

# Simultaneous Acute Ischemic Stroke and ST-Elevation Myocardial Infarction Pre-hospital Emergency Management by a General Practitioner

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## Abstract

*Simultaneous acute ischemic stroke (AIS) and ST-elevation myocardial infarction (STEMI) is a rare and life-threatening clinical scenario that presents significant management challenges, particularly in pre-hospital settings. We report the case of a 45-year-old male with a history of chronic hypertension, prior ischemic attacks, and paraplegia, who initially presented with severe hypertension. While initially without acute focal neurological deficits, he rapidly developed aphasia, upward gaze deviation (vertical nystagmus), tremor, and hemiparesis, accompanied by ST-segment elevation on electrocardiography. At the time of assessment, the patient was unconscious, rendering oral aspirin administration impossible. In the pre-hospital setting, immediate blood pressure control was initiated and intravenous unfractionated heparin was administered as a single bolus dose, avoiding continuous infusion to minimize hemorrhagic risk, in accordance with guideline-recommended management for STEMI. The patient was then urgently transferred to a tertiary center, where emergency percutaneous coronary intervention was successfully performed. The patient survived with full recovery of consciousness. This case highlights the critical role of timely clinical judgment and decisive pre-hospital management by a general practitioner in simultaneous cardio-cerebral emergencies. Written informed consent was obtained from the patient for publication of this case report.*

**Keywords:** Acute Ischemic Stroke, ST Elevation Myocardial Infarction, Pre Hospital Care, General Practitioner, Emergency Management, Anticoagulation and Percutaneous Coronary Intervention

## 1. Introduction

Simultaneous occurrence of acute ischemic stroke (AIS) and ST-elevation myocardial infarction (STEMI) is uncommon and associated with high morbidity and mortality. Management is particularly challenging due to competing priorities, including the need for rapid myocardial reperfusion while minimizing the risk of intracranial hemorrhage. Most reported cases involve management in tertiary centers with immediate access to advanced imaging and multidisciplinary teams. Reports describing initial management in pre-hospital or primary care settings are scarce. This case illustrates the pivotal role of a general practitioner in early recognition, risk stratification, and life-saving intervention prior to hospital arrival.

## 2. Case Presentation

### 2.1. Patient Information

A 45-year-old male with a medical history of chronic hypertension, heart failure, two prior ischemic attacks, and paraplegia below the waist was evaluated in a pre-hospital setting. His regular medications included antihypertensive and antithrombotic therapy.

### 2.2. Clinical Presentation

The patient initially presented with severe hypertension. At first assessment, there were no acute focal neurological deficits. Within minutes, he developed sudden-onset aphasia, upward gaze deviation (vertical nystagmus), tremor, and hemiparesis, along with mild chest discomfort. Importantly, the patient was unconscious at the time of assessment, which rendered oral administration of aspirin impossible.

### 2.3. Initial Assessment

Blood pressure was markedly elevated at 250/180 mmHg. Electrocardiography demonstrated ST-segment elevation consistent with acute STEMI. Neuroimaging was not available in the pre-hospital setting. Due to the patient's impaired consciousness, oral antiplatelet therapy could not be safely administered, representing a significant management limitation.

### 2.4. Emergency Management

Immediate management focused on stabilization and treatment of the life-threatening cardiac condition. Controlled blood pressure reduction was initiated using

intravenous antihypertensives. Given the presence of STEMI and the inability to administer oral aspirin, intravenous fractionated heparin was administered as a single bolus dose (approximately 60–70 IU/kg), and continuous infusion was avoided to reduce potential hemorrhagic risk. The patient was then rapidly transferred to the emergency department for definitive care.

### 2.5. Outcome and Follow-Up

Emergency percutaneous coronary intervention was performed successfully. The patient survived and regained full consciousness. No immediate hemorrhagic complications were observed. The patient was subsequently managed in the hospital setting according to standard post-PCI and stroke care protocols.

### 3. Discussion

Simultaneous AIS and STEMI represent a rare but critical clinical emergency requiring rapid prioritization of interventions. In this case, management decisions were made in a pre-hospital environment without access to neuroimaging or advanced diagnostics. The patient's impaired consciousness and vertical nystagmus further complicated pre-hospital management, making oral aspirin administration unsafe due to aspiration risk. The presence of ST-segment elevation indicated an immediately life-threatening myocardial infarction, necessitating urgent anticoagulation. Intravenous unfractionated heparin was therefore administered as a single bolus dose, with continuous infusion avoided, reflecting a careful balance between urgent myocardial reperfusion and potential intracerebral hemorrhage risk. Although anticoagulation carries a potential risk in patients with suspected acute stroke, the clinical presentation in this patient—absence of trauma, sudden severe headache, or vomiting—reduced the likelihood of intracerebral hemorrhage. Given the high immediate risk of cardiac mortality associated with untreated STEMI, the benefits of bolus-only anticoagulation were judged to outweigh the potential risks.

This case demonstrates that in life-threatening STEMI with simultaneous neurological compromise, single-dose intravenous UFH can serve as a temporizing measure when oral antiplatelet therapy is contraindicated, pending definitive imaging and hospital-based intervention. The successful outcome underscores the critical importance of rapid clinical decision-making, prioritization of life-threatening conditions, and timely transfer in complex pre-hospital emergencies.

### 4. Conclusion

Simultaneous cardio-cerebral ischemic events pose complex therapeutic challenges, particularly in pre-hospital settings.

This case demonstrates that prompt clinical assessment, prioritization of life-threatening conditions, and guideline-based intervention by a general practitioner, including bolus intravenous UFH when oral therapy is impossible, can be life-saving. Early stabilization, controlled blood pressure reduction, and urgent transfer for definitive cardiac care contributed to a favorable outcome in this patient.

### Author Contribution

for consideration as a Case Report in SN Comprehensive Clinical Medicine. Simultaneous occurrence of acute ischemic stroke and ST-elevation myocardial infarction is a rare and life-threatening clinical scenario. Management is particularly challenging when it occurs in a pre-hospital setting, where diagnostic resources are limited and rapid clinical decision-making is essential. Most published cases describe management in tertiary centers; however, reports focusing on initial pre-hospital intervention by a general practitioner are scarce. In this case, a general practitioner performed early clinical assessment and initiated guideline-based emergency management, including blood pressure control and intravenous unfractionated heparin for STEMI, followed by urgent transfer for percutaneous coronary intervention. Despite the diagnostic uncertainty inherent to the pre-hospital environment, timely prioritization of the immediately life-threatening cardiac condition contributed to a favorable outcome. This report highlights the critical role of primary care physicians in complex cardio-cerebral emergencies and emphasizes the importance of clinical judgment when advanced imaging is unavailable. We believe this case aligns well with the journal's scope, offering educational value for clinicians involved in acute and emergency care. This manuscript has not been published previously and is not under consideration elsewhere. Written informed consent for publication was obtained from the patient. There are no conflicts of interest to declare. Sincerely,

### References

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