

Case Report

Atrio Ventricular Block And Rheumatoid Arthritis : A Case Report

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Abstract:

Rheumatoid arthritis is an autoimmune and chronic inflammatory disease, several cardiac complications were reported, including conduction disturbances, we reported a case of complete Atrio-Ventricular block in a patient with rheumatoid arthritis, with obvious extensive calcified Rheumatoid granulomas in the interventricular septum.

Keywords: Complete Atrioventricular Block , Right Bundle Branch Block, Rheumatoid Arthritis.

Introduction:

Rheumatoid Arthritis (RA) is a common autoimmune disorder and chronic inflammatory disease, affecting 1-2 % of the population worldwide, more frequent in women.

RA affects several organs and tissues, particularly synovial joints, which leads to their progressive destruction and disability.

Cardiac involvement is common, including valvular disease, pericarditis, myocarditis, cardiomyopathy, coronary artery disease and also conduction disorders such as bundle branch block, and atrioventricular block, for the latter, several mechanisms are incriminated and may contribute to development of several degrees of atrioventricular blocks.

Case report

We report the case of a 49-year-old male patient with medical history of Rheumatoid Arthritis, diagnosed when he was fourteen, and treated with salazopyrine 2 g per day, he has significant bilateral and symmetrical joint deformities, typically characteristics of RA, like Swan-neck deformity and ulnar deviation of the fingers in gale. (figure 1)



Figure 1 : Severe bilateral and symmetrical joint deformities

In March 2023, He had experienced several episodes of palpitation, his surface ECG tracing showed sinus tachycardia with right bundle branch block and interval PR measured 200 msec. (Figure 2)

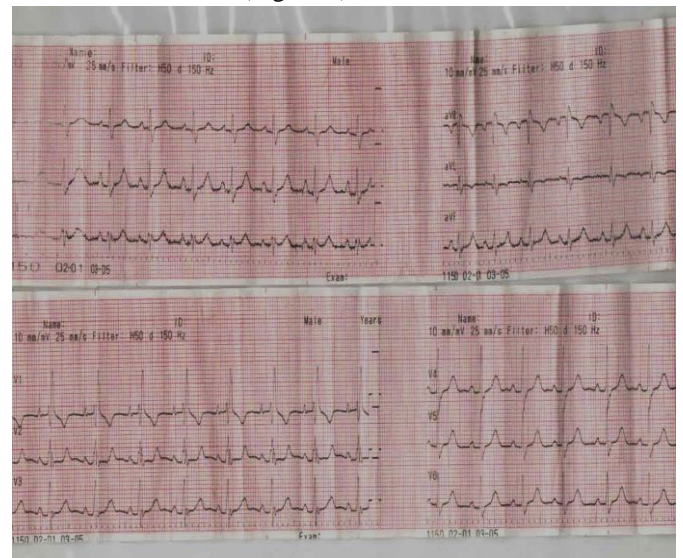


Figure 2 : Surface ECG of patient before hospitalisation
Sinus Rhythm with Right bundle branch block PR interval: 200 msec

In April 26th 2023, He had experienced dizziness and asthenia, his general state was preserved, no fever, no anemia, cardiac physical examination was in favor of moderate mitral regurgitation, with bradycardia, blood pressure 120/60 mmhg his surface ECG showed complete Atrioventricular block (AVB) (Figure 3), the site of AVB is nodal, because QRS morphology is the same with or without P conduction. The patient was admitted on the same day in our department for more investigation and treatment.

Etiologic investigations have eliminated a reversible cause of the atrio ventricular block.

Blood test is within normal range, the white blood cells : 6.10^3 , haemoglobin : 13.2 g/dl, blood creatinine : 7 mg/l, with normal inflammatory tests : fibrinogene 2.5 g/l, C reactive

protein : 4 mg/l, High-sensitivity Troponin T and electrolytes were within normal limites.

Specific biological tests of Reumatoide arteritis (Rheumatoid factors and anti-cyclic citrullinated peptide (anti-CCP)) performed in the past, were positive.

Transthoracic echocardiographie doppler performed during hospitalisation, showed, a cluster of calcified Rheumatoid nodules, embedded in the basal site of the interventricular septum, (Figure 4) and (Figure 5), with moderate mitral regurgitation, preserved left ventricular systolic function.

Single chamber pacemaker implantation was performed, (Figure: 6) (Figure:7) without complications, and with a good evolution.

At implantation Lead Impedance was slightly high (1300 Ω), then normalized (780 Ω) over time.

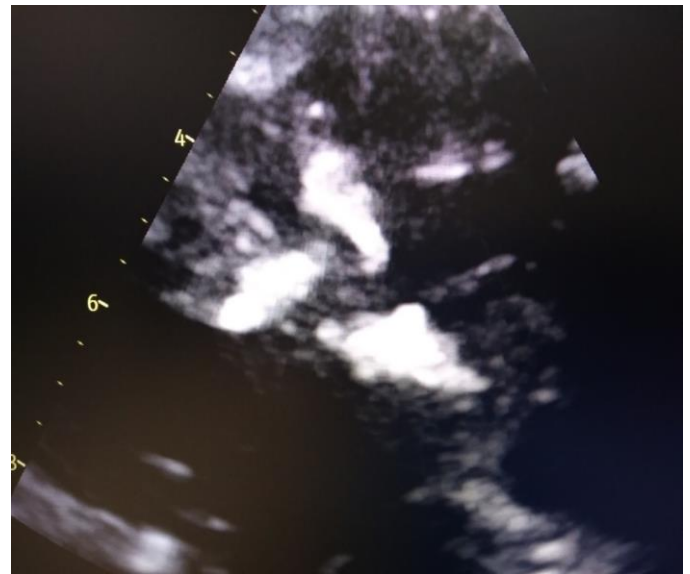


Figure 5: Calcified rheumatoid nodules in the base of the inter-ventricular septum at transthoracic echocardiography (zoom)

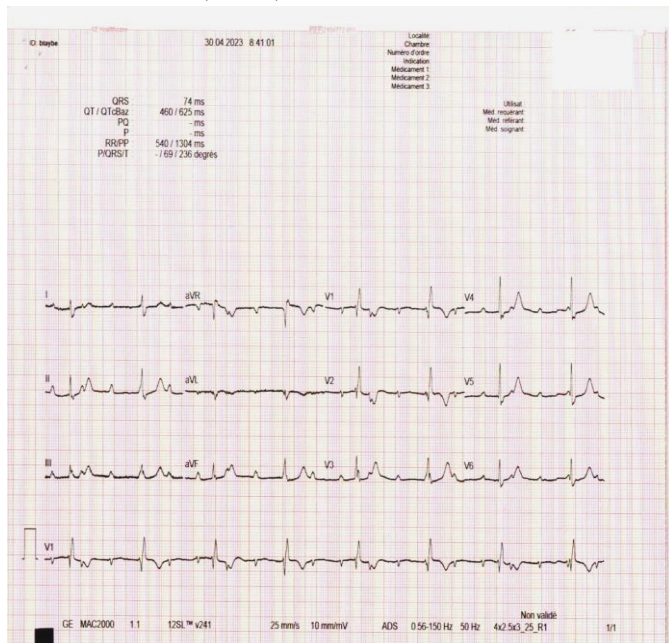


Figure 3 : Surface ECG at admission showed Complete Atrioventricular block.

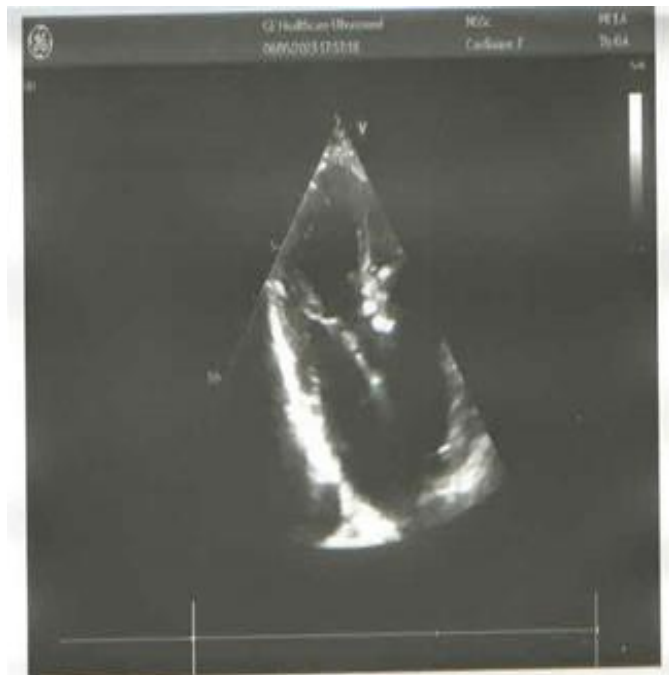


Figure 4: Calcified rheumatoid nodules in the base of the inter-ventricular septum at transthoracic echocardiography

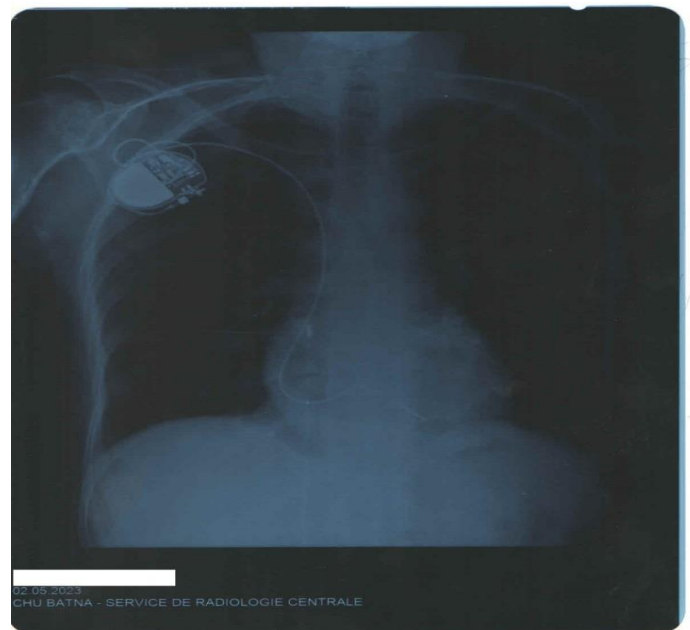


Figure 6: Chest radiography after implantation of single chamber pacemaker

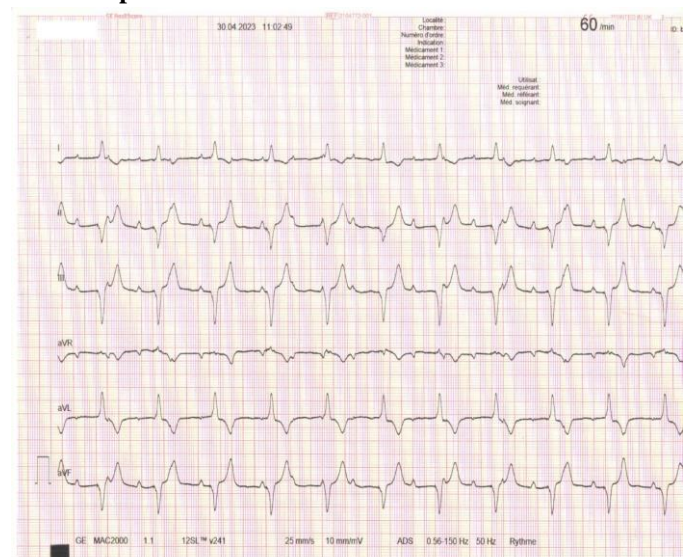


Figure 7: Surface ECG after implantation of single chamber pacemaker

Discussion

Rheumatoid arthritis (RA) is a common autoimmune disorder and chronic inflammatory disease, its prevalence varies widely. It affects approximately 1 % of the world population with a female predominance. [1]

Genetic, immunologic, hormonal factors, may contribute to development of RA, it affects several organs and tissues, particularly the small joints, which leads to their progressive destruction and disability. [2] [3]

Cardiac involvement is common, [4] including valvular disease, pericarditis, myocarditis, cardiomyopathy, coronary artery disease and also conduction disorders such as bundle branch block, and Atrioventricular block (AVB).

Atrioventricular block is rare complication; according to Ahern et al study, its incidence is approximately 1 in 1000 patients of RA, , while Raskar and Cosh reported an incidence of 1 in 1600 patients. [5][6], females are at a greater risk of developing AVB. [7]

For conduction disorders, several mechanisms are incriminated and may contribute to development of several degrees of AV Blocks, like ischemia, inflammation, or destruction of conductive tissue by rheumatoid nodules. [7]

Our patient had normal inflammatory tests, no previous coronary disease, High-sensitivity Troponine T and electrolytes were within normal limits, so coronary disease or ongoing inflammation, were unlikely. Destructive invasion of the conductive tissue by a rheumatoid nodule is the most likely, because of the obvious presence of calcified rheumatoid arteritis, embedded in the basal site of inter ventricular septum, and macroscopically visible in transthoracic echocardiography.

The surface ECG performed before occurrence of AVB showed complete right bundle brunch block and slight prolongation of PR interval, so invasion of conductive tissue was gradual and progressive, with destruction of right bundle brunch before destruction of Atrioventricular node.

There are two types of cardiac lesions in RA: nonspecific chronic inflammatory and specific rheumatoid nodule/granulomata formation, which embedded in the myocardium.

Cardiac rheumatoid nodules were described for the first time by Baggenstoss and Rosenberg In 1941. [8]

Rheumatoid nodule is a compact aggregate of histiocytes (macrophages) and may contain necrosis, lymphocytes, plasma cells, or multinucleated giant cells. [9]

Rheumatoid nodules are rarely visible at transthoracic echocardiography, but very often revealed by autopsy.

Conclusion

The occurrence of atrioventricular block in rheumatoid arthritis is rare but gradually, the mechanisms are multiples,

but the most obvious is the destructive invasion of the conductive tissue by rheumatoid nodules, so regular surface electrocardiography monitoring is recommended, especially in presence of bundle brunch block or prolongation of the PR interval, the transthoracic echocardiography may be a useful tool in nodules detection.

To our knowledge, obvious calcified rheumatoid nodule embedded in the interventricular septum visible at transthoracic echocardiography, were reported for the first time.

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