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Acute Myocardial Infarction in a Hypertensive Patient a Case Report

Meena Sharma*

Department of Cardiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India ***Correspondence:** Department of Cardiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India, E-mail: meena_04@gmail.com

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Abstract

Cardiovascular diseases (CVDs) remain the leading cause of morbidity and mortality worldwide. This case report presents an adult male with long-standing hypertension who developed acute myocardial infarction (AMI), highlighting the importance of early diagnosis, risk factor management, and appropriate intervention to prevent fatal outcomes.

Introduction

Cardiovascular diseases are a group of disorders of the heart and blood vessels, including coronary artery disease, cerebrovascular disease, and peripheral artery disease [1]. Myocardial infarction (MI), commonly known as a heart attack, is a life-threatening manifestation of coronary artery disease resulting from an abrupt reduction in coronary blood flow [2]. Risk factors include hypertension, diabetes, dyslipidemia, smoking, and sedentary lifestyle [3]. Prompt recognition and treatment significantly reduce mortality.

Case Presentation

A 58-year-old male presented to the emergency department with severe retrosternal chest pain radiating to the left arm, associated with sweating and nausea. The patient had a 15-year history of uncontrolled hypertension and was a chronic smoker but denied diabetes.

On physical examination:

- **Blood pressure:** 168/98 mmHg
- **Heart rate:** 102 bpm
- **Respiratory rate:** 20/min
- **SpO_2:** 94% on room air

Electrocardiogram (ECG) revealed ST-segment elevation in leads II, III, and aVF, consistent with an inferior wall myocardial infarction (Figure 1). Serum troponin I was markedly elevated. Echocardiography showed mild hypokinesia of the inferior wall with an ejection fraction of 45%.

The patient was immediately started on dual antiplatelet therapy, statins, and anticoagulants, and underwent emergency percutaneous coronary intervention (PCI) with successful stent placement in the right coronary artery.

Outcome: The patient showed marked improvement, was discharged after 5 days on secondary preventive therapy including beta-blockers, ACE inhibitors, and statins. Lifestyle modification advice was provided [Figure 1].

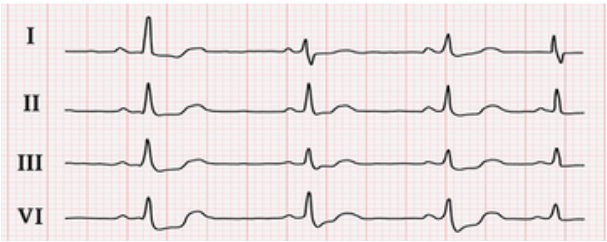

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Figure 1: Electrocardiogram of the patient showing ST-segment elevation in inferior leads (II, III, aVF) consistent with acute myocardial infarction.

Discussion

Cardiovascular diseases (CVDs) are the leading cause of death globally, accounting for approximately 32% of all annual deaths, with myocardial infarction (MI) representing a critical medical emergency [4]. This case highlights several key factors in the pathophysiology and management of MI. Chronic hypertension, a significant modifiable risk factor, contributes to the underlying endothelial dysfunction and arterial stiffness that increase the risk of plaque rupture, leading to acute coronary events [5]. The patient's history of smoking further compounded this risk. The timely diagnosis of MI hinges on the early recognition of chest pain symptoms, immediate electrocardiogram (ECG) assessment, and cardiac biomarker measurement [6]. Our case underscores the importance of a rapid diagnostic pathway, as confirmed by both ECG changes and elevated troponin levels. A key takeaway is that prompt revascularization through percutaneous coronary intervention (PCI) is essential for improving patient survival and reducing long-term complications. Looking ahead, long-term management is crucial and focuses on aggressive blood pressure control, lipid-lowering therapy, and significant lifestyle modifications to prevent a recurrence.

Conclusion

This case highlights the importance of early detection, risk factor management, and prompt intervention in the management of acute myocardial infarction. Awareness among high-risk individuals and adherence to secondary prevention measures are critical to improving outcomes in cardiovascular diseases.

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