March 19, 2020 COVID-19 Update

Compiled by Katherine Salciccioli MD

Contents include:

Brief summary:

- Recent ACC guidance related to cardiac medications, laboratory tests in COVID-19
- Role of Lopinavir/Ritonavir
- Aerosol/Surface Stability of SARS-CoV-2 (NEJM)

Articles reviewed:

- Detection of Covid-19 in Children in Early January 2020 in Wuhan China (NEJM)
- Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study (Lancet)

-------------------------------

HFSA/ACC/AHA Joint Statement on use of RAAS Antagonists in COVID-19

- Concern for worsening of COVID-19 given upregulation of ACE2 receptors with use
  - ACE2 receptor is cellular binding site for SARS-CoV-2
- As discussed in the ACC-CCA webinar, no role to start or stop ACE-I/ARB outside of normal clinical practice


No role for statins in acute therapy of COVID-19 at this time

- The anti-inflammatory role of statins has previously raised q’s about their role in the ICU setting
- First, are cardiovascular and general outcomes improved with the continuation of statin therapy among those already on statin therapy?
  - Yes, in observational studies pts admitted with viral or bacterial PNA had fewer CV complications while admitted
- Second, does de novo initiation of statin therapy have a role in preventing complications from viral illnesses including COVID-19?
  - No. There are conflicting RCTs on the use of statin therapy in ventilator-associated PNA, so no data to support initiation of statins in patients ill with COVID-19
- Third, is there any harm associated with statin therapy use in acute viral illnesses?
  - Not in the absence of rhabdomyolysis


Monitoring of troponin and BNP levels in COVID-19

- Troponin elevation in COVID-19?
  - Often elevated in severe respiratory distress
  - May be more elevated with COVID-19 due to elevated ACE2 binding sites on cardiomyocytes – may help explain the higher levels of myocarditis and acute ventricular dysfunction being seen with the disease
  - Although trends are not yet clear, hs-troponin was significantly elevated in more than half of patients who died in one large Chinese study
• BNP elevation in COVID-19?
  o Often elevated in states of myocardial stress even in the absence of HF (ie acute respiratory distress)
  o Often associated with poor outcomes in ARDS
  o Chinese studies have shown frequently elevated levels with uncertain significance – clinical correlation with s/sx of heart failure is warranted

• What should be done when troponin and/or BNP levels are abnormal?
  o Given the frequent elevation of both tests, ACC recommends only testing when there is clinical concern for acute MI or heart failure
  o Echo and angiography should be reserved for patients where these procedures would be expected to meaningfully affect their outcome


Role of Lopinavir/Ritonavir (NEJM March 18, 2020)

• Randomized/controlled trial of 199 patients total. No benefit of lopinavir/ritonavir in time to improvement or mortality
• DOI: 10.1056/NEJMoa2001282

Aerosol/Surface Stability of SARS-CoV-2 (NEJM March 16, 2020)

• Appears to be stable in aerosol up to 3 hours
• Appears to be stable on surfaces up to 72 hours, longer on stainless steel and plastic than cardboard
• DOI: 10.1056/NEJMc2004973
Study Question:
Were children infected early in the Covid-19 epidemic in China? What is the spectrum of illness seen in children infected with Covid-19?

Methods:
Retrospective cohort study of children hospitalized in Wuhan, China for respiratory infections during a one week period (1/7-1/15/20).

Results:
- Of 366 children admitted with respiratory symptoms, 6 (1.6%) were found to have Covid-19
- All children were previously healthy; no families had direct contact with Huanan Seafood Market
- Lymphocyte count was low in all 6 children
- 4/6 had typical viral PNA pattern on chest imaging
- 1/6 required ICU admission
- All treated with antivirals, antibiotics, supportive care
- All patients recovered with mean hospitalization of 7.5 days (range 5-13)

Conclusions:
Children were infected with Covid-19 early in the Chinese epidemic. The studied patients were previously healthy and had moderate to severe symptoms, with one requiring ICU care. All recovered.

Perspective:
Overall, this is a small study looking at Covid-19 illness in children who were sick enough to require hospitalization. The Covid-19 patients made up a very small percentage of the children admitted with respiratory symptoms. All 6 children, previously healthy, recovered and survived to hospital discharge. Few details are published as this was a research letter. When taken in context with the Pediatrics article reviewed yesterday 3/18/20, this raises questions about how many of the ‘suspected’ cases truly had Covid-19 and about how the study’s findings regarding the entire study population, not just those with proven Covid-19, should be interpreted.

Summary Written by:
Katherine B. Salciccoli MD

Topic Areas: Pediatrics, COVID-19
**Article Title:** Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study

**Authors:** Zhou F, Yu T, Fan G et al


**Study Question:**
What is the clinical course of patients with COVID-19? What are the risk factors for mortality?

**Methods:**
Retrospective, multicenter cohort study of all inpatient adults ≥18yo with lab-confirmed COVID-19. EMR data used to compare survivors and non-survivors using univariable and multivariable logistic regression to identify RFs for in-hospital death.

**Results:**
- 191 patients were included for hospitalizations occurring between 12/1/2019 and 1/31/2020
- SARS-CoV-2 RNA persisted for median 20 days with longest recorded 37 days in survivors (n=137, 71.7%) or through death (n=54, 28.3%)
- Nearly half of patients had at least one comorbidity, including HTN (30%), DM (19%), and CAD (8%)
- Older age, organ failure, and elevated D-dimer >1 were associated with increased mortality on multivariable analysis.

**Conclusions:**
The identified RFs (age, organ failure, elevated D-dimer) may help identify patients with poor prognosis early in their course. Prolonged viral shedding supports isolation of infected patients.

**Perspective:**
This appears to have been a very ill population, with mortality rate >25% which is much higher than other nationally or internationally published data, so it’s applicability should be carefully considered. After a relatively benign early course, respiratory distress, sepsis, and organ failure usually occur a week or more into the infection. Older patients with underlying organ dysfunction are at higher risk a priori, and elevated D-dimer and elevated organ failure scores identify patients at higher risk of in-hospital death. Individual comorbidities such as HTN were not significant on multivariable analysis, but the high incidence in the ill population raises questions about the role these underlying diseases and/or their therapies are playing in the COVID-19 disease process. Prolonged viral shedding suggests that prolonged isolation is needed to help stop spread of the disease – it will be important to know if this holds true for asymptomatic or minimally symptomatic outpatients as well.

**Summary Written By:** Katherine B. Salciccioli MD

**Topic Areas:** COVID-19, outcomes, risk factors, clinical course