Anxiety Induced Pulmonary Edema: A Rare Occurrence

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Introduction

- Severe anxiety has been known to be associated with various deleterious cardiovascular outcomes including but not limited to myocardial infarction, ventricular fibrillation, and takotsubo cardiomyopathy.
- There is rare documentation of the association of cardiogenic pulmonary edema with acute anxiety.

Case presentation

- An 18-year old Caucasian female with past medical history of schizoaffective disorder presented to the emergency department after attempted suicide by drug overdose. She ingested 30 tablets of 150 mg bupropion XL and 60 tablets of 300 mg oxcarbazepine.
- Upon arrival, the patient was intubated for airway protection.
- During the course of her ICU stay, blood pressure (BP) and vitals fluctuated dependent on the amount of sedation administered.
- When sedation was decreased, the following would increase:
  - Systolic BP (200-220 mmHg)
  - Pulse (180-200 beats per minute).
- On day 13, the patient was extubated.
- Subsequently, she experienced the following:
  - Acute episode of severe anxiety (vocalizing suicidal ideation),
  - Hypertensive emergency,
  - Resultant acute hypoxic respiratory failure requiring emergent re-intubation.
- Findings suggestive of acute cardiogenic pulmonary edema were visualized during intubation, which was confirmed by chest X-ray.
- Echocardiogram, before and after the episode was normal.
- Once anxiety was adequately controlled, she was successfully extubated.

Discussion

- Common causes of pulmonary edema:
  - Left ventricular failure
  - Dysrhythmia
  - Cardiomyopathy
  - Myocardial infarction
  - Left ventricular outflow obstruction
- Anxiety has been reported to be associated with worse cardiac outcomes through various mechanisms:
  - Inflammation,
  - Increased coagulation markers (platelet factor 4 and beta-thromboglobulin),
  - Prolonged platelet activation by catecholamines.
- This case report demonstrates a patient developing pulmonary edema by the following mechanism:
  - Acute anxiety → ↑ catecholamine release → profound ↑ HR & ↑ BP (↑ systemic vascular resistance) → ↑ cardiac afterload → ↑ LV filling pressure → backflow into pulmonary vasculature → pulmonary vascular congestion → pulmonary edema

Conclusion

- This case highlights that episodes of anxiety with resultant hypertensive crisis can be severe enough to result in pulmonary edema in an otherwise young, healthy adult with no significant chronic medical comorbidities and a structurally normal heart.

References