An Unlikely Source of Shock

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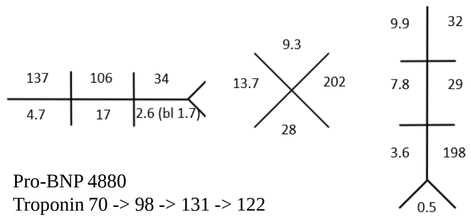
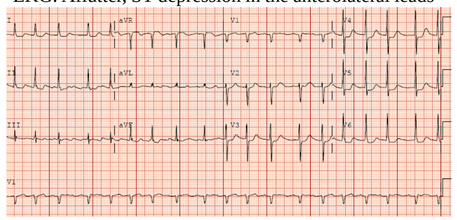
Case Presentation

80M with a PMH of CAD, Afib on warfarin, urothelial carcinoma, stable non-functioning pituitary adenoma, complaining of a day long history of fever, neck pain, headache, nausea, and vomiting. He was febrile, HR 130, and hypotensive at 80/55. On exam, he was mildly confused but AOx3 and had an irregular heart rate, negative Brudzinski sign, and right eye miosis, ptosis, and minimal extraocular movements. LP could not immediately be performed.



Pro-BNP 4880
Troponin 70 -> 98 -> 131 -> 122
EKG: Aflutter, ST depression in the anterolateral leads



Repeat EKG 30 minutes later: Atrial fibrillation with repolarization abnormalities

D-dimer: 1.07
INR: 7.5
7.26/42/19/19
Lactic acid 4.1
Urinalysis: 3+blood, 3+ LE
Urine micro: 36 WBC, 3 RBC, rare bacteria
Urine clx >10k
Pseudomonas aeruginosa, >10k Lactobacillus rhamnosus
Blood clx x2 NGTD

CXR negative
CT brain: stable pituitary adenoma

He received 1 U FFP for his supratherapeutic INR. Troponin elevation was thought to be due to a type II NSTEMI. He remained hypotensive despite 3L of IVF and was sedated the following day. His presentation was concerning for septic shock with infectious workup pending at the time. Therefore, he was started on broad-spectrum antimicrobials and IV steroids. MRI brain was obtained due to worsening mental status of AOx1, which showed the stable pituitary adenoma, measuring 2.3 cm, causing mass effect on the optic apparatus (Figure 2). Morning cortisol was 1.4. MRI brain was repeated as the patient became sedated and he showed no improvement on antibiotics. This demonstrated a pituitary macroadenoma measuring 2.5 cm, previously 2 cm five months earlier, abutting the right CN III and interval hemorrhagic transformation of the adenoma (Figure 3). Further testing was notable for an ACTH <3, IGF-1 15.8, TSH 0.26, FSH 1.8, LH 0.9, prolactin 1.8, testosterone 5.
Neurosurgery performed transsphenoidal pituitary resection with pathology consistent with pituitary apoplexy. Endocrinology recommended levothyroxine and hydrocortisone supplementation. Given supratherapeutic INR previous admission and this admission, warfarin was discontinued and patient declined DOAC therapy, understanding his risk of stroke. He was treated with cefepime for his Pseudomonal UTI.

Clinical Images

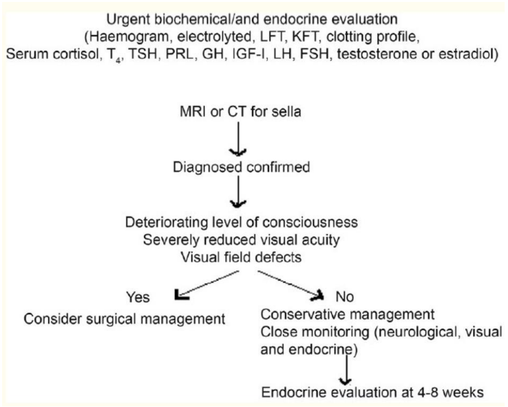


Figure 1. Management approach to pituitary apoplexy (1).

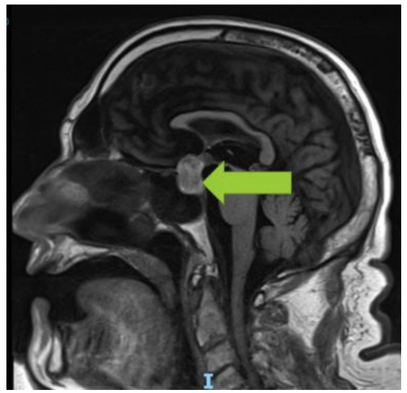


Figure 2. MRI brain obtained on hospital day (HD) 2 showing a stable pituitary adenoma, measuring 2.3 cm, causing mass effect on the optic apparatus.

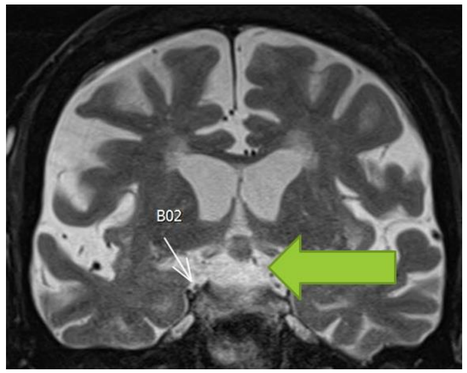


Figure 3. MRI brain obtained on HD 3 showing a pituitary macroadenoma measuring 2.5 cm abutting the right CN III and interval hemorrhagic transformation of the adenoma

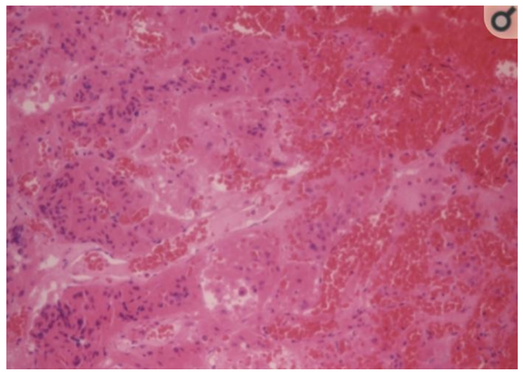


Figure 4. Pathology of pituitary apoplexy demonstrates coagulative necrosis and hemorrhage (3).

Discussion

Hypotension is a common presentation for hospitalization and, therefore, it is essential to consider a broad differential diagnosis including secondary adrenal insufficiency and/or hypovolemia due to diabetes insipidus from pituitary apoplexy. Pituitary apoplexy is rare but is a life-threatening endocrine emergency. Patients usually present with headache and may additionally have symptoms such as vomiting, visual defects, ophthalmoplegia, and even meningeal signs. It is caused by pituitary infarction, which can result from compression of the pituitary's blood supply from a mass or hemorrhage of the pituitary gland. In most cases, it occurs without any precipitating factors, but can be associated with major surgeries, radiation therapy, or coagulopathies either from primary or secondary causes (medications such as vitamin K antagonists or platelet inhibitors or in infection). Treatment includes stabilization with IVF, glucocorticoids, and hormone replacement therapy. Surgical management may be indicated if the patient has a deteriorating level of consciousness or visual defects otherwise conservative management can be pursued. There is a small risk of tumor recurrence and therefore all patients require surveillance imaging.

Conclusions & Teaching Points

Remember that there may be coexisting conditions causing shock, such as in this patient who presented with sepsis and secondary adrenal insufficiency.
-Consider pituitary apoplexy as a differential diagnosis especially in patients with a known pituitary adenoma or intracranial mass

-Pituitary apoplexy most commonly presents with headache and visual defects, but can also have extraocular palsies so do your neuro exam!

-Corticosteroid supplementation should be given emergently

-Patient should be assessed if they are a surgical candidate

-Patients require monitoring and hormone supplementation afterwards

References

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