

## The Hidden Conundrum: Sudden Collapse and Hypotension in an Elderly Female

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### Abstract:

Aortic dissection is a rare but often fatal condition. Patients typically experience a sudden, severe, tearing chest pain and may develop acute hemodynamic instability. Because of its high mortality rate, prompt diagnosis and treatment are essential for survival. This is a case of an 84-year-old female who presented with syncope, profound hypotension, left side hemiplegia and right preferential gaze. A chest CT with contrast done revealing a long segment aortic dissection in the ascending aorta extending to the brachiocephalic artery, left. The true and false lumen exhibit equal opacification at the level of T7 vertebra up to the level of T3 vertebra without contrast extravasation. Patient was started with norepinephrine and immediate consultation to a cardiothoracic surgeon for definitive surgical management. However, due to the family's refusal of the procedure, the patient was admitted to the surgical ICU, where she expired. This case underscores the challenges of diagnosing and managing acute decompensation in elderly patients, highlighting the need for rapid assessment and a coordinated multidisciplinary approach.

**Keywords:** ICU

### Introduction:

Aortic aneurysms result from the progressive degradation of elastin, collagen, and fibrolamellar structures, leading to medial thinning and reduced tensile strength. Sudden, unpredictable expansion can occur, with larger aneurysms carrying a higher rupture risk, often with catastrophic consequences<sup>2</sup>. Patients typically present with sudden, severe chest pain, back pain, or syncope. Physical clues include asymmetric blood pressure (>20 mmHg difference between arms), Pulse deficits in major arteries (carotid, brachial, or femoral), New diastolic murmur suggestive of aortic regurgitation, Signs of end-organ ischemia (stroke, limb ischemia, acute renal failure)<sup>3,4</sup>. Imaging such as CT angiography is the gold standard for confirming aortic dissection. Conservative management of acute aortic dissection is a viable option for Type B dissections in hemodynamically stable patients without life-threatening complications. The mainstay of treatment is blood pressure control with beta-blockers and nitrates, along with close monitoring for signs of deterioration. Surgery may become necessary if the dissection progresses or complications arise<sup>5</sup>.

### Clinical History and Presentation:

An 84-year-old female presented in the emergency department, experienced a sudden loss of consciousness (LOC). Patient was a known case of heart failure secondary to hypertension atherosclerosis cardiovascular disease. Patient was maintained on Losartan 50 mg/tab, trimetazidine 35 mg/tab, simvastatin 25 mg/tab. One hour prior to admission, the patient was ambulatory when suddenly had syncope and was found cold, clammy and with no breathing, which prompted the relative to initiate CPR for approximately 2–3 minutes until spontaneous breathing had returned. Then, the patient was subsequently transported to our institution for further evaluation and management via a transport vehicle. On



initial assessment the patient was palpatory 60 mmhg, tachycardic (108 bpm), tachypneic (26 cpm), 36.5 temperature, with oxygen saturation at 98%, conscious, coherent, weak looking, no neck vein engorgement, symmetrical chest expansion, clear breath sound, adynamic precordium, normal rate, no murmur, abdomen is flabby with normal active bowel sound, soft and nontender, GCS 13-14, no facial asymmetry, reactive pupils with rightward gaze, but with noticeable left arm and lower leg motor deficit.

### Case Management:

Patient was hooked to O2 support via face mask, cardiac monitor and pulse oximetry. Initial ECG showed sinus tachycardia with lateral wall ischemia. Ultrasound guided fluid resuscitation for hypotension was immediately addressed. Due to intractable hypotension and a new onset of epigastric pain radiating at the back, difference in the BP of both arms (right unappreciated, left 80/50 mmhg) aortic dissection was immediately considered. Extended FAST ultrasound was done which did not exhibit fluid collection in the independent portions of the abdomen, no abdominal aortic dilatation. However suspicious minimal pericardial effusion was noted. Patient was started with norepinephrine. Paracetamol 1 gram was given for pain. Patient sensorium improved and vitals signs were stabilized. Close monitoring of patients was done. Hence plain whole abdominal CT and plain cranial CT was performed in investigating for the probable cause of hypotension. Prompt referral to thoracic cardiovascular surgery and vascular internal medicine were done. Further work up was done which revealed mild anemia, with mild leukocytosis, and adequate platelet count. Coagulation studies were within the normal range. The Blood Chem panel was done with no noted electrolyte imbalance and a Trop I of 18.6ng/L. Chest x ray revealed basal crowding of the lungs with a magnified heart. Initial cranial CT findings revealed no acute bleed or infarct. Work up done was not congruent to the patient's clinical presentation.

Hence, Chest CT with IV contrast was done which revealed A long segment aortic dissection involving the ascending aorta, with an intimal flap from the aortic root extending to the brachiocephalic artery. The true and false lumen exhibit equal opacification at the level of T7 vertebra up to the level of T3 vertebra without contrast extravasation (see figure 1).

Patient was advised for the definitive surgical repair of the dissected vessel to a more capable hospital, however refused and opted to maximize supportive and medical management. Patient was admitted in SICU despite the risk, complications and untoward events. Later on, the patient succumbed to her death.

A long segment aortic dissection is seen involving the ascending aorta, with an intimal flap commencing 3.5 cm from the aortic root extending up just before the take-off of the brachiocephalic artery. The true and false lumen exhibit equal opacification beginning at the level of T7 vertebra up to the level of T3 vertebra. No abnormal areas of narrowing or filling defects. No contrast extravasation noted. The heart is enlarged with hyperdense thickened pericardium with a maximum HU of 70. Wall calcification of the aorta and some of its branches, including the coronary arteries.

### Discussion:

The patient had well known risk factors for developing acute aortic dissection. Patient was elderly, with heart failure secondary to hypertensive atherosclerotic cardiovascular disease, and dyslipidemia. Syncope and sudden collapse in elderly patients present a diagnostic challenge due to multiple potential underlying etiologies, including cardiovascular, neurological, and gastrointestinal conditions<sup>1</sup>. The presence of focal neurological deficits and rightward gaze preference in this case raises suspicion for a cerebrovascular event, while profound hypotension and compensatory tachycardia necessitate ruling out aortic dissection or myocardial infarction.

Her chest CT scan revealed a long segment aortic dissection from the ascending aorta, extending to the brachiocephalic artery. Acute aortic dissection (AAD) is a critical condition with an estimated annual incidence ranging from 5 to 30 cases per 1 million individuals worldwide<sup>3</sup>. The incidence of AAD increases with age, making it more prevalent among the elderly population. As the global population ages, the number of elderly individuals experiencing AAD is expected to rise<sup>6</sup>.

In elderly patients, particularly those over 70 years old as presented in this case, AAD presents a higher burden of comorbidities and increased operative mortality rates. Studies have reported operative mortality rates of 13% in elderly patients undergoing proximal aortic surgery, compared to 7% in younger cohorts<sup>7</sup>. Despite these risks, surgical intervention can be beneficial, as some studies have shown lower early mortality rates in surgically treated elderly patients compared to those managed medically<sup>8,9</sup>. However, the patient's relative did not consent for the definitive management in this case.



This case presents a diagnostic dilemma where multiple life-threatening conditions could explain the patient's presentation. Aortic dissection, ischemic stroke, ACS, and visceral perforation are all plausible causes of syncope, hypotension, and neurological deficits. This highlights the importance of a high clinical index of suspicion and of early imaging and interdisciplinary collaboration in geriatric emergency care.

### Conclusion:

Given the patient's advanced age, history of hypertensive atherosclerotic cardiovascular disease, and dyslipidemia, she was at significant risk for developing AAD. The increasing incidence of AAD in the aging population underscores the need for early recognition and timely intervention. Despite the high operative mortality associated with surgical management, studies suggest that early surgical intervention may improve survival outcomes compared to medical management alone. However, in this case, definitive treatment was not pursued due to lack of consent from the patient's family.

The overlap of symptoms between AAD, ischemic stroke, acute coronary syndrome (ACS), and other life-threatening conditions presents a diagnostic challenge, emphasizing the need for a high clinical index of suspicion, prompt imaging, and interdisciplinary collaboration in geriatric emergency care. Early detection and comprehensive management strategies are crucial in optimizing outcomes for elderly patients presenting with such critical conditions.

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