

Bilateral Adrenal Hemorrhage Following Thrombolysis

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LEARNING OBJECTIVES

1. Recognize signs and symptoms of adrenal insufficiency.
2. Understand the pathophysiology of adrenal insufficiency after thrombolysis.
3. Understand diagnostic and therapeutic options for adrenal insufficiency.

CASE PRESENTATION

- Patient is a 63-year-old male with a PMH of hypothyroidism who presented to the ED via EMS with the complaint of multiple syncopal episodes and seizure-like activity. He was found to be hypotensive in the field but was alert and oriented on arrival to the ED.
- In the ED, he became bradycardic and required CPR. He was resuscitated via ACLS protocol 4 times for cardiac arrest, one instance showing ventricular tachycardia. An EKG was done showing ST elevation in lead V1 with evidence of right ventricular strain.
- 50mg of TPA was given IV for a suspected pulmonary embolism based on the D-Dimer as patient was initially too unstable for CT.
- ROSC was achieved, he was started on vasopressors, and transferred to the ICU.

PHYSICAL EXAMINATION

- Vital signs after intubation and pressure support were as follows: blood pressure 109/55 mmHg, pulse 115 beats per minute, respiratory rate 18 breaths per minute, saturating 99%, temperature 98.2 degrees Fahrenheit. Physical exam was significant for diminished breath sounds bilaterally and abdominal distension.

IMAGING

- CT of the chest showed bilateral main pulmonary emboli with extension to the bilateral lower lobe vessels.
- CT of the abdomen showed bilateral adrenal hemorrhage greater on the left than the right with a left retroperitoneal hematoma
- Lower extremity dopplers showed DVT in left popliteal vein.
- Right upper extremity doppler showed DVT.

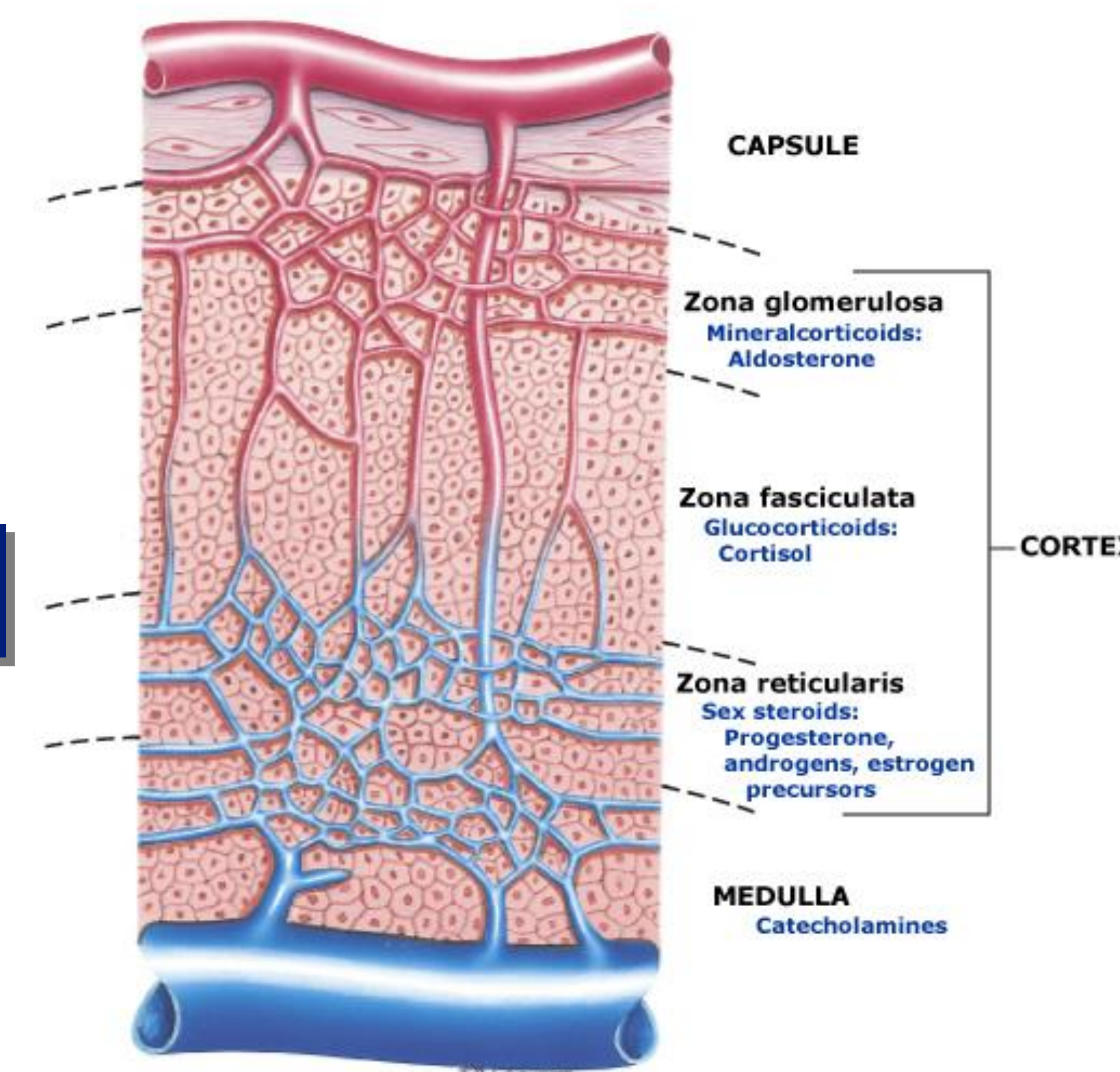
HOSPITAL COURSE

- The patient was resuscitated with blood products as needed given retroperitoneal bleed from bilateral adrenal hemorrhage.
- He was found to have hypernatremia and hypokalemia which was managed with the assistance of nephrology.
- He was on vasopressors to maintain his blood pressure.
- He was on hydrocortisone sodium succinate 100mg IV q8 from admission given the possibility of adrenal insufficiency.
- The patient's AM Cortisol level and ACTH levels were drawn.
- An ACTH (cosyntropin 0.25mg) stimulation test was given.
- The patient's cortisol levels did not respond to normal levels, confirming adrenal insufficiency.

Laboratory Data

D-Dimer	25,537 ng/mL (<500)
ACTH	6.1 pg/mL (7.2-63.3)
AM Serum Cortisol	2.9 ug/dL (8.7-22.4)
Cortisol, 30 minutes	11.7 ug/dL (>= 18-20)
Cortisol, 60 minutes	14.6 ug/dL (>= 18-20)
TSH	1.176 uIU/mL (0.300-4.500)
Thyroxine, Free	1.39 ng/dL (0.50-1.26)
Hemoglobin	11.7 g/dL (13.2-17.5)

PATHOPHYSIOLOGY



- Over 90% of patients present with hypotension or shock. Other presenting symptoms include abdominal or flank pain, fever, and neuropsychiatric symptoms.
- Acute onset does not allow enough time for hyperpigmentation to develop.
- Laboratory evidence of hemorrhage such as a drop in Hemoglobin and hematocrit with progressive hyperkalemia, hyponatremia are other signs to look for.
- Classic risk factors include anticoagulant therapy or an underlying coagulopathy, and post operative state.

CONCLUSIONS

- Acute adrenal insufficiency can occur as a result of sudden, bilateral adrenal necrosis caused by blunt trauma, sepsis, emboli, and hemorrhage.
- Regardless of the etiology, the exact mechanism of adrenal hemorrhage has not been established. Postulated theories implicate anatomical causes as the usual culprits. An extremely high rate of blood flow, an arterial network that abruptly transitions to a capillary bed, and drainage by a single, central adrenal vein may predispose to adrenal gland hemorrhage.
- Bilateral adrenal hemorrhage is a rare but potentially fatal entity that carries a mortality rate of 15%.

Reference:

Fatima, Z., Tariq, U., Khan, A., Sohail, M. S., Sheikh, A. B., Bhatti, S. I., & Munawar, K. (2018). A Rare Case of Bilateral Adrenal Hemorrhage. *Cureus*, 10(6), e2830. <https://doi.org/10.7759/cureus.2830>