

Case report



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Rheumatoid arthritis, a rare cause of acute myocarditis: a case report

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Abstract

Cardiovascular features in rheumatoid arthritis are common. However, the association of rheumatoid arthritis and myocarditis is seldom described. We report the case of a 56-year-old man with rheumatoid arthritis presenting with dyspnea. Echocardiography revealed severe left ventricle dysfunction and coronarography made it possible to eliminate a coronary artery disease. Cardiac MRI ultimately made the diagnosis of acute myocarditis. The patient improved gradually without immunosuppressive therapy. Conservative

treatment is a feasible strategy for myocarditis in patients with rheumatoid arthritis.

Introduction

Rheumatoid arthritis (RA) is a common inflammatory autoimmune disorder of the joints. It is also a systemic disease, because in addition to articular features it combines extra-articular features that can be life-threatening such as vasculitis, pleuropulmonary and cardiovascular complications. Cardiovascular complications of RA are dominated by pericarditis and also include valve diseases, atrio-ventricular conduction disorders, coronary artery diseases and myocarditis [1]. Cardiovascular diseases are considered to be a prognostic factor for RA [2]. Through this observation and based on literature data, we will highlight the peculiarities of myocarditis in the context of rheumatoid arthritis.

Patient and observation

A 56-year-old man with a 6-year history of seronegative and erosive rheumatoid arthritis treated with Methotrexate for 2 years, then on 5mg/d of prednisone. He was hospitalized for dyspnea associated with moderate chest pain without symptoms of flu syndrome. Pulse rate was 110 beats/min, arterial blood pressure was 90/50 mmHg, oxygen saturation: 90% and body temperature of 36.7°C were noted, associated with profuse sweating, pale and cool skin. Physical examination revealed bilateral crepitant rales. The electro-cardiogram showed a left anterior hemiblock and ventricular monomorphic extrasystoles. A chest radiograph disclosed cardiomegaly and interstitial syndrome. Blood analysis showed a high level of troponin at 50 times normal and elevated C-reactive protein at 25mg/l.

The echo-cardiography found a dilated left ventricular (LV), with poor systolic function (ejection fraction: 24%) and elevated LV filling pressure without pericardial effusion. The coronary angiography showed normal coronary arteries.

Under the impression of myocarditis, we arranged cardiac MRI which disclosed a global left ventricular hypokinesia with an ejection fraction of 26%. It also showed hyperemia (Figure 1) and sub-epicardial lateral, inferobasal and anterobasal wall delayed gadolinium enhancement (Figure 2) which constitutes two criteria among three of lake Louise criteria, thus confirming the diagnosis of myocarditis. Etiological investigation including viral serologies yielded normal results.

Conservative treatment with intravenous inotropic agents was initiated, we prescribed a β -blocker (bisoprolol) and an ACE inhibitor (ramipril) with good clinical evolution and progressive improvement in dyspnea. After 6 months, a repeated echocardiography showed a left ventricular of normal size and good global and segmental systolic function with an ejection fraction at 60% and a global longitudinal strain preserved at -18,3% and segmental strain slightly altered at the bases (Figure 3).

Discussion

Rheumatoid arthritis is a systemic disease; in addition to articular features it can associate extra-articular manifestations including cardiovascular diseases responsible for reduction in life expectancy. The term rheumatoid heart has been used to specify how different heart structures are affected during RA. Myocardial involvement is generally silent, many mechanisms can be responsible of this involvement including myocardial ischemia whether by macro or micro coronary ischemia, myocarditis or myocardial fibrosis [3].

Autopsies show that cardiac involvement was present in 50% of RA patients, dominated by pericarditis, myocarditis was encountered in 4 to 30% of these patients [1]. It is a rare but recognized complication of RA. It is characterized by a broad clinical spectrum which goes from the asymptomatic form to sudden death. The most common symptom of myocarditis is dyspnea. Two histological forms of myocarditis can be observed

in patients with RA: the interstitial form and the granulomatous form, the latter is more specific for RA, while the interstitial form is rather common in systemic lupus erythematosus [4]. Granulomatous lesions specific to RA can be seen grossly as yellow-gray spots in the endocardial surfaces, most often localized in the LV. Microscopically, they consist of: a central core of fibrinoid necrosis fibroblasts, a surrounding layer of palisading histiocytes, occasional multinucleated giant cells and an outer zone of fibrous tissue and chronic inflammatory cells [4].

Although myocardial biopsy may be an accepted method for the diagnosis of myocarditis, the possibilities of lethal complications and its limited sensitivity are the main concerns before intervention. Thus, other less invasive methods are necessary to diagnose and monitor myocardial damage, including echocardiography and MRI. If echo-cardiography allows a global and segmental study of myocardial contractility, it does not allow to detect an inflammatory process of the myocardium. Cardiac MRI is currently the method of choice for the diagnosis of myocarditis, it allows positive diagnosis with high sensitivity and specificity based on the criteria of lake Louise and thanks to the new tissue characterization methods, T1 and T2 mapping [3]. To our knowledge, for the moment, there have been no specific signs of rheumatoid myocarditis reported on cardiac MRI making it possible to differentiate between real rheumatoid myocarditis and viral myocarditis in a patient with RA. RA patients have an increased incidence of heart failure compared to the general population [2]. In addition to myocarditis, there are many causes of heart failure during RA, including the drugs used to treat this disease and coronary artery disease. Glucocorticoids are associated with an increased risk of congestive heart failure; this risk increases with the dose and would be higher if the drug is taken continuously rather than intermittently and also when the rheumatoid factor is positive [5]. Nonsteroidal anti-inflammatory drugs worsen congestive heart failure and should be avoided, they can cause sodium retention and decrease the response to diuretics [2]. Also studies

have shown that the use of infliximab is responsible for increasing rate of death and hospitalization for heart failure [5]. However, Methotrexate at a dose of 25mg per week, a dose that is usually effective in the treatment of RA, is believed to reduce cardiovascular mortality in RA patients [6].

Finally, coronary artery diseases remain the main cause of heart failure in these patients, they have the same risk of developing coronary artery diseases as diabetic patients [2]. Whether myocarditis is in the acute or chronic phase, the therapeutic options remain limited, if most patients respond well to standard treatment for heart failure, there are serious cases which may require mechanical circulatory assistance or even heart transplantation. Although autoimmune myocarditis can be one of the cardiac complications of many system diseases including RA, this diagnosis can only be made after eliminating an infectious cause, since viral causes are the most common. Immunosuppressive or immunomodulatory treatments can be considered.

Our patient has a seronegative RA. He developed acute congestive heart failure, the symptomatology of which was dominated by dyspnea, which was initially unexplained. Echocardiography having shown a severe dysfunction of the LV with high troponin levels. The coronarography made it possible to eliminate a coronary artery disease. Cardiac MRI allowed us to make the diagnosis of an acute myocarditis that would explain the degradation of the cardiac function without being able to confirm the rheumatoid origin of the attack, the evolution was marked by a recovery of a normal cardiac function under treatment of heart failure.

Conclusion

This is a case of myocarditis that marks the course of a chronic RA. Cardiac MRI is a useful method for studying myocardial inflammation. Failure to use immunosuppressive therapy remains a possibility for the treatment of myocarditis occurring during rheumatoid arthritis.

Competing interests

The authors declare no competing interests.

Authors' contributions

All the authors have read and agreed to the final manuscript.

Figures

Figure 1: T1-weighted fast spin echo images showing early gadolinium enhancement related to hyperemia in cardiac MRI: A) four-chamber view; B) short-axis view

Figure 2: late gadolinium enhancement sequence showing: A) linear sub-epicardial enhancement of the lateral wall of the left ventricle (arrows); B) inferobasal and anterobasal patchy sub-epicardial enhancement of the left ventricle (arrows)

Figure 3: echocardiography showing a left ventricular of normal size and good global and segmental systolic function: A) ejection fraction at 60% with the Biplane Simpson Method; B) global longitudinal strain preserved at -18,3% and segmental strain slightly altered at the bases

References

1. Cathcart ES, Spodick DH. Rheumatoid heart disease: a study of the incidence and nature of cardiac lesions in rheumatoid arthritis. *N Engl J Med.* 1962 May;266: 959-964. **PubMed | Google Scholar**
2. Nicola PJ, Maradit-Kremers H, Roger VL, Jacobsen SJ, Crowson CS, Ballman KV *et al.* The risk of congestive heart failure in rheumatoid arthritis: a population-based study over 46 years. *Arthritis Rheum.* 2005;52(2): 412-420. **PubMed | Google Scholar**
3. Kobayashi Y, Giles JT, Hirano M, Yokoe I, Nakajima Y, Bathon JM *et al.* Assessment of myocardial abnormalities in rheumatoid arthritis using a comprehensive cardiac magnetic resonance approach: a pilot study. *Arthritis Res Ther.* 2010;12(5): R171. **PubMed | Google Scholar**
4. Ferrans VJ, Rodríguez ER. Cardiovascular lesions in collagen-vascular diseases. *Heart Vessels Suppl.* 1985;1: 256-261. **PubMed | Google Scholar**
5. Dhawan SS, Quyyumi AA. Rheumatoid arthritis and cardiovascular disease. *Curr Atheroscler Rep.* 2008 Apr 1;10(2): 128-33. **PubMed | Google Scholar**
6. Micha R, Imamura F, Wyler von Ballmoos M, Solomon DH, Hernán MA, Ridker PM *et al.* Systematic review and meta-analysis of methotrexate use and risk of cardiovascular disease. *Am J Cardiol.* 2011;108(9): 1362-1370. **PubMed | Google Scholar**

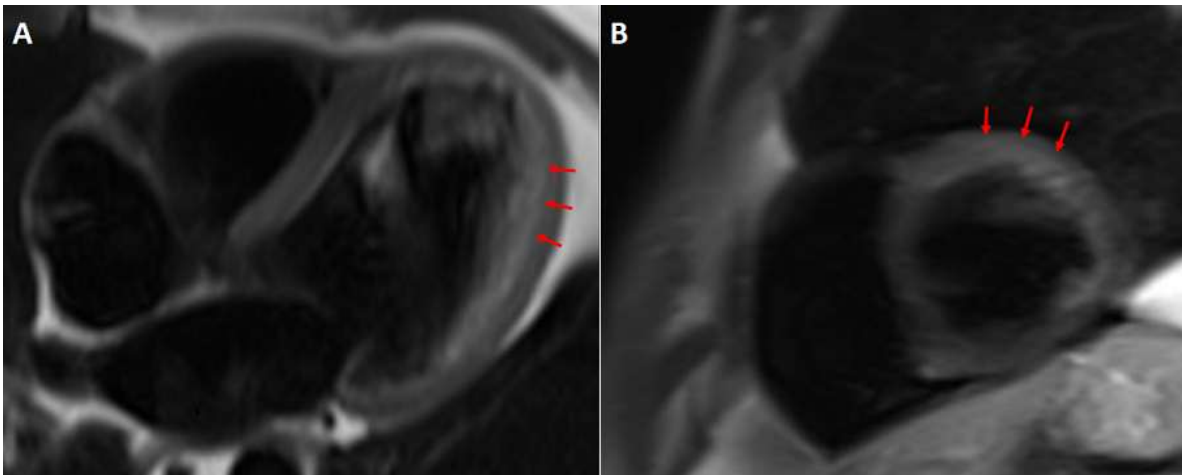


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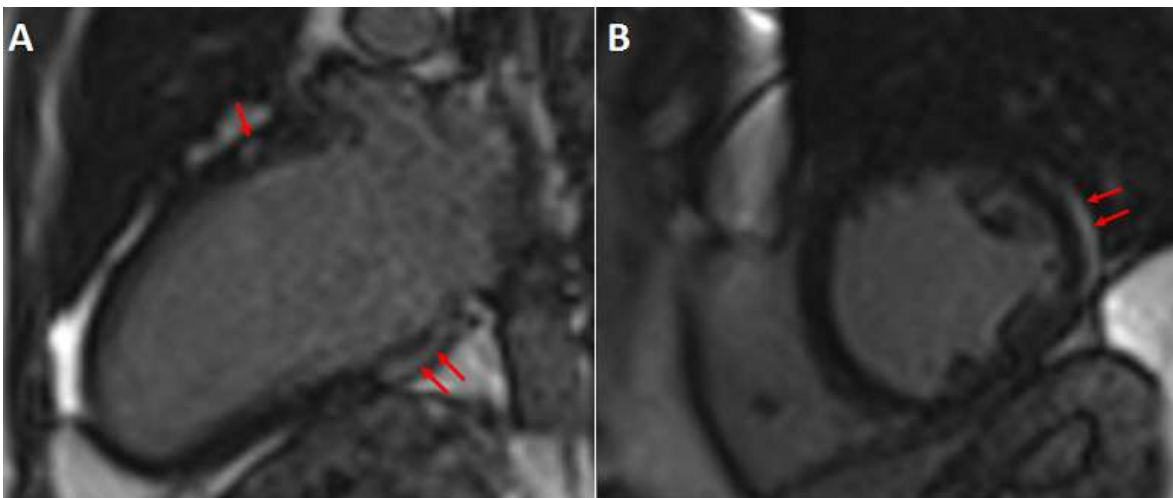


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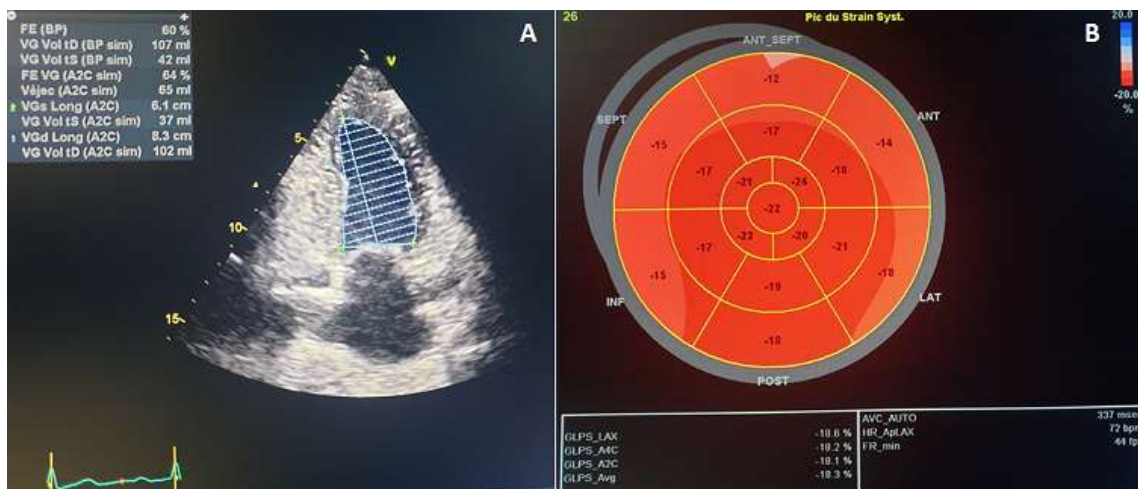


Figure 3: echocardiography showing a left ventricular of normal size and good global and segmental systolic function: A) ejection fraction at 60% with the Biplane Simpson Method; B) global longitudinal strain preserved at -18,3% and segmental strain slightly altered at the bases