Review Article - Cardiovascular Manifestation in Rheumatoid Arthritis Patients

Maria Aziz, K S Yadav

Abstract— Rheumatoid Arthritis (RA) is a joint disease with Cardiovascular conditions as the most common cause of mortality. This review focuses on all cardiovascular disorders prevalent in RA patients ,their diagnosis and treatment.

Index Terms— inflammatory nature, extra articular manifestation, chronic disease, Cardiovascular Manifestation, Arthritis, Rheumatoid, articular manifestation, CVD disease, RA group

1. Introduction

RA is a joint disease of inflammatory nature. Its a chronic disease .It has both articular and extraarticular manifestations .Prominent joint symptoms include red ,swollen joint ,warmth and tenderness.[1]**The uniqueness of RA is ,it's a chronic disease of inflammatory nature** .It can cause rapid disability in < 2 yrs.There is progressive joint destruction and the joint loses its anatomical structure and physiological function both.[2]Histologically,RA is marked by vasculitis and it's the cardinal histological finding for extra articular manifestation.CVD diseases are the MC extraarticular manifestations amongst all and responsible as major cause of mortality in RA group .[3-4]

2. Cardiovascular Diseases in Rheumatoid Arthritis

Most common cardiovascular diseases of consideration in RA patients are[5]–

Inflammation of pericardium-Pericarditis

Myocardial involvement –cardiomyopathy /myocarditis

Blood vessels involvement-vasculitis

Rhythm disorders-arrhythmias

Valve diseases

CHF/IHD/Cardiac amyloidosis

3. Pericarditis

Pericardium is the most common layer to be affected in RA patients .Most common case profile is -Severely destructive and nodular RA in male patients is considered a risk factor for development of pericarditis.Prognosis is poor.MC pericarditis in RA is constrictive pericarditis and rapidly progressive effusive pericarditis.Treatment regimens include NSAIDs,corticosteroids,immunosuppresants and severe cases pericardiectomy .Onset could be after diagnosis of RA and in some cases even before diagnosis of RA.All patients wilth pericardial effusion should be screened for antibodies ,Immunoglobulin M –RF and anti-CCP.Early diagnosis and treatment significantly improves prognosis

4. Cardiomyopathy

Cardiomyopathy has cardiac muscles involved and affected. Heart muscles are the target of affliction. In RA associated cardiomyopathy, there is diffuse necrotizing or granulomatous myocarditis.Its more of a histological diagnosis. Some of the drugs used in the treatment of RA e.g corticosteroids and anti malarial also trigger cardiomyopathy.In

cardiomyopathy patients hence the treatment regimen has to changed and these drugs are removed from the plan.Diagnosis is confirmed by cardiovascular MRI,Cine CMR.

5. Amyloidosis

Amyloidosis is more common in male patients with longer duration of disease .Its a restrictive pericarditis with fibrillary protein infiltration in the myocardium .There is loss of compliance so systolic and diastolic functions are impaired .Diagnosed histological by sparkling pattern.ECHO with MRI show Biventricular hypertrophy. Treatment is with Immunosuppressant's .

6. Coronary Vasculitis

Vasculitis of coronary arteries is common inRheumatoid arthritis.Exact diagnosis is with end myocardial biopsy .Treatment is with immunosuppressant drugs.

7. Rheumatoid Granuloma

Rheumatoid granulomas can occur at any site organ but in heart common sites of involvement are the fat around epicardium,layers of heart ,septem between the ventricles ,chordate tendinae ,aorta and valves .These valves cause arrhythmias and valve disease .These nodules cause functional impairment .

There is no treatment for these nodules except medications that could relieve the symptoms and then last resort is surgery.

8. Arrhythmia

Arrhythmia is caused by ischaemia, amyloidosis, CHF, Conduction Abnormalities Due Rheumatoid Granulomas.Raised sympathetic activity causes ventricular tacky arrhythmias.

QT dispersion intervals are longer in RA patients ,also depend on the duration of the disease and also serve as a useful marker for CVD mortality associated with ventricular arrhythmias.

9. Valvular Insufficiencies

Valvular diseases are common in RA patients .Most common valve involved are the Mitral and Aortic valves and insufficiencies are common than stenosis .Valvular involvement is more common in Nodular RA .Clinical features of Mitral insufficiency are-Shortness of breath (dyspnea), especially with exertion or when you lie down, Fatigue, heart murmur, Heart palpitations, Swollen feet or ankles, Cough, nightfall RA patients with these symptoms should be screened for valvular involvement or patients with these clinical symptoms should be screened for RF and Immunoglobulin M –RF and anti-CCP .

10. Congestive Heart Failure, Ischaemic Heart Disease

CHF is more common in RA patients as compared to the general population and is the chief cause of mortality among RA patients.CVD mortality has linear correlation with markers of systemic inflammation in RA .Myocardial infarctions are common in RA patients. These facts support there is a significant correlation between serum lipid levels and inflammatory parameters.[6]

Several studies indicate besides the role of traditional risk factors as cause of CVD incidences in RA patients there are RA related factors that influence the risk of CVD diseases. Coronary calcification is more common in RA patients and is detected by electron beam CT scan .Carotid ultrasound is also used as a marker for cardiovascular disease .Besides cardiac diseases non cardiac vascular events i.e. cerebrovascular disease and peripheral artery disease are also more common in RA patients as compared to the general population..There is also association between severity of joint damage and intima-media thickness. Patients with higher titers of inflammatory mediators have higher risk and prevalence of ischemic heart disease .Inflammation plays vital predisposing risk factor role in causation of CVD events in RA patients.[7]

Echocardiography is used to diagnose CHF in RA Patients. Ventricular systolic/diastolic dysfunction are frequently found in RA patients. Hence RA patients with abnormal EKG should be screened for ventricular dysfunction with echocardiography.Corticosteroids reduce inflammation and hence reduce atherogenicindex, statins also by lowering LDL ,decrease the CVD risk. Amongst the drugs used in the treatment of

RA-Methotrexate is associated with reduced cardiovascular mortality and morbidity. Whereas anti –TNF agents, NSAIDs and COX-2 inhibitors has beeed with increased risk of cardiovascular events.[8]

Dyslipidemia in RA leads to atherosclerosis and the end result of the stenosis caused by the plaques are the Terminal Events-Acute Coronary Syndrome, Myocardial Infarction, Fatal Arrhythmias, Sudden Cardiac death. Hence Cardiologist while treating RA should be watchful for abnormal lipid profile .

Vitamin D deficiency is predominant in RA patients and its role in metabolic syndrome in RA patients has been speculated and further studies are warranted to explicit its role in CVD events in RA patients.[11-14]

11. REFERENCES

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12. CONCLUSION

Early diagnosis of cardiovascular diseases and treatment significantly improves prognosis of the case .Drugs that significantly affect lipid metabolism and parameters should be removed from the plan and the treatment regimen should be to changed .

All RA patients with cardiac symptoms should be screened for valvular involvement or CVD patients with valvular involvement should be screened for RF and Immunoglobulin M –RF and anti-CCP .

There is a significant correlation between serum lipid levels and inflammatory parameters.There is also association between severity of joint damage and intima-media thickness.RA patients with higher titers of inflammatory mediators have higher risk and prevalence of ishemic heart disease .Inflammation plays vital predisposing risk factor

role in causation of CVD events in RA patients.Hence control of inflammation will reduce CVD associated morbidity and mortality both.

RA patients with abnormal EKG should be screened for ventricular dysfunction with echocardiography. Corticosteroids reduce inflammation and hence reduce atherogenicindex, statins also by lowering LDL, decrease the CVD risk. Amongst the drugs used in the treatment of RA-Methotrexate is associated with reduced cardiovascular mortality and morbidity. Whereas anti –TNF agents, NSAIDs and COX-2 inhibitors has been with increased risk of cardiovascular events .Hence drug regimen plans for RA patients with cardiovascular disease should be judgmentally decided to reduce CVD mortality rate in the long term.

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