

Pituitary Apoplexy in the setting of COVID-19 Infection

LT Brent Buccine, LT Michael LaRoy and LCDR Morgan McGuire

Emergency Department, Naval Medical Center San Diego, San Diego, CA

Introduction

Coronavirus disease 2019 (COVID-19) is primarily a febrile respiratory illness declared a pandemic on March 11, 2020. The pathophysiology of the virus is complex and remains under investigation. As a result of this, new manifestations of this disease process continue to be discovered. We submit the case of an otherwise healthy male presenting with fever and headache, found to have pituitary apoplexy in the setting of COVID-19 infection.

Case Description

History of Present Illness

35 year-old previously healthy male who presented to the ED for three days of sharp retro-orbital headache and neck stiffness. He states that he began to have upper respiratory tract infection symptoms four days prior to arrival, including fevers, loss of smell and taste, increased sputum production and non-bloody diarrhea. No visual changes, diplopia, pain with extraocular movements, focal weakness, or sensory changes.

Vitals

Temp 101.1°F BP 142/89 HR 117 RR 20 O2 sat 95%

Pertinent Physical Exam

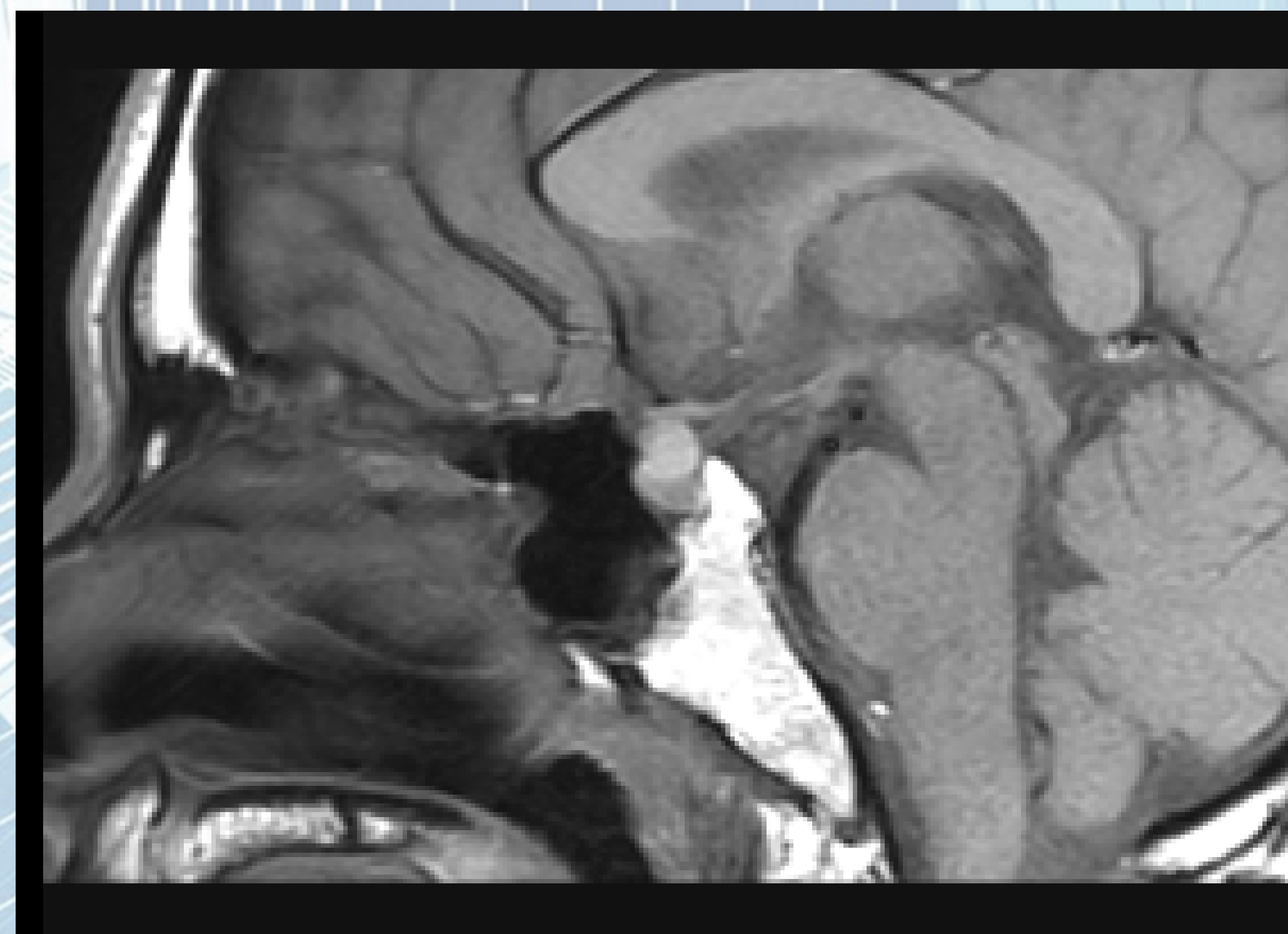
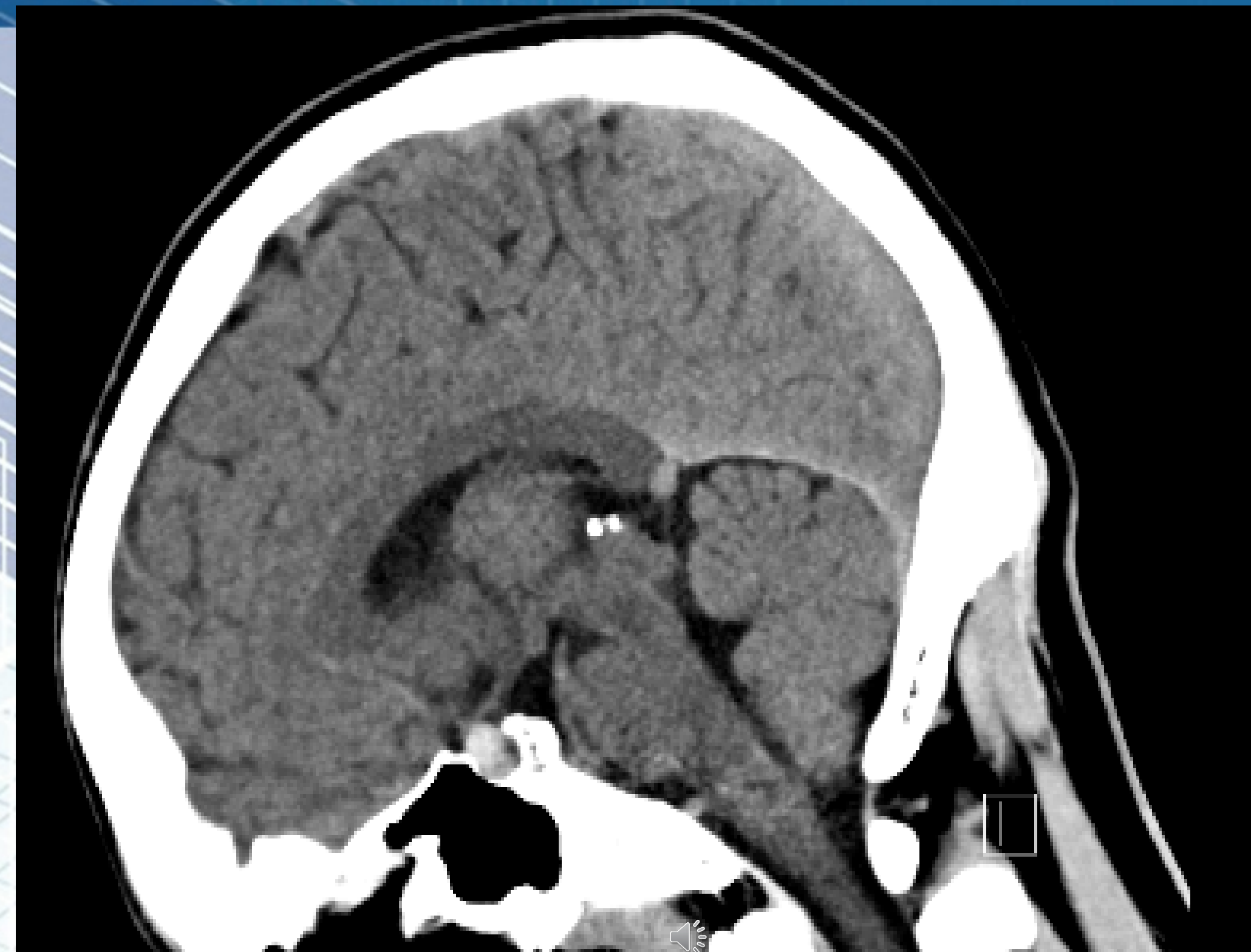
GEN: Well-developed, well nourished, diaphoretic male
NEURO: Normal neurological examination. No visual field deficits.

Pertinent Labs

CBC normal
Elevated inflammatory markers (ESR – 51, CRP – 3.8)
LFTs in a hepatocellular injury pattern (ALT 293, AST 141, LDH 318)
COVID positive via PCR

Hospital Course

Neurosurgery was consulted and the patient was admitted to the ICU. Repeat head CT revealed slight worsening of the bleed with MRI later confirming hemorrhagic pituitary microadenoma consistent with pituitary apoplexy. During hospitalization, the patient developed pancytopenia, which has been consistent with COVID-19 infection [2]. Hormone testing was unrevealing the remainder of his hospitalization was unremarkable and was discharged with endocrinology follow up.



Pituitary apoplexy on initial CT (top picture) shows a small hyperdense blood collection within the sella measuring 7 mm x 8 mm x 8 mm without mass effect on the optic chiasm. There is mild upward deflection of the pituitary infundibulum. T1 hyperintense 7.5 mm pituitary mass with suprasellar extension mildly compressing the optic chiasm (bottom picture)

Discussion

Pituitary apoplexy is a rare neurological and endocrine emergency due to hemorrhage or infarction of the pituitary gland. Risk factors have traditionally included pregnancy and the post-partum period, trauma, hypertension and coagulopathies. Presentation is usually in the 5th to 6th decade of life [1,2]. None of which were present in our patient.

Typical COVID-19 infections have come to be associated with lung injury as well as proinflammatory/thrombotic states such as PE [5]. To date, there are few reports of spontaneous bleeding in the setting of COVID-19, or neurological manifestations although myelitis and acute necrotizing hemorrhagic encephalopathy have both been reported [3,4].

COVID-19 in the setting of pituitary apoplexy makes the management more complicated. Patients with COVID-19 who complain of headache are likely to appear septic and have concerning presentations for meningitis. Furthermore, if the patient is already experiencing hypopituitarism, it would be easy to attribute hypotension to severe sepsis and septic shock. This could lead emergency providers to miss the potential brain hemorrhage or the adrenal crisis, which requires additional management considerations.

Conclusions

This case demonstrates a very uncommon though potentially lethal variation on the presentation of COVID-19 infections. While headache is not an uncommon presentation in acute viral infections this case presents a new concern that may warrant neuraxial imaging of patients suspected of having COVID-19 infections in the setting of headache. COVID-19 infections raise concern for CNS involvement and while typical practice may allow for an LP without CT imaging given a normal neurologic exam this case demonstrates potentially missed alternative diagnoses that require specialized care. Further research into the prevalence of CNS hemorrhage and COVID-19 infection will further inform this discussion. When encountering a patient suspected of COVID-19 with headache in the emergency department consideration for CNS hemorrhage should occur.

References

1. Ahmed M, Rifai A, Al-Jurf M, Akhtar M, Woodhouse N. Classical pituitary apoplexy presentation and a follow-up of 13 patients. *Horm Res.* 1989;31(3):125-32. doi: 10.1159/000181101. PMID: 2744725.
2. Veldhuis JD, Hammond JM. Endocrine function after spontaneous infarction of the human pituitary: report, review, and reappraisal. *Endocr Rev.* 1980 Winter;1(1):100-7. doi: 10.1210/edrv-1-1-100. PMID: 6785084.
3. Long A, Grimaldo F. Spontaneous hemopneumothorax in a patient with COVID-19: A case report [published online ahead of print, 2020 Jul 30]. *Am J Emerg Med.* 2020;S0735-6757(20)30660-4. doi:10.1016/j.ajem.2020.07.065
4. Jasti M, Nalleballe K, Dandu V, Onteddu S. A review of pathophysiology and neuropsychiatric manifestations of COVID-19. *J Neurol.* 2020 Jun 3:1-6. doi: 10.1007/s00415-020-09950-w. Epub ahead of print. PMID: 32494854; PMCID: PMC7268182.