

Case Report

An Unusual Cause of Dyspnea in a Patient with Rheumatoid Arthritis

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- Pericardial tamponade

Abstract

Rheumatoid arthritis (RA) is a chronic systemic inflammatory condition of unknown etiology that affects the joints and the visceral serosa of heart, lungs and peritoneum. Pericarditis and pericardial effusion are the most common presentations of cardiac involvement. Pericardial tamponade is extremely rare affecting <1% of these patients. We report an interesting case of a young female with poorly controlled RA who presented with progressive dyspnea. Initial work-up was concerning for pericardial effusion based on chest radiographic and electrocardiographic findings. A transthoracic echocardiogram confirmed a large pericardial effusion. Elevated inflammatory markers and serological evidence of an active disease were detected on blood tests. A repeat echocardiogram performed to evaluate worsening of dyspnea and hypotension revealed increase in pericardial effusion. A right heart catheterization revealed equalization of diastolic pressures in the right atrium, right ventricle, and pulmonary artery wedge pressure diagnostic of pericardial tamponade. An emergent pericardiocentesis was performed to relieve the pericardial pressure. She was treated with steroids to prevent reaccumulation of the pericardial fluid. An echocardiogram at follow-up visit 4 weeks later showed stable small pericardial effusion. Our case underscores the significance of early detection and treatment of a rare but potentially life-threatening complication such as cardiac tamponade to prevent bad outcome.

ABBREVIATIONS

RA: Rheumatoid Arthritis; DMARDs: Disease Modifying Anti-Rheumatic Drugs; TTE: Trans Thoracic Echocardiography

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic systemic inflammatory condition characterized by persistent synovitis and visceral serositis. Pericardial involvement is common in RA, which usually manifests as pericarditis or pericardial effusion. However, pericardial tamponade is extremely rare in these patients. We report an interesting case of a young female with RA presenting with dyspnea from rapidly progressive pericardial tamponade as a result of poorly controlled disease. High clinical suspicion and prompt diagnosis are paramount in identifying and treating potentially life-threatening complication such as cardiac tamponade.

CASE PRESENTATION

A 49-year-old Caucasian female with a past medical history of rheumatoid arthritis presented with oral ulcers, myalgias, and progressive shortness of breath over the past 10 days. She had

not taken any DMARDs for over 3 years and has been using over the counter non-steroidal anti-inflammatory agents for arthritic pain. On examination, she was afebrile and had a blood pressure of 107/70 mm Hg, heart rate of 114 beats per minute and respiratory rate of 25/min. Her cardiovascular examination was significant for tachycardia and distant heart sounds without any rubs or murmurs. Her lung examination was unremarkable otherwise. Mild synovitis was present in all proximal interphalangeal and metacarpophalangeal joints. Multiple subcutaneous rheumatoid nodules were palpable over her elbows bilaterally. Blood tests (normal reference values in parentheses) were significant for an elevated C-reactive protein of 15.85 mg/dl (<0.75), rheumatoid factor of 635 IU/mL (<20 IU/mL), Anti-cyclic citrullinated peptide of >300 U/mL (<3 U/mL), and Anti-nuclear antibody titers of 1:80 (<1:80) with a homogeneous pattern, reflecting an active RA disease. Electrocardiogram showed diffuse low voltage without any ST changes (Figure 1).

A plain chest radiograph showed lobular cardiac enlargement (Figure 1) prompting a transthoracic echocardiogram (TTE), which was remarkable for a large circumferential pericardial effusion with fibrinous strands. On the day 2 of hospitalization she became hypotensive with systolic blood pressures dropping

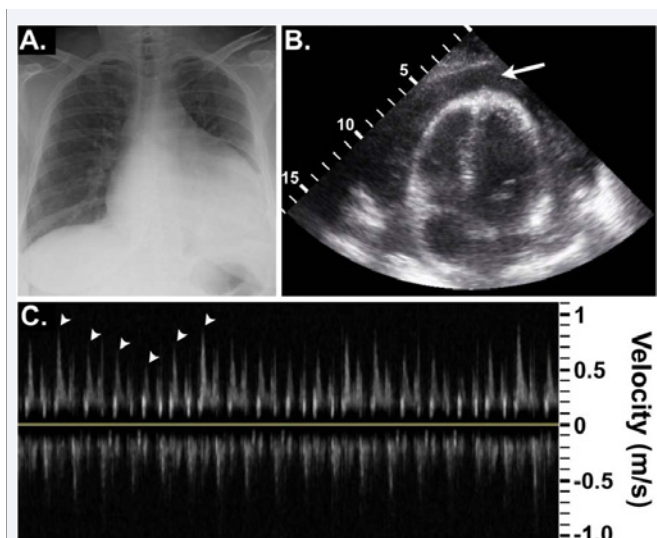


Figure 1 A. Chest radiograph showing lobular enlargement of the cardiac silhouette. B. Apical four chamber echocardiographic view depicting a large circumferential pericardial effusion (arrow). C. Significant respiratory variation in mitral E inflow velocity (arrowheads) on echocardiogram.

to 80's mm Hg with a pulsus paradoxus of 10 mm Hg. A repeat TTE showed an increase in the size of pericardial effusion with significant (>25%) respiratory variation of the mitral E wave consistent with increased pericardial pressure. Right heart catheterization revealed an equalization of diastolic pressures in the right atrium [23/20(19) mm Hg], right ventricle [35/16 (20) mm Hg], and pulmonary artery [33/19 (26) mm Hg] with a pulmonary arterial wedge pressure of 26/25 (20) mm Hg diagnostic of cardiac tamponade. She underwent an emergent pericardiocentesis with drainage of 500 ml of fibrinous straw colored fluid that resulted in drop of pericardial pressure from 18 mmHg to 4 mmHg and an immediate improvement in her dyspnea and tachycardia. A pericardial drain was left in place, which drained another 250 ml of fibrinous straw colored fluid in next 48 hours. Pericardial fluid analysis was significant for 5450 white blood cells/cu mm with 46% neutrophils and 46% mononuclear cells, 574 red blood cells/cu mm, a very low glucose of 10 mg/dl, total protein of 4.3 g/dl, and very high lactate dehydrogenase (LDH) level of 4367 IU/L without any microbial growth or malignant cells. She was treated with methylprednisolone for

exacerbation of RA. She was discharged on oral prednisone with recommendations to follow-up with a rheumatologist to optimize her treatment with anti-tumor necrosis factor therapy. A repeat TTE performed a month later revealed a stable small pericardial effusion.

DISCUSSION

Rheumatoid arthritis is a chronic multi-organ inflammatory condition predominantly involving the synovium and visceral serosa. Approximately 50% of the RA patients have echocardiographic or postmortem evidence of pericardial involvement [1]. About 2-14% of patients present with pericardial effusions, however, rapidly progressive effusions or pericardial tamponade is extremely rare (0.2-0.5%) [2]. Pericardial fluid analysis with high white cell count, low glucose, and an elevated LDH concentration is characteristic of pericardial effusion in RA. Non-steroidal anti-inflammatory agents, corticosteroids, and/or immunosuppressive drugs are commonly used to treat pericarditis or pericardial effusion [3]. However, percutaneous drainage is warranted for immediate relief of cardiac tamponade, while immunosuppressive agents such as corticosteroids and methotrexate are used adjunctively for controlling the inflammation and preventing fluid reaccumulation [4,5]. In summary, dyspnea or chest pain in RA patients should prompt a careful physical and diagnostic evaluation to identify cardiac effusion or tamponade.

REFERENCES

1. Mandell B, Hoffman G. Rheumatic diseases and the cardiovascular system. Braunwald's heart disease. 2004. 2101-2116.
2. Escalante A, Kaufman RL, Quismorio FP, Beardmore TD. Cardiac compression in rheumatoid pericarditis. *Semin Arthritis Rheum.* 1990; 20: 148-163.
3. Mellana WM, Aronow WS, Palaniswamy C, Khera S. Rheumatoid arthritis: cardiovascular manifestations, pathogenesis and therapy. *Curr Pharm Des.* 2012; 18: 1450-1456.
4. Cauduro SA, Moder KG, Luthra HS, Seward JB. Echocardiographically guided pericardiocentesis for treatment of clinically significant pericardial effusion in rheumatoid arthritis. *J Rheumatol.* 2006. 33: 2173-2177.
5. Imadachi H, Imadachi S, Koga T, Miyashita T, Izumi Y, Takayama H, et al. Successful treatment of refractory cardiac tamponade due to rheumatoid arthritis using pericardial drainage. *Rheumatol Int.* 2010; 30: 1103-1106.

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