



ORIGINAL RESEARCH PAPER

General Medicine

A RARE CASE OF CORONARY ARTERY ANEURYSM IN A HYPERTENSIVE FEMALE WITH HEART FAILURE AND CKD

KEY WORDS:

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ABSTRACT

This case report aims to present a rare instance of a coronary artery aneurysm (CAA) identified incidentally during coronary angiography in a 67-year-old female patient with multiple complex systemic comorbidities, including heart failure, chronic kidney disease (CKD), and systemic hypertension. The objective of this report is to highlight the diagnostic value of coronary angiography in elderly patients with multiple risk factors. Furthermore, it emphasizes the efficacy of conservative management strategies for non-obstructive coronary aneurysms.

Case Presentation

A 67-year-old female with a decade-long history of poorly controlled systemic hypertension and stage 3 chronic kidney disease (CKD) was admitted to the emergency department. She presented with a five-day history of progressive New York Heart Association (NYHA) Class III breathlessness, associated with bilateral pedal edema, generalized malaise, and vague abdominal discomfort. On physical examination, the patient was tachypneic with a respiratory rate of 24 breaths per minute and hypertensive with a blood pressure of 160/90 mmHg. Auscultation revealed bilateral basal crepitations and a displaced apex beat, suggesting cardiomegaly. Laboratory investigations were significant for an elevated N-terminal pro-B-type natriuretic peptide (NT-proBNP) of 4,500 pg/mL and a serum creatinine of 2.1 mg/dL (baseline 1.4 mg/dL), indicating acute kidney injury (AKI) superimposed on CKD. Serial troponin-I levels were within normal limits, initially ruling out acute myocardial infarction.

OBSERVATIONS AND RESULTS

Transthoracic echocardiography revealed several findings indicative of significant cardiac dysfunction. These findings included global left ventricular (LV) hypokinesia and a low left ventricular ejection fraction (LVEF) of 30–35%. Grade II diastolic dysfunction was observed, alongside a mild pericardial effusion.

The patient subsequently underwent coronary angiography, a procedure critical for diagnosing incidental coronary aneurysms in patients with systemic comorbidities. The procedure revealed a normal left coronary system. However, the proximal right coronary artery was found to have a minor plaque and an aneurysm. Notably, no significant obstructive coronary artery disease was detected during the intervention.

Given the non-obstructive nature of the aneurysm, the patient was managed conservatively. The medical treatment regimen included antihypertensives, diuretics, and cardiac support medications.

DISCUSSION

Coronary artery aneurysm (CAA) is defined as a localized dilation of a coronary artery segment exceeding 1.5 times the diameter of the adjacent normal segment. The incidence of CAA ranges from 0.3% to 4.9% in patients undergoing coronary angiography, making it a relatively rare clinical entity. In this specific case, the presence of CAA in an elderly female with heart failure and CKD presents a unique clinical challenge. While atherosclerosis is the leading cause of CAA in adults, the patient's longstanding hypertension likely contributed to arterial wall stress and remodeling, facilitating the aneurysmal formation.

The link between CAA, heart failure, and CKD is multifaceted. Chronic kidney disease is often associated with accelerated vascular calcification and endothelial dysfunction, which can weaken the tunica media of the coronary vessels. Furthermore, the volume overload and systemic inflammatory state inherent in both heart failure and CKD may exacerbate the progression of coronary ectasia. In this patient, the reduced ejection fraction (30–35%) necessitated a careful balance in pharmacotherapy to manage heart failure symptoms without further compromising renal perfusion.

Conservative management was deemed the most appropriate strategy for this patient given the absence of obstructive coronary artery disease (CAD) or symptoms of myocardial ischemia. The rationale for this approach is supported by literature suggesting that non-obstructive, asymptomatic CAAs have a relatively benign prognosis when systemic risk factors are aggressively controlled. Surgical or percutaneous intervention was reserved only for cases where the aneurysm is large, rapidly expanding, or associated with high-risk features such as thrombosis or significant stenosis. The patient's medical regimen focused on optimizing hemodynamics through afterload reduction with ACE inhibitors and volume control via loop diuretics, which concurrently addressed the hypertensive urgency and the congestive heart failure symptoms.

CONCLUSION

This case underscores the vital importance of coronary angiography in the timely diagnosis of incidental coronary aneurysms. This is particularly relevant in elderly patients presenting with complex systemic comorbidities. Conservative management remains the preferred approach for asymptomatic, non-obstructive aneurysms. Early detection, combined with multidisciplinary care, is crucial for optimizing outcomes in elderly patients navigating complex cardiac and renal conditions.