Case Report

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Pre-hospital Thrombolysis of St-Segment Elevation Myocardial Infarction: An Ideal Alternative to Primary Angioplasty in a Developing World

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Abstract

Background: Coronary Artery Disease is on the increase. Management within guideline indicated early apt treatment is critical for successful outcomes.

Methods: 50 year old male who presented with chest pain at a peripheral out-patient clinic. The past medical history was not significant and his risk factors were age, gender and tobacco use. An electrocardiogram revealed diagnosis of ST Elevation Myocardial Infarction,and thrombolysis with streptokinase was administered at the clinic as primary angioplasty was not accessible.

Conclusion: Thrombolysis treatment when offered at the first point of medical contact, is a life saver and is the accepted standard management. All medical facilities should be equipped with necessary medication to treat acute coronary syndromes.

Keywords: Coronary artery disease; Ischemic heart disease; Non-communicable diseases; Thrombolysis; Electrocardiograph.

INTRODUCTION

Background

Although ischemic heart disease in Sub-Saharan Africa remains relatively uncommon, its prevalence is predicted to rise due to the increasing prevalence of the risk factors viz. hypertension, diabetes, obesity, tobacco use and dyslipidaemia.[1] The available projections suggest that in a few decades from now, cardiovascular diseases will overtake communicable diseases as the most frequent cause of death, particularly due to coronary artery disease.

The East African region may be unprepared for this growing burden, as there is evidence of insufficient health care infrastructure and resources.[2] It has been noted that greater mortality in low socioeconomic status patients with acute coronary syndrome is due to lack of awareness of symptom, delay in reaching healthcare facilities, non-availability of thrombolysis and coronary revascularization, and the unaffordability of expensive medicines.[3]

We present a case report to explore the possibility

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of changing the narrative, utilizing a low cost thrombolytic administered by primary care clinicians at the point of first medical contact, which will be an ideal alternative in a developing world.

CASE REPORT

51 year old male, with no known co-morbidities, but a heavy smoker presented to our satellite clinic, with sudden onset central chest pain, radiating to the left jaw with associated chest heaviness, difficulty in breathing and diaphoresis. The pain lasted 30mins before he presented at the clinic.At triage he was noted to have high blood pressure of 140/106 mmHg, a pulse of 88 beats per minute, sinus rhythm, and oxygen saturation of 89%. An ECG revealed ST elevation in leads V1-V5.

He was started on aspirin 300mg, clopidogrel 300 mg and enoxaparin 80 mg. The medical officer at the clinic telephonically conveyed the images to a cardiologist who agreed on thrombolysis with intravenous streptokinase 1.5 million units over 1 hour and transfer the patient via ambulance to the hospital for percutaneous coronary intervention (PCI) which is two hours away.

Upon arrival to the main hospital, he was feeling less chest pain saturating well on room air. He was admitted to high dependency unit overnight and went to the catheterization laboratory the following morning 10 hours later. Coronary angiogram revealed a left anterior descending artery (LAD) 50% stenosis mid-lesion. PCI to LAD done with 3.00x16mm Drug eluting stent (Alvimedica /Boston Scientific) successfully. Stayed 12hrs in HDU and was transferred to the ward and discharged 2 days later.

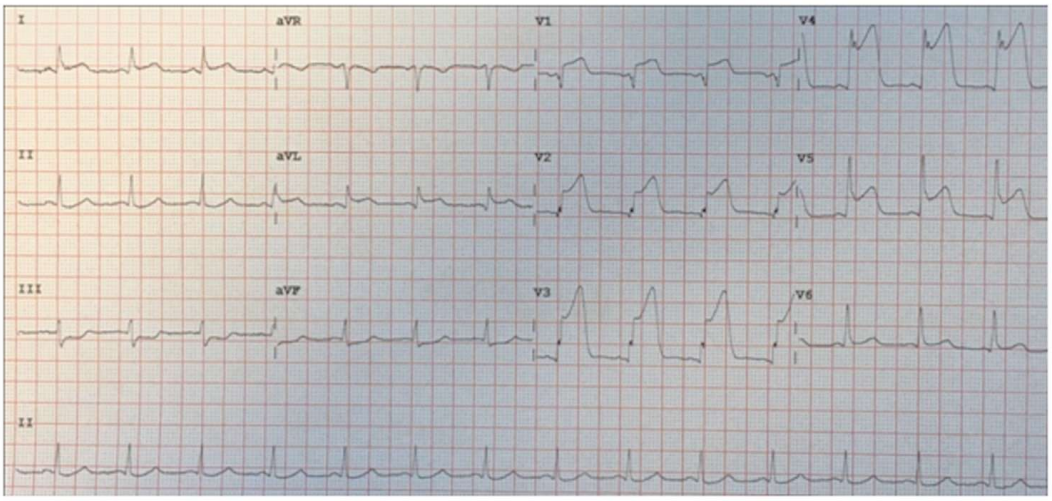

Fig. 1: Electrocardiogram on presentation

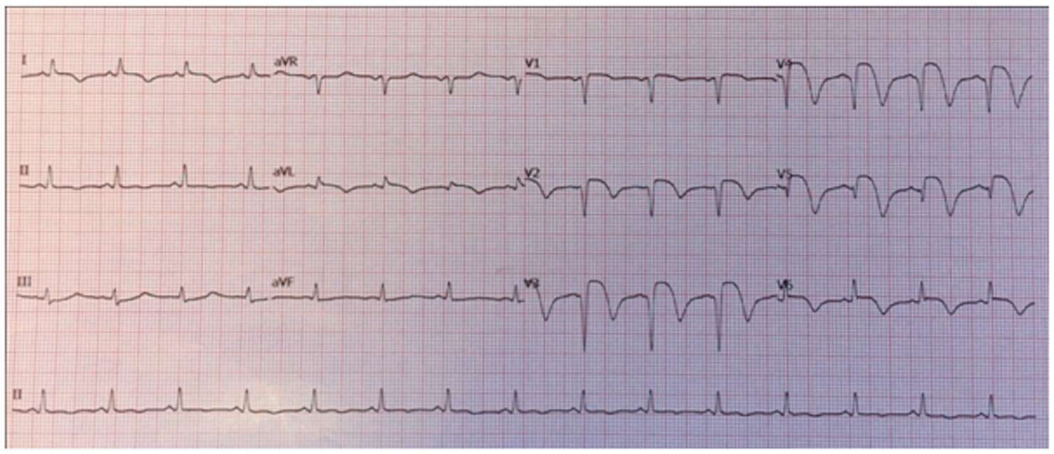

Fig. 2: Electrocardiogram after thrombolysis

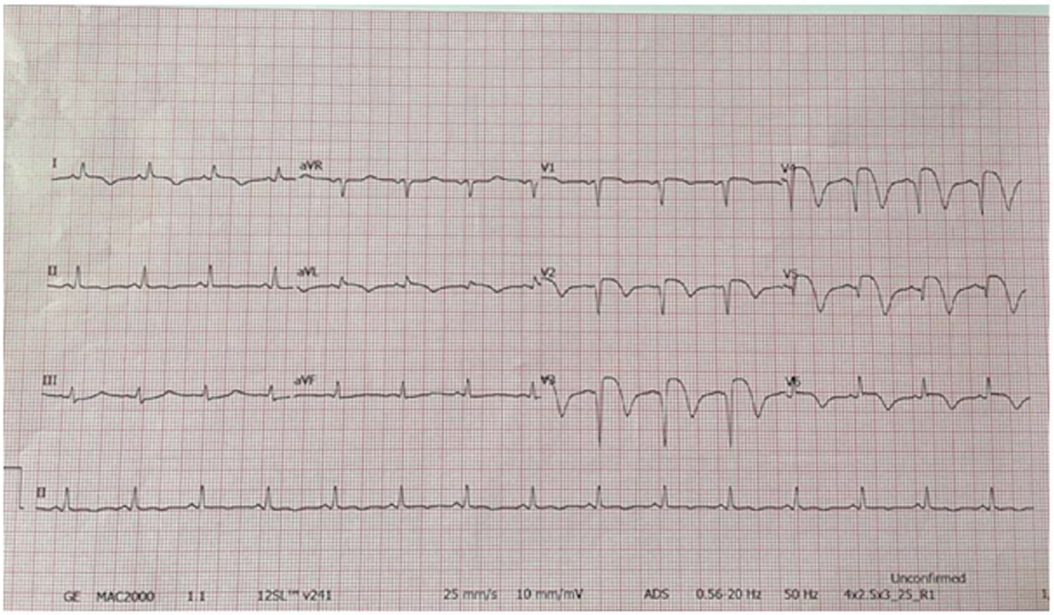

Fig. 3: Electrocardiogram 1 day after PCI

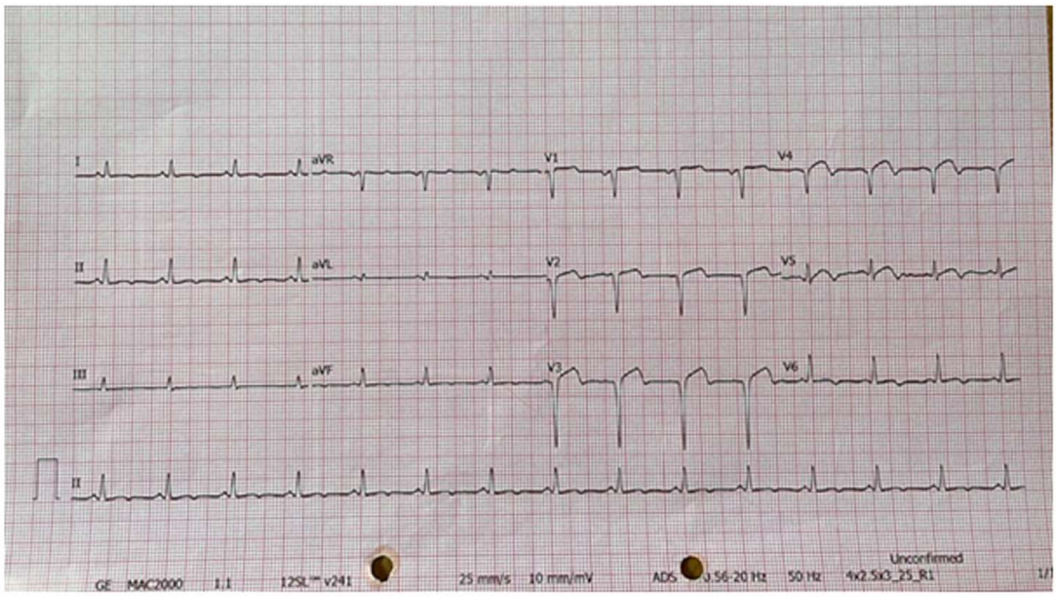

Fig. 4: Electrocardiogram 5 days after PCI

DISCUSSION

The Prospective Urban Rural Epidemiology study reported that there is a paradox characterized by greater mortality being the highest in those of low socioeconomic status in low-income countries despite the lower prevalence of risk factors. This paradox could be due to the inferior quality of acute and chronic ischemic heart disease management and poor risk factor control.[3]

Successful management of ACS is dependent on the timeliness of presentation, recognition of the condition and prompt institution of successful therapy. A survey conducted in 2018, to determine the level of preparedness of County hospitals in Kenya, for the management of acute coronary syndromes revealed none of the respondents reported any access to thrombolysis within 60 minutes.[4] A further survey in Kenya in 2019 demonstrated challenges at multiple tiers in delivering quality ST elevation myocardial infarction care within the healthcare system. It concluded on the need to improve the availability of drugs as well as early referral of patients to PCI-capable centres.[5]

The solution to the above issues are the introduction of ST elevation myocardial elevation kits as envisaged by the current Kenya Cardiac Society guidelines. Essentially a bag with all the requisite medication including a thrombolytic to manage ST elevation myocardial infarctions. This kit was used in the above case report successfully. The approximate cost is 150 dollars, providing a life saving treatment. The kit contains a vial of streptokinase 1.5 million international units, enoxaparin 80mg, chlorphenamine 10mg and hydrocortisone 100mg, along with tablets of aspirin 300mg, clopidogrel 300mg, and atorvastatin 80mg.

CONCLUSION

Even though primary angioplasty is the recommended treatment for ST elevated MI, lack of availability of catheterization lab in the smaller towns and quick and efficient transportation to major cardiac centres are the limiting factors. Hence, thrombolysis at the primary health centre followed by delayed angioplasty could be an ideal choice in the present scenario. Timely treatment is the essence of success in these ailments.

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