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Case Report

Overlap Syndrome; The Actual Cause of a Presumed TB Pericardial Effusion- A Case Report

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Abstract

Pericardial effusion is a common manifestation of tuberculosis in endemic regions; however, autoimmune disorders should also be considered in the differential diagnosis. A 23-year-old woman initially presented with severe pericardial effusion and early cardiac tamponade. Despite negative microbiological investigations for tuberculosis, mildly elevated pericardial fluid adenosine deaminase (ADA) levels led to a presumptive diagnosis of tuberculous pericarditis and initiation of anti-tuberculosis therapy. She later developed ATT-induced hepatitis with persistent constitutional symptoms, polyarthritis, serositis, and proteinuria. Further autoimmune evaluation revealed strongly positive ANA, anti-RNP, anti-dsDNA, and other autoantibodies with low complement levels, confirming overlap syndrome (mixed connective tissue disease). Following corticosteroids and azathioprine, the patient demonstrated marked clinical and laboratory improvement. This case highlights the diagnostic challenge of distinguishing tuberculous pericarditis from autoimmune serositis in TB-endemic settings. A comprehensive evaluation is essential when microbiological evidence is lacking or patients fail to respond to empirical anti-tuberculosis therapy.

Keywords: Overlap syndrome, Mixed connective tissue disease, Pericardial effusion, Tuberculous pericarditis

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Introduction

Autoimmune diseases are a complex form of diseases that present with the involvement of several organs in one disease. Autoantibodies are physiologically present in our body; however, excessive production of autoantibodies can lead to autoimmune disorders.[1] Some patients will not only have a single disease due to which the concept of overlap syndrome was established. Overlap syndrome is where symptoms from two or more autoimmune conditions are identified in the same patient.[2]

Autoimmune rheumatic diseases are now widely recognized to also involve cardiovascular manifestations. In some patients, these manifestations may even serve as the initial indication of an underlying rheumatological disorder. The range of cardiovascular symptoms linked to rheumatic diseases is quite extensive, as these disorders can directly impact the myocardium, cardiac valves, pericardium, conduction system, and vasculature.[3]

According to the researches cardiac manifestations with relation to MCTD and its related diseases are present depending on its nature of severity, onset and physical evaluation. Abnormalities include acute and chronic pericarditis with or without effusions, mitral valve prolapse, intimal hyperplasia of coronary arteries, myocarditis and pulmonary hypertension.[4] Pericarditis is one of the cardiac findings in MCTD.[5] Our case report focuses on the dilemma of suspecting and treating pericardial effusion as a presumed manifestation of tuberculosis which instead was a feature of overlap syndrome.

Case Report

A 23-year-old female, unmarried, belonging to a lower socioeconomic status. She initially presented to the emergency department of a tertiary care hospital with complaints of shortness of breath, and chest discomfort 3 months ago, where she was diagnosed to have severe pericardial effusion with early signs of cardiac tamponade. She underwent pericardiocentesis. Pericardial fluid DR was done which showed raised polymorph nuclear cells,

protein fluid 5710 gm/dl, which was suggestive of an exudative etiology, however, gram Stain, AFB smear, culture and GeneXpert were negative for evidence of tuberculosis. Adenosine Deaminase levels of 44 U/L (Cutoff limit 40 U/L for tuberculosis). She was diagnosed as a presumed case of Tuberculosis and started on Anti-tuberculosis therapy (weight adjusted) for about one and a half months.

She presented to the outpatient department of our hospital with complaints of persistent vomiting, yellow discoloration of eyes, low grade fever, multiple joint pains, myalgia for 2 weeks and shortness of breath (NYHA III) for 1 week. She was having paroxysmal nocturnal dyspnea. She was having significant weight loss of 20kg for last 3 months. No past history of TB or TB contact with family members. On examination, she was febrile - 99F, tachycardia 110b/min, Blood pressure 110/70 mmHg, respiratory rate 20 bpm and Spo2 98% on room air. Weight= 45kg. She had pallor, jaundice and signs of dehydration. Thyroid and Lymph nodes (cervical, inguinal and axillary) were not palpable. Eye examination was unremarkable. On abdomen examination; no tenderness, no viscera's palpable, no shifting dullness and fluid thrill were appreciated. Bowel sounds were audible. On respiratory examination, clinical impression of right sided pleural effusion was made. On CVS examination; no visible pulsations. No tenderness on palpation. Apex beat localized to 5 midclavicular line at left side measured 6cm from mid-sternum. On auscultation s1 and s2 were audible. Pulse was regular, high volume, rate- 110b/min, no radio-radial and no radio-femoral delay. JVP= raised 11cm on 45 degrees. Peripheral pulses are intact. On musculoskeletal examination; clinical impression of synovitis of small joints of hands and wrist. Pain in full range of movements.

Initial impression of ATT induced hepatitis was made. Her lab workup showed Hb of 10 .01, pcv 28.2, RBC 3.52. Total bilirubin 10.94, direct bilirubin 7.99, sgpt 199, alkpo4 67, GGT 34 ,SGOT 67 , ESR 48 , HAV and HEV negative, HBS Ag and Anti HCV non-reactive. Urine DR; Bilirubin, urobilinogen and protein is positive. X-ray showed borderline cardiomegaly with obliteration of left CP angle. ECG showed sinus tachycardia, Echocardiography showed preserved EF 55 %. Mild pericardial effusion 8mm was noted. TAPSE 24. She was managed for ATT induced hepatitis; ATT was hold. Patient was re-evaluated for presenting symptoms of joint pain, serositis and proteinuria with the impression of autoimmune disease.

Workup of Autoimmune disease: An antinuclear antibody screen by standard indirect immunofluorescence demonstrated homogenous +3. An extractable nuclear antigen was positive for antinuclear ribonucleoprotein (anti-RNP) antibodies. Antibodies to native deoxyribonucleic acid (dsDNA), Smith antigen, SS-A(Ro), Nucleosome, Ribosomal p protein all were positive. Complements consisting of C3- 0.60g/l -low, C4-0.11g/l, CRP 108.98mg/dl. Urine for micro albumin was greater than 200.

She was diagnosed as mixed connective tissue disease. She was given high dose steroids pulse therapy as injection methylprednisolone 1g iv for 3 days once daily followed by prednisolone 1mg /kg and initiated on azathioprine 50mg bd and NSAIDS. Her symptoms and labs were monitored. She responded well to the treatment her symptoms resolved and serositis improved.

Discussion

Mixed connective tissue diseases are a group of autoimmune disorders that affect multiple systems and have various characteristics.[6] It is often seen in clinical practice that certain patients cannot be categorized as having a particular disease and, as a result, they are labeled as having an undifferentiated connective tissue disease.[7] The identification of symptoms from two or more connective tissue diseases in a single patient is another scenario that can occur, resulting in the emergence of concept of "Overlap Syndromes" (OSs).[6]

The most commonly observed cardiac manifestation of MCTD is pericarditis, which can impact all layers of the heart. Conversely, tamponade is a rare manifestation of the disease, and there is limited literature.[8] The incidence of pericardial involvement in various connective tissue disorders differs, with the highest rate being observed in overlap syndrome as 50% leads to diagnose pericardial effusion respectively.[9]

Previous studies show the presence of pericardial effusion been commonly present in patients of overlap syndrome whose disease is been late identified and sometimes becomes the early presentation to make the diagnosis of the syndrome. My case report is a unique presentation of tuberculous pericarditis which was unresponsive to treatment and was finally with extensive workup was diagnosed as overlap syndrome.

One of the case report mention a unique presentation of overlap syndrome as similar to our case. A 26yrs female black treated initially for pharyngitis which then present with fever, chest pain, bilateral knee

effusions, elbow effusion, sclerodactyly, left sided pleural effusion. Echo has posterior pericardial effusion with biopsy shows fibrinous pericarditis. ANA and anti-RNP was positive.[10]

Another female 19yr young girl reports with complain of chest pain, shortness of breath which on further investigations diagnosed as pericardial tamponade with ANA and anti-dsDNA positive. On treatment pericardial window was formed along with steroids to relive her symptoms.[11]

Our case report differs from on the point where pericardial effusion was drained and ADA levels was measured. As though ADA> 40 U/L suggestive of tuberculosis that becomes a misleading point to start treatment with anti-tuberculosis. As of ADA levels of more than 40 U/L are diagnostic for TB pericarditis (sensitivity 88%, specificity 83%).[12] Elevated levels of more than 200 pg/L are suggestive of tuberculous pericarditis. (Sensitivity 92%, specificity 100%).[13] One of the study suggestive of the fact that increase ADA levels in pericardial and pleural effusion not specify towards tuberculosis as it diagnosed as lung adenocarcinoma with metastasis in pericardium.[14]

Conclusion:

Our case report is an eye-opener in the field of medicine to broaden our horizons in the diagnosis of the disease rather than work over probability factors. Overlap syndrome is a multisystem connective tissue disease which is not only been diagnosed with symptoms only but can present initially with complications as well.

Ethical Approval: The IRB/EC approved this study via letter no.

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Authors' Contribution

AB: Conception.

IG: Design of the work.

UR: Data acquisition, analysis, or interpretation.

IG, UR: Draft the work.

AB: Review critically for important intellectual content.

All authors approve the version to be published.

All authors agree to be accountable for all aspects of the work.

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