 4. Other imaging manifestations included: neuritis, cranial nerve neuritis, myelitis, myositis, thrombo-ischemic disease, and more devastating changes in 4 patients with apparent co-infections.

Examples:

- 13 year old boy with ADEM-like lesions with confluent areas of high signal in the subcortical white matter with associated mass effect.
- 5 year old boy with multiple cranial nerve deficits and marked enhancement of the left 12th cranial nerve.
- 3 year old girl presenting with respiratory failure, confusion, limb weakness, and vomiting. T1 post-contrast enhancement suggesting ongoing active disease.
- 15 year old pregnant girl with fever, high blood pressure, seizures, and pneumonia. 7 days after presentation had small infarcts and a larger occipital infarct.

This publication includes multiple images of children with serious CNS involvement related to SARS-CoV-2 and although many of the children did well others died or had neurologic residua.

Other References:


Premise/Methods: 1. Both peripheral and central nervous system involvement with SARS-CoV-2 was described in adults from the earliest days of the pandemic. 2. Across case series published between March and August 14, 2020, between 6% and 58% of children and adolescents hospitalized with MIS-C developed central and/or peripheral nervous system involvement. 3. Using the
Overcoming COVID-19 US public health surveillance registry of children and adolescents (61 hospitals) hospitalized with COVID-19–related complications, we aimed to describe the type and severity of neurologic involvement and documented hospital outcomes.

**Findings:**

1. 1,695 patients involvement from SARS-CoV-2 are described: median age, 9.1 years; Hispanic/Latino, 638 or 38%; non-Hispanic Black, 442 or 26%. 2. The frequencies of previously healthy patients (195 [53%] vs 723 [54%]) and patients meeting MIS-C criteria (126 [35%] vs 490 [37%]) were similar. 3. Patients with life-threatening neurologic conditions including severe encephalopathy (n = 15; 5 with white-matter hyper-intensities and splenial lesions), acute ischemic or hemorrhagic stroke (n = 12), acute CNS infection/ADEM (n = 8), acute fulminant cerebral edema (n = 4), and GBS (n = 4): 43 of 365 patients (12%); 20 of 43 patients (47%) had MIS-C; 3 of 43 patients (7%) had an underlying neurologic disorder; 11 of 43 patients (26%) died; and 17 of 43 patients (40%) were discharged with new neurologic deficits. 4. 22% of patients with either SARS-CoV-2 or MIS-C had neurologic involvement and most patients had transient neurologic changes that resolved by the time of discharge, but as noted above devastating neurologic involvement can occur.


**Premise/Methods:**

1. The impact of COVID-19 on adults within marginalized communities and people of color is well documented but little is known about the impact on children. 2. A review of the scientific literature on implicit bias in pediatric health care was integrated with a review of articles from peer-reviewed journals and news media on COVID-19 and health disparities.

**Findings:**

1. Rates of pediatric HCWs implicit bias have been documented as similar to that of the general population and can negatively impact clinical decision-making and outcomes for marginalized pediatric populations. 2. Pediatric implicit bias occurs in multiple domains of the healthcare sector: individual encounter, organizational, medical educational, and research. 3. **Call to action:** 1) individual encounters- recognize that the higher clinical and personal demands of a pandemic results in “fast thinking” and stereotyping; manage implicit bias through self-awareness (Implicit Associations Test) and emotional regulation training; and recognize that implicit bias is difficult to change and focus on “one team approach”. 2) organizational- invest in QI methods that continually provide feedback regarding clinical interactions with youth and families; encourage patient advocacy (family advisory councils); connect with communities to reduce barriers to care; and openly communicate about bias, microaggressions and eliminate fear of retaliation. 3) medical educational- revamp medical education to integrate perspective taking and empathy in all clinical rotations; and provide annual hospital-wide implicit bias training for all employees. 4) research- operational definitions and continuous feedback from participants on methodology, communication, and outcomes that may be effected by bias; and incentivize research on implicit bias in the pediatric setting through improved funding mechanisms during the pandemic.

*Consider administering the Implicit Associations Test as a means to determine what is subconsciously effecting our encounters with patients:* [https://implicit.harvard.edu/implicit/index.jsp](https://implicit.harvard.edu/implicit/index.jsp)

SEE THE ARTICLE CABINET ON THE S: DRIVE, “COVID-19 ARTICLE RESOURCE CABINET” FOR CHILDREN’S FULL COLLECTION