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CASE REPORT

Diagnostic Challenges of Pneumonia in an Elderly Patient Presenting with Acute Chest Pain: A Case Report

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Abstract : Community-acquired pneumonia in older adults often presents with atypical clinical manifestations, which may complicate diagnosis, particularly when patients present with acute chest pain. A 71-year-old man presented to the Emergency Department with left-sided chest pain described as a heavy pressure radiating to the neck and back, beginning six hours before hospital admission. The complaint was accompanied by nausea and a one-week history of cough without fever. Physical examination revealed a blood pressure of 160/100 mmHg and crackles in both lung fields. Electrocardiography showed ST-segment depression in the lateral leads. Laboratory examination revealed leukocytosis without an increase in CK-MB, while chest radiography showed an infiltrate in the right parahilar-paracardiac region consistent with pneumonia. The patient was diagnosed with Killip class I unstable angina pectoris accompanied by community-acquired pneumonia and received treatment for both conditions. This case demonstrates that pneumonia in older adults may present with atypical symptoms resembling acute coronary syndrome. A systematic diagnostic approach is necessary to identify both conditions accurately and determine appropriate management.

Keywords: pneumonia, older adult, chest pain, unstable angina pectoris, acute coronary syndrome

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INTRODUCTION

Pneumonia is an acute respiratory infection that can be caused by various pathogens, including bacteria, viruses, fungi, and parasites. It remains a major global health problem because it contributes substantially to morbidity and mortality across age groups. The risk of pneumonia increases in older adults, particularly in individuals with comorbidities and physiological changes in the respiratory system that increase susceptibility to infection (Perhimpunan Dokter Paru Indonesia, 2022; World Health Organization, 2026)

Clinically, pneumonia may be classified as community-acquired pneumonia, hospital-acquired pneumonia, or ventilator-associated pneumonia. The diagnosis of pneumonia is based on history taking, physical examination, laboratory findings, and radiological examination. Clinical manifestations in older adults are often atypical. Patients may present without fever and may instead experience weakness, decreased appetite, altered mental status, or chest pain. These features may delay recognition of pneumonia (Perhimpunan Dokter Paru Indonesia, 2022; Faverio et al., 2014)

Chest pain in patients with pneumonia presents a diagnostic challenge because it may resemble acute coronary syndrome. In addition, the systemic inflammatory response to infection may contribute to cardiovascular complications through activation of proinflammatory cytokines, endothelial dysfunction, platelet activation, and a prothrombotic state. These mechanisms may increase the risk of myocardial ischemia and acute coronary syndrome (Libby et al., 2018; Corrales-Medina et al., 2011; Dong et al., 2011; Meregildo-Rodriguez et al., 2023)

Therefore, older adults presenting with acute chest pain require a comprehensive diagnostic approach to distinguish cardiac from non-cardiac causes. This case report aims to describe the presentation of community-acquired pneumonia in an older adult with acute chest pain resembling acute coronary syndrome and to emphasize the importance of a

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diagnostic and management approach that addresses both conditions simultaneously

CASE REPORT

A 71-year-old man presented to the Emergency Department with a chief complaint of left-sided chest pain that had started approximately six hours before hospital admission. The pain was described as a heavy pressure radiating to the neck and back, with severe intensity measured at 9/10 on the Visual Analog Scale (VAS). The complaint was accompanied by nausea. The patient also reported a one-week history of cough without fever or hemoptysis. He reported easy fatigability during activities.

The patient had a history of smoking during his younger years but had quit smoking. He denied a history of hypertension or diabetes mellitus. He also denied any history of drug or food allergies. Physical examination revealed a moderately ill general condition with the patient conscious and oriented (*compos mentis*). Blood pressure was 160/100 mmHg, pulse rate 98 beats/minute, respiratory rate 24 breaths/minute, body temperature 36.7°C, and oxygen saturation 96% on room air. Head and neck examination revealed no anemia or jaundice. Cardiac examination showed regular S1 and S2 sounds without murmurs. Pulmonary examination revealed bilateral vesicular breath sounds with crackles in both lung fields and no wheezing. Abdominal examination was within normal limits. The extremities were warm, with a capillary refill time of less than two seconds and no peripheral edema.

Electrocardiography showed sinus rhythm with a heart rate of 90 beats/minute, a normal cardiac axis, and ST-segment depression in the lateral leads. Laboratory examination revealed leukocytosis with a white blood cell count of 13.63 × 10^3/µL, hemoglobin 12.9 g/dL, and platelet count 248 × 10^3/µL. The creatine kinase-MB (CK-MB) level was 1.0 ng/mL, with no elevation. Chest radiography showed an infiltrate in the right parahilar-paracardiac region consistent with pneumonia. Based on the history, physical examination, and supporting investigations, the patient was diagnosed with Killip class I unstable angina pectoris (UAP) accompanied by community-acquired pneumonia. The patient initially received bed rest and intravenous 0.9% NaCl at 1,000 mL/24 hours, along with intravenous ranitidine 50 mg twice daily. Treatment for UAP included aspirin 320 mg oral loading dose, clopidogrel 300 mg oral loading dose, isosorbide dinitrate 5 mg sublingually, and atorvastatin 40 mg. Treatment for pneumonia consisted of intravenous ceftriaxone 1 g every 12 hours, N-acetylcysteine 200 mg three times daily, and bronchodilator nebulization three times daily. Following treatment, the patient's clinical condition improved. Management was provided simultaneously while considering both the pneumonia and UAP identified in the patient.

DISCUSSION

This case demonstrates the challenge of diagnosing pneumonia in an older adult presenting with acute chest pain. In older adults, pneumonia may present with atypical clinical manifestations, meaning that classic respiratory symptoms such as fever, cough, and dyspnea may not always be the main complaints. These features may delay recognition of pneumonia, particularly when the presenting complaint predominantly suggests cardiovascular disease (Faverio et al., 2014; Klapdor et al., 2012).

The patient in this case was 71 years old and presented with left-sided chest pain described as heavy pressure radiating to the neck and back. This presentation was more suggestive of ischemic myocardial pain than pleuritic chest pain. However, the one-week history of cough, crackles on pulmonary examination, leukocytosis, and infiltrates on chest radiography supported the diagnosis of community-acquired pneumonia. Therefore, both diagnostic possibilities needed to be considered simultaneously.

Pneumonia can cause pleuritic chest pain due to inflammation of the parietal pleura. Pleuritic pain is generally sharp and may be affected by deep inspiration, coughing, sneezing, or movement of the chest wall. In this patient, the pressure-like pain with a VAS intensity of 9/10 and radiation to the neck and back was more suggestive of typical ischemic chest pain. Therefore, electrocardiography and cardiac biomarkers were important for evaluating the possibility of acute coronary syndrome.

In this case, ST-segment depression was found in the lateral leads without an elevation in CK-MB. These findings, together with the characteristics of the chest pain, supported the diagnosis of unstable angina pectoris as part of a non-ST-segment elevation acute coronary syndrome. Accordingly, the patient received antiplatelet, nitrate, and statin therapy in accordance with acute coronary syndrome management guidelines (Perhimpunan Dokter Spesialis Kardiovaskular Indonesia, 2023). On the other hand, leukocytosis and an infiltrate in the right parahilar-paracardiac region on chest radiography supported the diagnosis of pneumonia. The relatively atypical clinical presentation of cough without fever in this older patient is consistent with the characteristics of pneumonia in this population. This highlights the importance of not focusing on a single diagnosis when an older adult presents with chest pain.

The association between pneumonia and cardiovascular events is also an important aspect of this case. Acute respiratory infections have been reported to be associated with an increased risk of acute coronary syndrome. A meta-analysis by Dong et al. demonstrated an association between acute respiratory infections and acute coronary syndrome (Dong et al., 2011). The systemic inflammatory response during infection may increase proinflammatory cytokine activation, cause endothelial dysfunction, increase platelet activity and the prothrombotic state, and contribute to atherosclerotic plaque instability (Libby et al., 2018; Meregildo-Rodriguez et al., 2023).

Recent evidence further supports the close relationship between community-acquired pneumonia and cardiovascular complications. A systematic review and meta-analysis by Tralhao & Povoa (2020), which included 39 observational studies involving more than 92,000 patients, reported that cardiovascular complications occurred in a substantial proportion of patients with CAP, including acute coronary syndromes, heart failure, arrhythmias, and stroke. These findings suggest that cardiovascular events may occur during or shortly after pneumonia and are clinically important, particularly in patients with advanced age and underlying cardiovascular risk factors. In the present case, the coexistence of pneumonia and unstable angina may therefore represent a clinically relevant interaction between acute infection and cardiovascular disease (Tralhao & Povoa, 2020).

In this case, pneumonia was considered a possible triggering factor for the coronary event. Infection and inflammation may increase myocardial oxygen demand while affecting the balance between oxygen supply and demand. This is particularly important in older adults, who have a higher cardiovascular risk.

The severity of pneumonia could not be fully assessed using the CURB-65 score because blood urea was not measured. However, based on the available parameters, the patient had no altered mental status, hypotension, or severe tachypnea. These clinical findings suggested non-severe pneumonia, allowing the patient to be managed in a regular ward. Management in this case addressed both conditions simultaneously. Antibiotics were administered to treat pneumonia, while antiplatelet, nitrate, and statin therapy were given to manage UAP. This approach is important because pneumonia is not only an infectious condition requiring treatment but may also be associated with cardiovascular events in older adults. This case illustrates that acute chest pain in older adults is not necessarily caused by a single condition. A systematic clinical assessment, electrocardiography, cardiac biomarkers, laboratory investigations, and chest imaging are required to establish a more comprehensive diagnosis.

This case demonstrates that pneumonia in older adults may present with atypical clinical manifestations, including acute chest pain resembling acute coronary syndrome. Therefore, pneumonia should be considered in the differential diagnosis, particularly when atypical infectious symptoms are present. A comprehensive diagnostic approach involving the clinical history, physical examination, electrocardiography, cardiac biomarkers, and thoracic imaging can facilitate a more accurate diagnosis and enable timely initiation of appropriate treatment.

This case may increase clinicians' awareness of atypical presentations of pneumonia in older adults and provide a basis for further research into the relationship between pneumonia and acute coronary syndrome.

CONCLUSION

Community-acquired pneumonia in older adults may present with atypical clinical manifestations, including acute chest pain that mimics acute coronary syndrome. In this case, comprehensive evaluation involving the clinical history, physical examination, electrocardiography, cardiac biomarkers, and chest radiography enabled the simultaneous diagnosis of community-acquired pneumonia and unstable angina pectoris. Pneumonia may contribute to the development of acute coronary events through systemic inflammatory responses. This case highlights the importance of considering pneumonia as a differential diagnosis in older adults presenting with acute chest pain and emphasizes the need for simultaneous management of infection and acute coronary syndrome to optimize clinical outcomes.

STRENGTHS AND LIMITATION

The strength of this case report lies in its description of an atypical clinical presentation of pneumonia in an older adult whose main complaint was acute chest pain. The case also demonstrates the importance of a comprehensive diagnostic approach in recognizing pneumonia and acute coronary syndrome simultaneously.

The severity of pneumonia could not be fully assessed using the CURB-65 score because blood urea was not measured. In addition, cardiac biomarker evaluation in this case was limited to CK-MB, so information on other cardiac biomarkers was unavailable.

CONFLICT OF INTEREST

The authors declare that there are no financial or non-financial conflicts of interest that could have influenced the preparation or publication of this case report.

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ETHICAL APPROVAL

Patient identity was heavily protected by omitting personal registration numbers and using clinical pseudonyms. Institutional clearance and informed verbal consent from the patient's family for the utilization of anonymized clinical data were secured prior to manuscript compilation.

DECLARATION OF USING AI

The authors declare that artificial intelligence (AI) tools were used to assist with language editing, including grammar checking, paraphrasing, and improving clarity. AI was not used to generate original data, conduct data analysis, or independently interpret clinical findings. The authors take full responsibility for the content, interpretation, and conclusions presented in this manuscript.

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