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INTRODUCTION

Dressler syndrome (postcardiac injury syndrome) (PCIS) is an autoimmune-mediated syndrome that occurs after myocardial infarction (MI), heart surgery, chest traumas, pacemaker implantation, angioplasty, and is characterized by fever, pleuritis - pericarditis and lung parenchymal infiltration. It occurs over a period of weeks to months following cardiac or pericardial injury, although the exact pathophysiology is unknown (1). Laboratory findings may reveal leukocytosis, increased sedimentation, pulmonary parenchymal infiltration, and pleural effusion on chest X-ray (2). Also, during the pandemic, these laboratory and radiological findings were observed in patients with covid 19 infection. Therefore, PCIS might easily confuse with covid 19, and this affects treatment success. Diagnosis is difficult due to the lack of a diagnostic test, and it has been suggested that anti myocardial antibody titer in pleural fluid and serum has a diagnostic value (3). The diagnosis should mainly include the exclusion of pulmonary embolism, heart failure, and pneumonia. Nonsteroidal anti-inflammatory drugs and systemic

Dressler's Syndrome after Coronary Artery Bypass Surgery in pandemic period; A case report and review of the literature

Abstract

The incidence of Dressler's syndrome (postcardiac injury syndrome) has increased in parallel with the ascending performance of coronary artery bypass surgery in recent years. Although there is a lack of data about the incidence of postcardiac injury syndrome after coronary artery bypass surgery and it was reported to be 1.7%. The diagnosis of Dressler's syndrome is mainly made through the exclusion of differential diagnosis and during this process diagnosis may be delayed or missed. Especially, during the pandemic period, it might confuse with COVID 19 infection. This report presents the management of a Dressler's syndrome case admitted with complaints of dyspnea, chest pain, and fever in the early postoperative follow-up period for coronary artery bypass surgery.

Keywords: Cardiac surgery, pericardial effusion, pericarditis, Dressler's syndrome

corticosteroids are preferred for treatment (4). In this study, we present a case with PCIS in light of the literature which occurred 14 days after coronary artery bypass surgery (CABG).

CASE

A 64-year-old male patient who underwent CABG two weeks ago presented to the emergency department with complaints of fever, shortness of breath, and chest pain for 2 days. He had undergone 4 vessel on-pump CABG 14 days ago and was discharged uneventfully on the 6th postoperative day. The physical examination revealed that his general condition was moderate, and he was conscious, cooperation and orientation were complete. Vital parameters were detected as arterial blood pressure 100/60 mmHg, Pulse: 117/min, respiratory rate: 19/min, and body temperature: 38 °C. A cardiac examination revealed tachycardia, and a respiratory system examination revealed dullness in the left lower zone and decreased breath sounds in the same area. There were no signs of infection in the saphenous vein and sternum incision line. Pretibial edema was not observed. Laboratory findings were white blood cell count (WBC): 12,68

$10^3/\mu\text{L}$, hemoglobin (Hb): 9,6 g/dL, hematocrit (Hct): %30,4, platelet: $540 \times 10^3/\mu\text{L}$, erythrocyte sedimentation rate (ESR): 71 mm/h, C-reactive protein (CRP): 13 mg/dL values detected. Biochemical parameter findings including cardiac markers were in the normal range. Cardiophrenic sinus blunting was present in the left lung on the chest X-ray (Figure 1).



Figure 1. Left cardiophrenic sinus blunting, pleural effusion on chest X-ray

In arterial blood gas parameters were in the normal range. The COVID-19 (SARS-Cov-2) test was negative. Thorax CT revealed pleural effusion and passive atelectasis adjacent to the effusion in the left hemithorax (Figure 2).

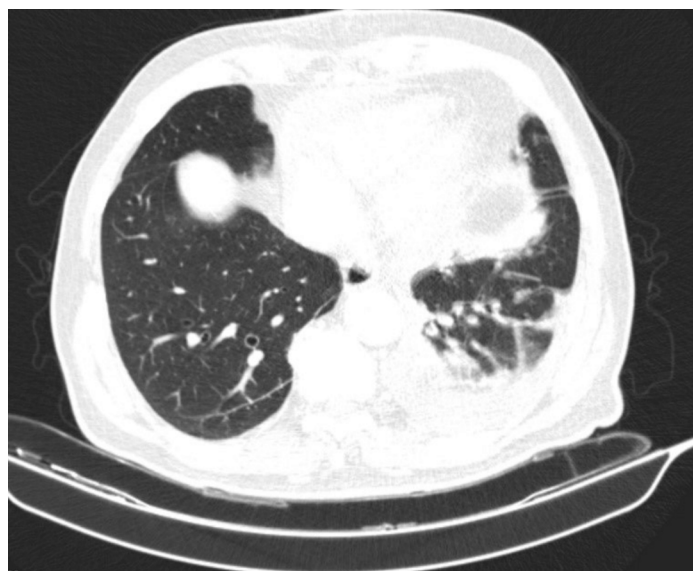


Figure 2. Pleural effusion and passive atelectasis adjacent to the effusion in left hemithorax

No pathology was detected in the electrocardiogram (ECG), except for sinus tachycardia. After the multidisciplinary evaluation by the cardiology, cardiovascular surgery, and chest

diseases clinics in the emergency department; the patient was hospitalized in the cardiovascular surgery intensive care unit with the preliminary diagnoses of pleural effusion and community-acquired pneumonia. Initially, until community-acquired pneumonia was ruled out, prophylactic parenteral moxifloxacin 400 mg/day was ordered and continued for five days. Enoxaparin sodium 4000 IU twice a day treatment was initiated considering the prophylaxis of deep vein thrombosis and the preliminary diagnosis of pulmonary embolism. Blood, urine, and sputum cultures were collected. Transthoracic echocardiography (TTE) revealed an ejection fraction of 60%, right and left ventricular dimensions and functions were normal, and pericardial fluid was not detected. After the diagnosis of pneumonia, heart failure, and pulmonary embolism was excluded with laboratory and radiological test results PCIS was considered and nonsteroidal anti-inflammatory treatment (ibuprofen 600 mg) was started. Methylprednisolone at a dose of 40 mg/day was added to the treatment of the patient whose symptoms and signs did not regress on the third day of follow-up. The symptoms of the patient regressed on the 7th day of treatment. The value of WBC decreased to $6.25 \times 10^3/\mu\text{L}$ and also CRP value decreased to 1mg/dL. There was a regression in pleural effusion on the chest X-ray (Figure 3). The patient's steroid treatment was planned to be discontinued 3 weeks later and discharged after adjusting the steroid dose. The sixth-month follow-up of the patient was uneventful without any complaints.

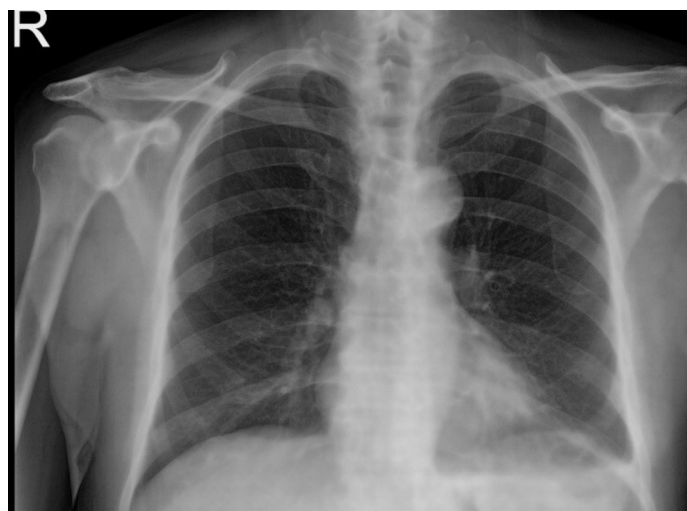


Figure 3. Regression in pleural effusion on chest X-ray before discharge

DISCUSSION

PCIS may develop following myocardial infarction, cardiac surgery, blunt chest trauma, percutaneous left ventricular biopsy, pacemaker placement, and angioplasty, but the incidence is higher in cases with large transmural infarction involving the pericardium (5). PCIS is an important complication of cardiac surgery and occurs in 1.7 % of postcardiotomy cases (6). PCIS is characterized by fever, leukocytosis, high ESR, and pericardial-

pleural effusion. The pathophysiology of PCIS has not been fully clarified yet but autoimmune mechanisms caused by combined cell-mediated and humoral mechanisms are thought to be effective (7). Antimyocardial antibodies have been reported in the pleural fluid of PCIS (8).

In the diagnosis of PCIS, it is very important to carefully evaluate the physical examination, laboratory findings, and imaging methods together with the history of patient in order to make a differential diagnosis. Although typically rather benign, PCIS may result in significant morbidity and potential mortality due to fatal arrhythmias, constrictive pericarditis, occlusion of the bypass graft, and cardiac tamponade. Therefore, its early detection is clinically relevant (9,10). Although fever is usually the first symptom, characteristic symptoms are shortness of breath and increased pleuritic or pericardiac chest pain radiating to the precordial region, neck, shoulders, arms, lower chest, and abdomen, coughing, deep breathing, swallowing (11). The laboratory test results of a patient with PCIS can reveal leukocytosis, high ESR, high CRP, increased heart size on chest radiographs, pleural effusion and pericardial effusion on echocardiograms support the diagnosis, but none are specific (12). Our patient, who presented with typical clinical manifestation and laboratory results, had a history of CABG 2 weeks ago. TTE, thorax CT and chest X-ray findings also supported the clinical condition of the patient. Thoracentesis was not performed because our patient had minimal pleural effusion and anti myocardial antibody tests were not performed in our laboratory.

The diagnosis of PCOS makes upon some criteria classified as major and minor. 2 major and 1 minor criteria existence is sufficient for diagnosis. Major criteria are pericardial or pleural friction sound, chest pain and fever above 38oC, also minor criteria are increased ESR, CRP level, and leukocyte count (13). Our patient has 2 major and 3 minor criteria.

Furthermore, PCIS is usually diagnosed with the exclusion of other possible diagnoses. As a result of clinical and laboratory values, the diagnosis of PCIS is made after the exclusion of pulmonary embolism, pneumonia, congestive heart failure, and also the exclusion of complications secondary to coronary artery bypass surgery (5,14). Also, cases of pericardial effusion and cardiac tamponade due to COVID-19 infection have been reported during the pandemic. Therefore, the diagnosis of COVID-19 infection should be excluded (15). Although the risk of these possible complications was high in our patient after CABG surgery, as well as a high risk of covid-19 infection due to the pandemic. Our patients' blood, urine, sputum culture, and COVID-19 test results were negative. The diagnosis of pneumonia was ruled out because the patient did not have both sputum purulence and elevated fever, and there was no finding of parenchymal consolidation on initial CT images. TTE findings led us to move away from the diagnosis of congestive heart failure in the patient. The diagnosis of embolism was dismissed because there was no finding in favor of embolism in thorax CT

and TTE.

The prognosis of PCIS is generally good, and patients can be treated on outpatient. Nevertheless, the multidisciplinary evaluation is important for excluding the other diagnosis. Our patient was evaluated with the multidisciplinary approach of cardiovascular surgery, cardiology and chest diseases clinics with the current findings. The initial treatment strategy involves administering NSAIDs (for example; aspirin, ibuprofen, naproxen) over a period of 4 to 6 weeks. Patients who do not respond to NSAID therapy may be given a tapering corticosteroid (for example; prednisolone) and colchicine over 4 weeks. Pericardiocentesis is a treatment option in more severe patients who may present with symptoms of cardiac tamponade (16). Steroids are discouraged for use in viral lung infections, including COVID-19, with exceptions. Exclusion of covid-19 infection in PCIS is important for possible steroid therapy. Patients presenting like PCIS following CABG surgery during the pandemic period are at a higher risk of deep vein thrombosis and pulmonary embolism due to a possible covid-19 infection. Therefore, prophylactic low molecular weight heparin therapy is very important.

CONCLUSION

PCIS as a complication of cardiac surgery should be kept in mind in patients presenting with fever, shortness of breath, and chest pain following postcardiotomy. In pandemic conditions, COVID-19 infection should also be excluded besides heart failure, pulmonary embolism and pneumonia.

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Patient informed consent: Patient consent was obtained for the publication of this article.

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