March 24, 2020 COVID-19 Update

Compiled by Katherine Salciccioli MD

Contents include:

Brief summary:

- ACC recommendations on testing/procedures to defer during active COVID-19 pandemic

Articles reviewed:

- Impact of Coronavirus Disease 2019 (COVID-19) Outbreak on ST-Segment-Elevation Myocardial Infarction Care in Hong Kong, China (Circulation Cardiovascular Quality and Outcomes)
- Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children (Journal of Infection)

ACC releases list of suggested visits/testing/procedures to defer during the pandemic

- https://www.acc.org/latest-in-cardiology/articles/2020/03/24/09/42/general-guidance-on-deferring-non-urgent-cv-testing-and-procedures-during-the-covid-19-pandemic

Article Title:	Impact of Coronavirus Disease 2019 (COVID-19) Outbreak on ST-Segment-Elevation Myocardial Infarction Care in Hong Kong, China
Authors:	Tam CF, Cheung K, Lam S et al
Full Citation:	Tam CF, Cheung K, Lam S et al. (2020). Impact of Coronavirus Disease 2019 (COVID-19) Outbreak on ST-Segment-Elevation Myocardial Infarction Care in Hong Kong, China. *Circ Cardiovasc Qual Outcomes*. Published online 18 March 2020 at www.ahajournals.org

Study Question:

How has the COVID-19 outbreak affected STEMI care in Hong Kong?

Methods:

Door-to-device (balloon) time and symptom-onset-to-medical-contact time for out-of-hospital STEMI with known symptom onset at a single center before and after COVID infection control protocol implementation were compared – 1/25/20-2/10/20 vs 2/1/18-1/31/19 (control).

Results:

- N=7 patients from the COVID-19 period (none of whom had COVID-19 illness) were compared to n-108 controls
- All time components were increased in the COVID-19 period, with the largest increase being from symptom onset to first medical contact

Table. Time Components of STEMI Care Before and After COVID-19 Outbreak

	Since Late January 2020 (N=7; 6 out of 7 Presented During Office Hours)	2018–2019, During Office Hours (N=48)	2018–2019, During Non–Office Hours (N=60)
Symptom onset to first medical contact	318 (75–458)	82.5 (32.5–195)	91.5 (35.25–232.75)
Door to device	110 (93–142)	84.5 (65.25–109.75)	129 (106–159)
Cath lab arrival to device	33 (21–37)	20.5 (16–27.75)	24 (18–30)

Results presented as median (interquartile range) in minutes. Office hours: 8 AM to 8 PM, weekdays excluding public holiday. COVID-19 indicates coronavirus disease 2019; and STEMI, ST-segment–elevation myocardial infarction.

Conclusions:

- Cath lab intervention for STEMI was delayed for patients presenting in the COVID-19 era, with delays occurring both from symptom onset to first medical care, from door to device, and from cath lab arrival to device
- Patients may be less likely to seek care when symptoms present due to strong desire to avoid hospitals
- Infection control procedures at hospitals likely delay care and procedures for patients who are not infected
- Community outbreaks of infections like COVID-19 stress other parts of the healthcare system

Perspective:

This small study, presented as a research letter, shows early evidence that patients may be less likely to seek care in a timely fashion due to concerns about presenting to a hospital. Transportation issues, such as availability of ambulances, was not addressed. There were also delays in evaluation after patients arrived at the hospital, likely due to concern for possible infection control issues in the ER as well as the cath lab. Careful consideration to this type of collateral damage, especially in time-sensitive care like STEMI or stroke, is needed moving forward to help examine our care delivery for non-COVID-19 care in the current COVID-19 era. Balancing timely care with risks of nosocomial spread will be critical.

Summary Written by:

Katherine B. Salciccioli MD

Topic Areas: COVID-19, STEMI, healthcare systems

Article Title:	Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children
Authors:	Liu H, Liu F, Li J et al.
Full Citation:	Liu H, Liu F, Li J et al. (2020). Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children. *J Infection*. In press. Available online at www.elsevier.com/locate.jinf

Study Question:

What are the key clinical and CT features of COVID-19 pneumonia in pregnant women and children? Are they similar to those reported in the general population?

Methods:

Retrospective chart review of 60 patients with diagnosed or presumed COVID-PNA who underwent CT scan at a single maternal/child health care center and one related healthcare center in Wuhan over a one month period from 12/2019-1/2020. CT scans were independently reviewed by two radiologists with a third available if a dispute arose.

Results:

- A total of 59 charts were reviewed – 14 non-pregnant adults, 16 lab-confirmed COVID+ pregnant women, 25 clinically-suspected COVID+ pregnant women, 4 lab-confirmed COVID+ children
- Pregnant women were less likely to present with fever ($p<0.001$), more likely to present with leukocytosis ($p=0.01$)
- Pregnant and non-pregnant adults had a predominance of peripheral lesion distribution, but pregnant women were more likely to have pure consolidation or mixed ground glass (GG)/consolidation (vs mainly GG in non-pregnant)
- Given the small number of children reviewed, clinical characteristics and CT findings were described but not compared to the other groups – the group had heterogenous clinical and CT findings

Table 2
Clinical and chest CT imaging characteristics of 4 children with laboratory-confirmed COVID-19 pneumonia.

Findings	Case 1/Case2/Case3/Case4
Clinical characteristics	
Gender	
Male/Female	Female/Male/Female/Male
Age	5 years/11 months/9 years/2 months
Exposure to confirmed or suspected patient	Yes/Yes/Yes/Yes
Initial Symptoms	
Fever	Yes/Yes/Yes/No
Cough	Yes/Yes/No/Yes
Fatigue	Yes/No/No/No
Other pathogen infection	No/No/No/Yes
Laboratory test	
Blood leukocyte count	Decreased/Normal/Normal/Normal
Neutrophil ratio	Decreased/Decreased/Normal/Normal
Lymphocyte count	Increased/Increased/Normal/Normal
Lymphocyte ratio	Increased/Increased/Decreased/Normal
C-reactive protein	Normal/Normal/Normal/Increased
CT findings	Normal/Single consolidation/Single pure GGO/Multiple consolidations
Other findings	
Pleural effusion	No/No/No/Yes
Lymphadenopathy	No/No/No/No

GGO, ground-glass opacity.

Conclusions:

- Pregnant women are more likely to have atypical clinical presentations and initial CT scan findings
- Children have significant variety in presentation and CT findings, but all had known positive COVID+ contacts

Perspective:

Overall, this was a small study that overall suggests there are likely differences in presentation and CT findings (as a correlate for parenchymal lung manifestations) in pregnant women compared to non-pregnant 'controls.' This is consistent with the mounting evidence surrounding the key role the immune system plays in the clinical syndrome of COVID-19, as pregnancy is a relatively immune-suppressed state. The data on children is interesting, but with n=4 difficult to extrapolate. This type of data is likely to be commonly presented as the pandemic unfolds, but is limited to mainly suggesting signals and trends vs presenting definitive conclusions. Overall, this study poses questions that could be addressed in larger multicenter reviews.

Summary Written by:

Katherine B. Salciccioli MD

Topic Areas: COVID-19, pregnancy, children