Case Report

Managing Acute Coronary Syndrome Amidst Resource Constraints: A Nigerian Case Report

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Article History
Submitted: 07/05/2026; Accepted: 18/05/2026: Published: 28/05/2026

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ABSTRACT

Acute coronary syndrome is a cardiovascular disease that is now becoming common in developing countries as a result of the adoption of a westernized lifestyle, high prevalence of hypertension, diabetes mellitus, and obesity. The diagnosis and management are challenging in low-resource countries such as Nigeria due to late presentation, diagnostic challenges, and financial constraints. We present the case of a 63-year-old woman, a known patient with hypertension and diabetes mellitus, who presented with a 5-day history of central crushing chest pain, with associated diaphoresis, vomiting, and preceding easy fatigability. An electrocardiogram (ECG) done at presentation showed widespread myocardial ischaemia, and troponin I was markedly elevated. The coronary computed tomography (CT) coronary angiography done showed near total occlusion of the proximal portion of the left anterior descending artery. A diagnosis of acute coronary syndrome was made. She was counselled for percutaneous coronary intervention (PCI), but she could not afford it. Guideline-directed medical therapy was initiated, and only two serial electrocardiograms were done. Due to financial constraints, there was a delay in getting a CT coronary angiography, inability to do serial ECG and cardiac enzyme monitoring and inability to have PCI, which is the definitive treatment of her condition. She improved with medical therapy only and was subsequently discharged.

Keywords: Acute Coronary Syndrome, Case Report, Nigeria, Resource Constraints

INTRODUCTION

Cardiovascular disease is the leading cause of death worldwide and disability.[1,2] Coronary artery disease is part of cardiovascular disease, posing a huge challenge in sub-Saharan Africa due to its increasing prevalence.[3,4] The increasing prevalence may be partly attributable to the adoption of a westernized lifestyle. Established risk factors for this disease are hypertension, smoking, diabetes mellitus, low physical activity, aging, and high body mass index.[2,5,6] The management of acute coronary syndrome in sub-Saharan Africa has its challenges.[7,8,9]

The presentation of patients with acute coronary syndrome may vary, with some presenting with the classical chest pain, diaphoresis, feeling of impending doom, while in diabetic patients, the presentation can be atypical and without pain due to neuropathy in patients with diabetes mellitus.[10]

The prognosis is good for individuals with prompt diagnosis and management. However, outcomes may be unfavourable in those whose care is limited by financial constraints.[11] Late presentation,

Article Access
Website: www.wjmbs.site
10.5281/zenodo.20811802

How to cite this article
Akinfaderin DA, Enikuomehin AC, Junaid OA, Fabusuyi OT, Akinfaderin AW. Managing Acute Coronary Syndrome Amidst Resource Constraints: A Nigerian Case Report. West J Med & Biomed Sci. 2026;7(2):280--284. DOI:10.5281/zenodo.20811802

presence of comorbidities and cardiovascular risk factors, and limited access to care can impede prompt diagnosis and good treatment outcomes.[12,13]

This case report highlights the challenges encountered in the management of acute coronary syndrome in a resource-limited setting.

CASE PRESENTATION

A 63-year-old female retiree presented to the emergency unit on account of central chest pain of 5-day duration. Pain was said to be severe, crushing, radiated to the left jaw, and not posture-related. There was associated diaphoresis and episodes of vomiting. The patient gave a history of preceding fatigue for weeks and a feeling of impending doom, which necessitated the presentation to the hospital. Orthopnea, dyspnea, paroxysmal nocturnal dyspnea, fever, cough, altered sensorium, and differential body weakness were absent. There was no history of prolonged immobilization, leg swelling, or pain.

She was diagnosed with hypertension and diabetes mellitus 10 years ago, and 3 years ago, respectively. She had poor compliance with medications and clinic follow-up. She took alcohol occasionally, but frequently consumed highly caffeinated drinks.She had no family history of diabetes mellitus, hypertension, or sudden cardiac death. She was postmenopausal and was not on hormone replacement therapy or oral contraceptives pills.

On examination, she was conscious, not pale, in painful and respiratory distress, cyanosed and without pedal swelling. Her body mass index was 33.2kg/m^2. Her oxygen saturation at room air was 84%. The pulse rate was 82beats per minutes, regular and full volume. She had thickened arterial wall and locomotor brachialis. The blood pressure was 160/80mmHg and no distended neck vein. The apex beat was located at the 5th left intercostal space, lateral to midclavicular line. She had the fourth, first and second heart sound and a loud A2. There was a grade 3 apical systolic murmur, and no fine basal crepitations. Chest examination was essentially normal except for tachypnea. There was loss of sensation to light touch at L5, S1 up to the ankle.

Electrocardiogram at presentation showed widespread myocardial ischaemia. (Fig 1). A diagnosis of poorly controlled hypertension and diabetes mellitus with acute coronary syndrome and mild obesity were made. The troponin I at admission was 661ng/L (<14ng/L), serum sodium was 135mmol/L (135-145 mmol/L), potassium was 4.0(3.5-5.5mmol/L), urea was 3.2mmol/L, and creatinine was 48 micromol/L (45-115 micromol/L). The packed cell volume was 47%, total blood cell count was 7,070 cells /mm^3 with normal differential count. The total cholesterol was elevated 5.4mmol/L (2.4-4.7mmol/L), low density lipoprotein-cholesterol was 3.5mmol/L (2.0-3.36mmo/L) triglyceride was 1.4mmol/L (0.5-1.4mmol/L), high density lipoprotein-cholesterol was 1.3mmol/L (1.1-1.8mmol/L). The glycated haemoglobin was 7.4% and fasting blood glucose was 9.6mmol/L.

She was placed on anti-anginal medication and intranasal oxygen. She was subsequently managed with subcutaneous insulin, low molecular weight heparin, metoprolol succinate, indapamine, empaglifozin, soluble aspirin, clopidogrel, ramipril, and rosuvastatin.

A repeat ECG done showed deepening of the T waves while on admission (Fig 2). The findings on the echocardiogram were global hypokinesia, echogenic aortic valve, left ventricular posterior wall hypertrophy, preserved biventricular systolic function, impaired relaxation of both ventricles, mild mitral and aortic regurgitations. (Fig 3). CT coronary angiography showed near total occlusion of the proximal left anterior descending artery, with coronary artery calcification. (Fig 4)

She was referred to another center for coronary intervention based on the finding of the coronary angiography, however, she declined because she could not afford the cost of care and was unwillingly to travel to another state for care. The medical treatment was intensified with significant improvement.

The repeat troponin I done following several days of treatment was less than 10ng/L, and there was improvement in the repeat ECG (Fig 5) She was subsequently discharged and presently on regular clinic follow. She is yet to get funds for a repeat coronary CT angiography.

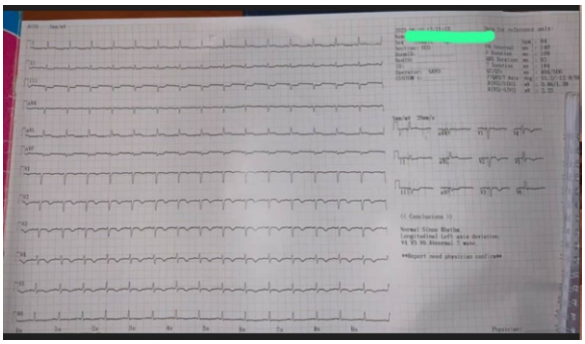

Figure 1. Resting 12 – lead Electrocardiogram done at admission with widespread T wave depression and ST segment depression.

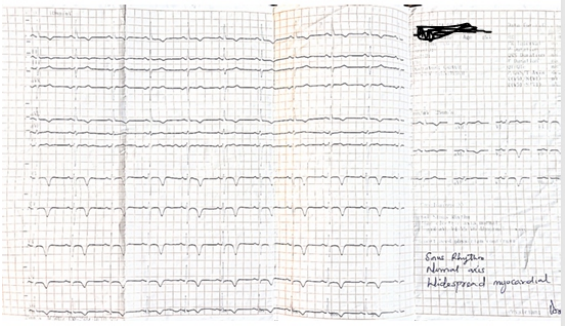

Figure 2. Repeat Resting 12 – lead ECG with deeper T waves while on admission.

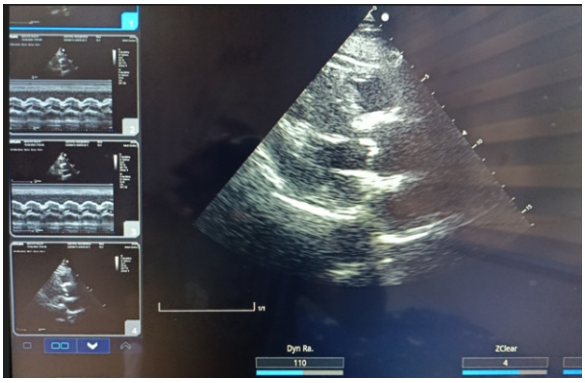

Figure 3. Parasternal long Axis on 2D –Echo showing echogenic aortic valve.

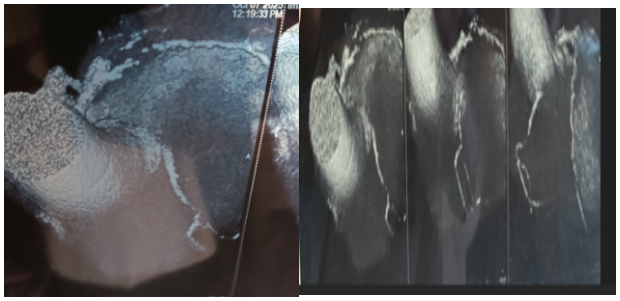

Figure 4. CT coronary angiography with near total obstruction of proximal segment of Left anterior descending artery.

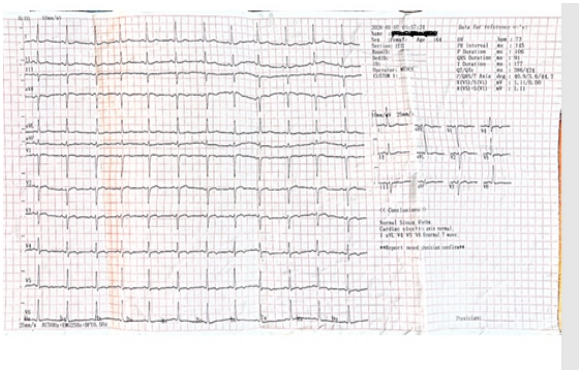

Figure 5. Repeat resting 12- lead done when symptoms subsided and after normalization of Cardiac Troponin

DISCUSSION

Acute coronary syndrome is a constellation of unstable angina, ST segment elevation myocardial infarction and non-ST segment elevation infarction.[7,14] The diagnosis requires typical symptoms such as chest pain, characteristic ECG findings an electrocardiogram (T wave tenting or inversion or ST segment elevation), and elevated cardiac enzymes which were present in the index patient.[8,14] The index patient also had diaphoresis, and generalized T wave inversion on ECG.

Ameen et al[15], reported 29.6% occlusive myocardial infarction in a total patient of 189 patients with non-ST segment elevation acute coronary syndrome, the patients were older, had higher prevalence of hypertension and dyslipidaemia. Similar pattern of presentation and cardiovascular risk factors were present in the index patient. Additional risk factors identified in the patients were obesity and poor glycemic control

Ngaide et al[8] reported 61years as the mean age of patients with acute coronary syndrome in their study which is similar to the age of our patients. Similar to the patient clinical characteristics, hypertension, dyslipidaemia and female gender were reported as risk factors in some studies.[8,16]

There was delayed presentation and management in emergency unit in this patient, similar to the report of Mboup et al.[16] Her presentation to the emergency was delayed for about 5 days after the onset of chest pain. The diagnosis and management of non-ST segment elevation acute coronary syndrome could be challenging in sub-Saharan Africa due to limited access to coronary angiography,[8,9] as experienced in

this patient who had to travel to another center to get the investigation done, and could not afford revascularization after the angiography. Revascularization of acute coronary syndrome in sub-Saharan Africa could be challenging due to limited infrastructure and resources.[9] The patient was in need of revascularization, however this could not be done due to limited resources. Medical therapy was optimized and she had significant improvement. The repeat ECG and troponin showed improvement compared to the previous result.

The challenges in the patient included delayed presentation, limited infrastructure and resources for her management, patient's inertia in seeking care in centres away from her place of residence, inability to afford serial cardiac enzyme assay, serial ECG or continuous ECG monitoring during her management.

CONCLUSION

The management of acute coronary syndrome in low-resource settings may be associated with challenges such as; delayed presentation and diagnosis, non-availability of diagnostic and therapeutic facilities required for proper management and financial constraints.

RECOMMENDATIONS

In order to limit the challenges mentioned in this paper, there will be need to enlighten the populace on the risk factors associated with acute coronary syndrome, and the need for early presentation when symptomatic. There will be need for advocacy to the government in influencing policies and budgetary allocations to the hospitals as well. This will further enhance availability of equipment, transport facilities when needed, and adequate financial support in form of health insurance.

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