Acute Stroke and the COVID-19 Pandemic:

Lessons From the New York City Surge

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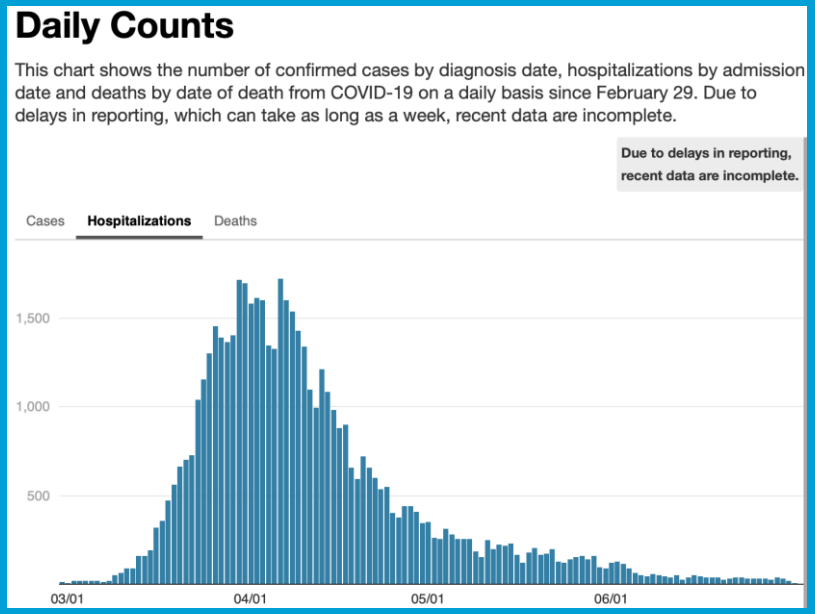
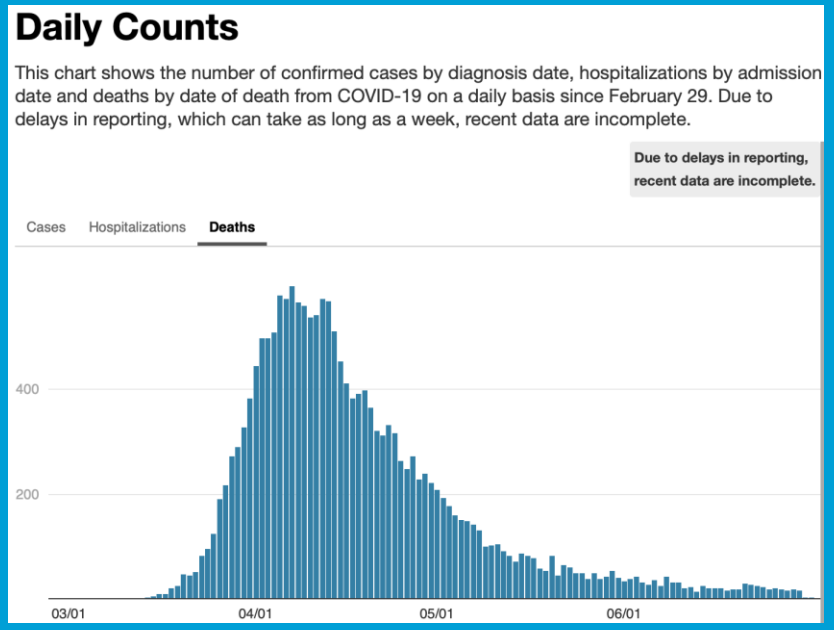
New York City COVID-19 Surge: March-April, 2020

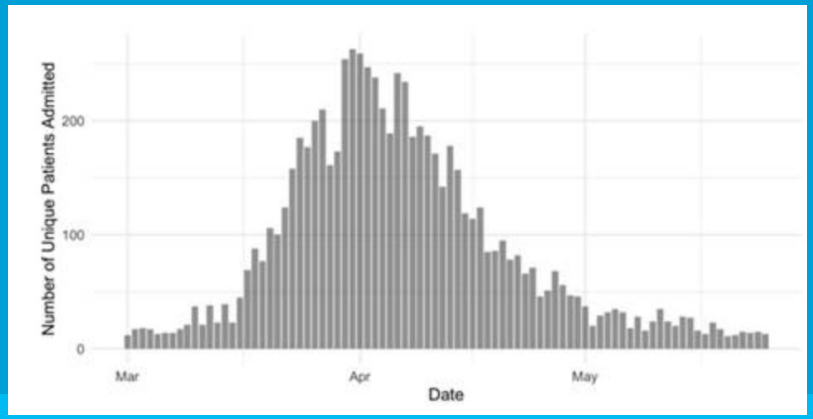
Daily NYC Hospitalizations



Daily NYC Deaths



Daily Mount Sinai Health System Hospitalizations



https://www1.nyc.gov/site/doh/covid/covid-19-data.page

Early Observations

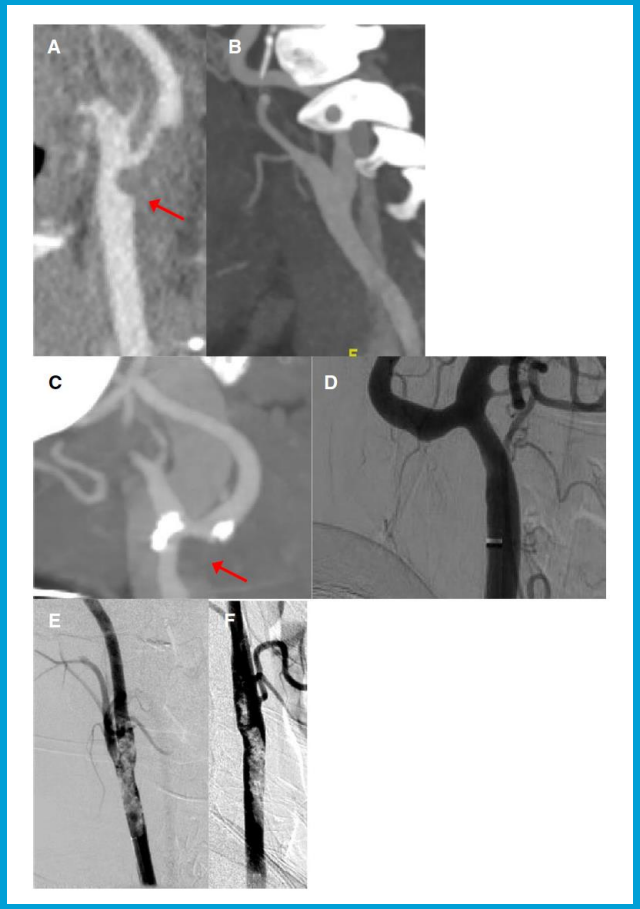
The NEW ENGLAND JOURNAL of MEDICINE

CORRESPONDENCE

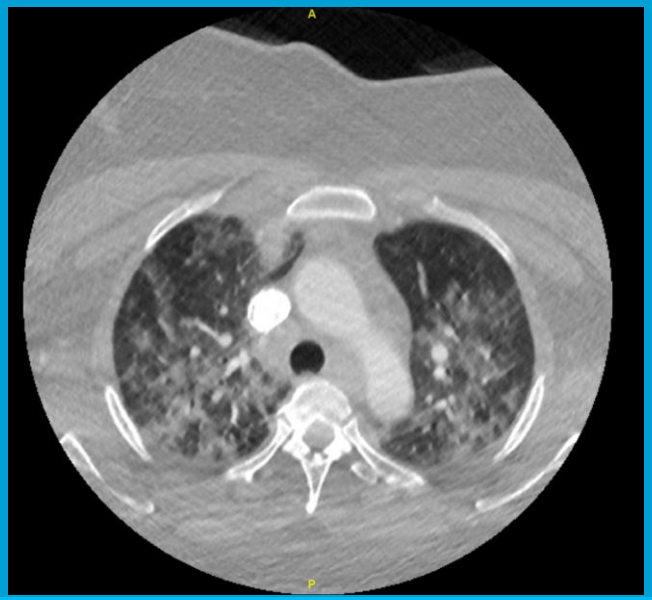
COVID-19 CASES

To rapidly communicate information on the global clinical effort against Covid-19, the Journal *has initiated a series of case reports that offer important teaching points or novel findings. The case reports should be viewed as observations rather than as recommendations for evaluation or treatment. In the interest of timeliness, these reports are evaluated by in-house editors, with peer review reserved for key points as needed.*

Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young



Poor

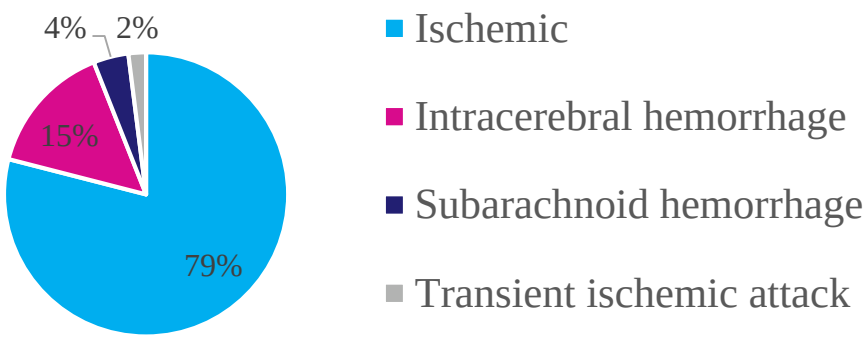


TJ Oxley et al. N Engl J Med 2020. DOI: 10.1056/NEJMc2009787

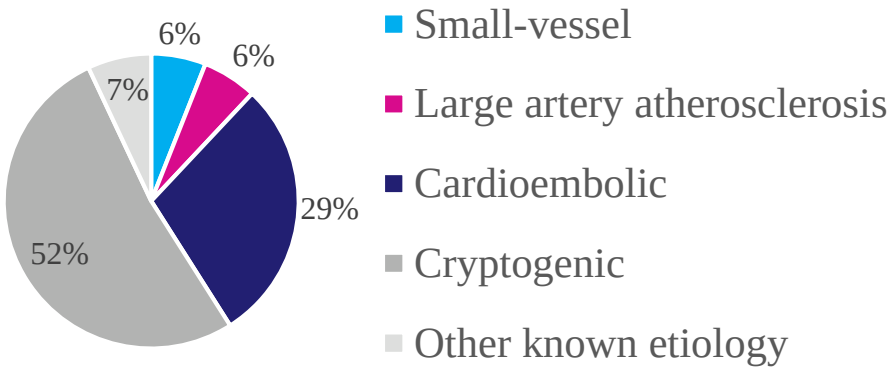
MG Fara et al. Journal of Thrombosis and Haemostasis, 2020, DOI: 10.1111/jth.14938

105 Hospitalized Stroke COVID-19 Patients: March-April, 2020

Stroke Subtypes
(n=105)



Ischemic Stroke Mechanisms
(n=87)



Mean age 66 (SD 14), ~60% male

Mild elevations in coagulation parameters and peak troponin levels

Significant elevations in inflammatory markers (D-dimer, ESR, CRP, LDH, Fibrinogen, IL-6)

High requirements for ICU care and mechanical ventilation

Frequent neurologic worsening

>30%: in-hospital death

>45%: large artery occlusion

8%: treated with intravenous alteplase

13%: treated with mechanical thrombectomy

Shift In Treatment Paradigm

Early anticoagulation for non occlusive thrombi

→

Hospital anticoagulation algorithm based on disease severity

(Heparin→ Apixaban or Rivaroxaban)

→

3 months of anticoagulation for ischemic stroke patients with current/recent COVID-19 infection

Management Challenges

1. Completion of full workup in pandemic conditions
2. Timing and duration of anticoagulation
3. Medical comorbidities
4. Communication with patients/families
5. Neurologic examinations in PPE and on COVID-19 units staffed by redeployed healthcare providers
6. Counseling on future stroke risk

Key Lessons

1. COVID-19 related stroke is severe and associated with high medical comorbidity and mortality
2. Emergent vessel imaging to identify large vessel involvement is essential
3. Protocols must continue to prioritize acute management with tPA and thrombectomy
3. The mechanism of COVID-19 stroke seems different from typical etiologic classification
4. Treatment with early anticoagulation may prevent recurrent ischemic stroke