

MANAGEMENT OF NSTEMI IN AN ELDERLY PATIENT WITH ACUTE PULMONARY EDEMA AND SYMPTOMATIC BRADYCARDIA: A CASE REPORT

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ABSTRAK

Penanganan infark miokard non-elevasi ST (NSTEMI) pada pasien lanjut usia dengan komorbiditas signifikan menghadirkan tantangan klinis yang substansial. Edema paru dan bradikardia simtomatik pada kasus NSTEMI memerlukan intervensi multidisiplin segera untuk menstabilkan pasien. Mengingat perubahan fisiologis yang kompleks pada pasien lanjut usia, kasus ini memberikan gambaran mendalam tentang tantangan penanganan sindrom koroner akut pada populasi berisiko tinggi. Kami menyajikan kasus seorang wanita berusia 84 tahun dengan riwayat hipertensi, gagal jantung kronis, dan penyakit ginjal kronis yang datang dengan nyeri dada yang menjalar ke punggung, dispnea, dan bradikardia. EKG pasien menunjukkan blok atrioventrikular total, dan rontgen dada menunjukkan edema paru. Pemeriksaan darah mengonfirmasi diagnosis NSTEMI dengan peningkatan kadar troponin, anemia, dan fungsi ginjal yang memburuk. Pasien diobati dengan oksigen, terapi antiplatelet ganda, nitrat sublingual, morfin, diuretik, dan atropin, diikuti dengan rujukan untuk pemasangan alat pacu jantung. Kasus ini menunjukkan kompleksitas penanganan NSTEMI pada pasien lanjut usia dengan berbagai penyakit penyerta. Pengenalan dini, terapi medis yang cepat, dan rujukan tepat waktu untuk perawatan jantung tingkat lanjut sangat penting untuk meningkatkan hasil pada pasien berisiko tinggi tersebut.

Kata Kunci: Non-ST Elevation Myocardial Infarction (NSTEMI), Elderly Patients, Comorbidities, Acute Coronary, Syndrome, Pulmonary Edema, Bradycardia, Atrioventricular Block, Dual Antiplatelet Therapy, Pacemaker Implantation, Renal Function.

ABSTRACT

Managing non-ST elevation myocardial infarction (NSTEMI) in elderly patients with significant comorbidities presents substantial clinical challenges. Pulmonary edema and symptomatic bradycardia in NSTEMI cases require immediate, multidisciplinary intervention to stabilize the patient. Given the complex physiological changes in elderly patients, this case provides an in-depth look into the challenges of managing acute coronary syndromes in a high-risk population. We present the case of an 84-year-old female with a history of hypertension, chronic heart failure, and chronic kidney disease who arrived with chest pain radiating to the back, dyspnea, and bradycardia. The patient's ECG revealed a total atrioventricular block, and chest X-ray showed pulmonary edema. Blood investigations confirmed the diagnosis of NSTEMI with elevated troponin levels, anemia, and worsening renal function. The patient was treated with oxygen, dual antiplatelet therapy, sublingual nitrates, morphine, diuretics, and atropine,

followed by a referral for pacemaker implantation. This case demonstrates the complexity of managing NSTEMI in elderly patients with multiple comorbidities. Early recognition, prompt medical therapy, and timely referral for advanced cardiac care are critical for improving outcomes in such high-risk patients.

Keywords: *Non-ST Elevation Myocardial Infarction (NSTEMI), Elderly Patients, Comorbidities, Acute Coronary Syndrome, Pulmonary Edema, Bradycardia, Atrioventricular Block, Dual Antiplatelet Therapy, Pacemaker Implantation, Renal Function.*

INTRODUCTION

Non-ST elevation myocardial infarction (NSTEMI) is a common manifestation of acute coronary syndrome (ACS) that predominantly affects elderly patients with multiple comorbidities. The risk of adverse outcomes, including death and recurrent ischemic events, is significantly higher in this population due to underlying cardiovascular and renal diseases (O’Gara et al., 2013). Management becomes increasingly complex when NSTEMI is accompanied by acute complications, such as pulmonary edema and bradycardia, which require urgent and specialized interventions.

Elderly patients, due to physiological changes and multiple concurrent illnesses, have altered pharmacokinetics and pharmacodynamics, complicating the standard treatment protocols for ACS (Morrow et al., 2007). Furthermore, chronic kidney disease (CKD) and chronic heart failure (CHF), both common comorbidities in elderly patients, limit the use of certain medications and increase the risk of fluid overload, which can exacerbate pulmonary edema (Anderson and Morrow, 2017). This case report illustrates the critical decision-making process in managing NSTEMI complicated by acute pulmonary edema and symptomatic bradycardia in an elderly patient.

Case Presentation

Patient Information

- **Name:** Mrs. SN
- **Age:** 84 years
- **Gender:** Female
- **Chief Complaint:** Chest pain radiating to the back, dyspnea, especially when lying flat, with symptomatic bradycardia. The patient described the chest pain as persistent, with increasing shortness of breath upon exertion.

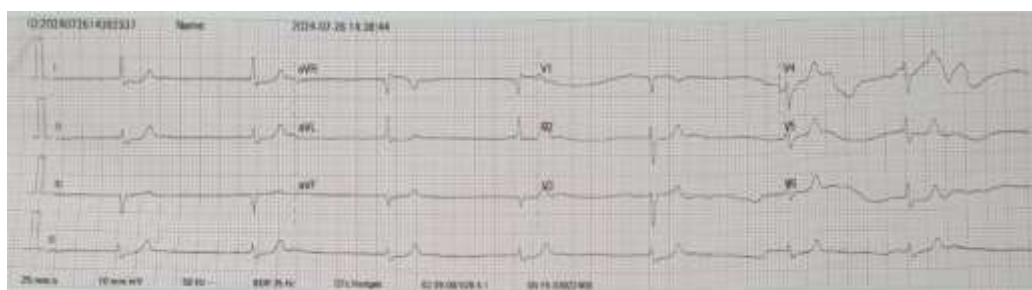
- **Medical History:** The patient had a history of hypertension (HT), chronic heart failure (CHF), and chronic kidney disease (CKD). She had been on regular treatment, including Spironolactone, Candesartan, Digoxin, KCL, Farsiretic, and Meloxicam. Despite compliance with her medications, her symptoms worsened on the day of admission.

Physical Examination

- **Vital Signs:**
 - BP: 171/92 mmHg
 - HR: 50 bpm
 - RR: 22 breaths/min
 - SpO2: 91%, improved to 99% with nasal oxygen 3L/min.
- **Cardiovascular Exam:** Regular heart sounds (S1, S2), no murmurs.
- **Respiratory Exam:** Bilateral rales, particularly in the lower lung fields, indicating pulmonary congestion.
- **Abdomen:** Soft, non-tender, no hepatosplenomegaly.
- **Extremities:** Warm, with capillary refill time <2 seconds. No peripheral edema.

Diagnostic Workup

- **Electrocardiogram (ECG):**



The ECG revealed a total atrioventricular (AV) block with a ventricular rate of 50 beats per minute and non-specific ST changes, consistent with ischemia. The absence of ST-segment elevation confirmed the diagnosis of NSTEMI. Bradyarrhythmias in the context of myocardial ischemia suggest advanced conduction system disease, often exacerbated by myocardial injury (Epstein et al., 2008).

- **Chest X-ray:**



The X-ray showed bilateral pulmonary infiltrates indicative of pulmonary edema. Pulmonary edema in this setting likely resulted from fluid overload, secondary to heart failure and worsening renal function.

- **Laboratory Findings:**

- **Complete Blood Count (CBC):**

- WBC: $19.0 \times 10^9/L$ (elevated, indicating stress response or infection)
- Hemoglobin (HGB): 10.1 g/dL (anemia, common in CHF and CKD)
- Hematocrit (HCT): 29.6% (low)
- Neutrophils: 83.2% (elevated)

- **Renal Function Tests:**

- Urea: 105 mg/dL (elevated, CKD worsening)

- Creatinine: 3.50 mg/dL (elevated, worsening CKD)
- **Troponin T:** Elevated, confirming myocardial injury consistent with NSTEMI.

Diagnosis

- Non-ST Elevation Myocardial Infarction (NSTEMI) with Killip Class 3
- Acute Pulmonary Edema
- Symptomatic Bradycardia with Total AV Block
- Stage 2 Hypertension

Management

The patient received nasal oxygen at 3 liters per minute, improving her oxygen saturation to 99%. Given her symptomatic bradycardia and the presence of AV block, the primary focus was to stabilize her hemodynamic status and prevent further ischemic damage.

The patient was treated with dual antiplatelet therapy (Aspirin 320 mg and Clopidogrel 300 mg) to prevent further platelet aggregation and clot formation. Sublingual nitrates (Isosorbide Dinitrate 5 mg) were administered to alleviate chest pain and reduce myocardial oxygen demand. Morphine (2 mg intravenously) was given to control pain and anxiety. Furosemide (Lasix 2 ampoules intravenously) was used to manage the pulmonary edema by promoting diuresis. Atropine (2 ampoules intravenously) was administered to manage the symptomatic bradycardia and stabilize heart rate.

Due to the symptomatic bradycardia and the total AV block, the patient was transferred to a tertiary care center for consideration of a permanent pacemaker. This intervention was essential to prevent further episodes of bradycardia and ensure adequate cardiac output

RESEARCH METHODS

Study Design:

Case report detailing the management of NSTEMI in an elderly patient.

Study Subject:

An 84-year-old female patient with a history of hypertension, chronic heart failure, and chronic kidney disease, presenting with NSTEMI symptoms (chest pain, dyspnea, bradycardia).

Data Collection:

- Comprehensive medical history and physical examination.
- Laboratory tests (troponin levels, hemoglobin, renal function).
- Diagnostic imaging (ECG and chest X-ray).

Intervention:

Initial treatment with oxygen, dual antiplatelet therapy, sublingual nitrates, morphine, diuretics, and atropine.

- Referral for pacemaker implantation after stabilization.
- Monitoring and Evaluation:
 - Continuous monitoring of vital signs and treatment response.
 - Follow-up assessments to evaluate renal function and clinical outcomes.
- Data Analysis:

Descriptive analysis of collected data and evaluation of factors influencing clinical outcomes.

Ethical Considerations:

Ethical approval obtained from the patient or family prior to data collection, ensuring confidentiality of patient information.

HASIL DAN PEMBAHASAN

This case highlights the complexity of managing NSTEMI in elderly patients, particularly when complicated by acute pulmonary edema and bradyarrhythmias such as total AV block. In elderly patients, physiological changes and multiple comorbidities complicate the management of ACS. NSTEMI in this population is associated with increased morbidity and mortality due to factors such as heart failure and renal impairment (O’Gara et al., 2013).

In this case, the patient’s presentation of NSTEMI was complicated by fluid overload, likely exacerbated by chronic heart failure and worsening kidney function. Diuretic therapy played a crucial role in managing the pulmonary edema, while the use of dual antiplatelet therapy was critical in addressing the underlying myocardial ischemia. Bradyarrhythmias, such as total AV block, significantly worsen prognosis in NSTEMI patients and require timely intervention to maintain hemodynamic stability (Epstein et al., 2008).

CONCLUSION AND SUGGESTIONS

This case demonstrates the importance of early recognition and timely management of NSTEMI in elderly patients with significant comorbidities. A comprehensive approach that includes prompt medical therapy and referral for advanced interventions, such as pacemaker implantation, is essential to improving outcomes in high-risk patients. The complexity of managing comorbidities, including heart failure and chronic kidney disease, underscores the need for individualized care in this vulnerable population

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