



# Management of Coronary Artery Bypass Graft Operation in a Patient with Rheumatoid Arthritis

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## ABSTRACT

Rheumatoid arthritis is an inflammatory condition with joint and systemic involvement. It is more common in women than in men. It is thought that the interaction of environmental and genetic factors plays a role in the chronic inflammatory process. It typically begins in the distal joints of the extremities as symmetrical involvement and progresses to the proximal joints. Symptoms lasting longer than six months are required for diagnosis. There is no pathognomonic test for the diagnosis of rheumatoid arthritis. Diagnosis is made through anamnesis, physical examination and a multisystemic approach. Since it is a systemic and inflammatory process, it can cause extra-articular involvement in many organs and systems such as the eye, heart, lung, and hematopoietic system. Therefore, early diagnosis and treatment are very important to prevent mortality and morbidity. In rheumatoid arthritis, the vascular system, like many other systems, can be affected due to the inflammatory process that can lead to coronary artery disease. The inflammatory process may cause coronary artery disease by causing damage to the vascular endothelium. Treatment strategies become more

important due to the use of disease-specific drugs. Our aim is to present a case with rheumatoid arthritis who underwent coronary artery bypass graft operation.

## Keywords

*Coronary artery disease; Coronary artery bypass graft operation; Rheumatoid arthritis*



# Romatoid Artritli Bir Hastada Koroner Arter Baypas Greft Operasyonunun Yönetimi

## ÖZET

Romatoid artrit, eklem ve sistemik tutulumunun olduğu inflamatuvar bir durumdur. Kadınlarda erkeklere oranla daha sık görülür. Çevresel ve genetik faktörlerin birbirileri ile olan etkileşiminin kronik inflamatuvar süreçte rol oynadığı düşünülmektedir. Tipik olarak ekstremitelerin distal eklemlerinden ve simetrik tutulum şeklinde başlar ve proksimal eklemlere doğru ilerler. Semptomların altı aydan uzun sürmesi tanı için gereklidir. Romatoid artrit tanısı için patognomonik bir test yoktur. Anamnez, fizik muayene ve multisistemik bir yaklaşımla tanı konulur. Sistemik ve inflamatuvar bir süreç olmasından dolayı göz, kalp, akciğer, hematopoetik sistem gibi birçok organ ve sistemde ekstraartiküler tutulum yapabilir. Bu nedenle erken tanı ve tedavi mortalite ve morbiditenin önlenmesi için oldukça önemlidir. Romatoid artritte, koroner arter hastalığına yol açabilecek inflamatuvar süreçten dolayı diğer birçok sistem gibi damar sistemi de etkilenebilir. İnflamatuvar süreç damar endotelinde hasara neden olarak koroner arter hastalığına neden olabilir. Hastalığa özel ilaç kullanılması nedeniyle tedavi stratejileri daha da önem kazanmaktadır. Amacımız koroner arter bypass greft operasyonu yapılan romatoid artritli bir olguyu sunmaktır.

### Anahtar Kelimeler

*Koroner arter hastalığı; Koroner arter baypas greft operasyonu; Romatoid artrit*

## INTRODUCTION

Inflammation plays a role in rheumatoid arthritis (RA) progression affects different systems mostly joints, eyes, skin, kidneys and lungs but also cardiovascular system (Crowson et al., 2013). The global prevalence of RA is 460 patients per 100,000 population (Almutairi et al., 2021). Risk of coronary artery disease (CAD) increased upto 2 folds in patients with RA compared with general population. Elevated inflammatory markers especially in active and severe RA such as anti citrullinated protein, C reactive protein erythrocyte sedimentation rate and rheumatoid factor play a role in increased risk of heart disease (Kremeres-Maradit et al., 2005). In a study composed of 4,363 patients incidence of any cardiovascular events in patients with rheumatoid arthritis was found to be 9.3% (Naranjo et al., 2008). Atherosclerosis is the main contributed process in CAD. Inflammation plays a key role in the development of atherosclerosis which leads to ischemic heart disease and myocardial injury (Semb et al., 2020). A various medication modalities were defined in the literature for RA including non-steroid antiinflammatory drugs (NSAIDs), corticotherapy, synthetic and biological anti-rheumatic drugs (DMARDs) which require a strict follow up in patients CAD (Rezus et al., 2021).

This study aimed to present the clinical approach to a patient with RA who operated due to CAD.

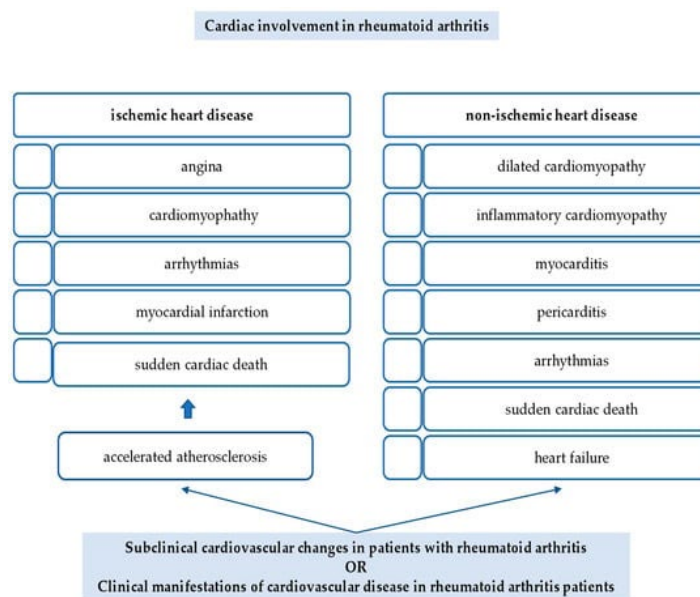
## CASE REPORT

A 55 year old woman admitted to the clinic with chest pain. She suffers from RA for 10 years and takes NSAID and sulfasalazine. The medical history is unremarkable for any chronic condition except smoking. The patient was smoking one-packed/year. Physical examination revealed multiple joint abnormalities in upper extremity distal joints and ischemic changes were detected in ecg. There were no abnormalities except increased LDL and decreased HDL levels according to laboratory findings. Coronary angiography showed more than 90% stenosis in RCA, LAD

and Cx. Other cardiac structures were normal and EF was 55%. It was decided to perform Coronary artery bypass graft operation (CABG ). NSAID medication was given up but sulphasalazine was continued preoperatively. After written informed consent three vessels CABG was performed. On the operation day the patient was extubated and observed in intensive care unit for 2 days. Beside acetylsalicylic acid, sulphasalazine was admitted when the patient achieved the oral intake. On postoperative 5th day the patient was discharged free of complication.

## DISCUSSION

Chronic inflammatory disease management requires attention both in medication and probable related conditions. Many organs and systems can be affected by RA such as cardiovascular system (Hansildaar et al., 2021). According to a metaanalyse consisted of 41920 patients with RA, an increased risk of CVD and MI with the ratio of 48% and 68% was shown respectively (Avina-Zubieta et al., 2021). Alteration of insulin resistance and lipid distribution and destruction of vascular endothelium occur due to inflammatory mediators produced by synovium. These mediators also affect blood pressure. As a result of these processes progression of atherosclerosis happen (Lei et al., 2023). In a study conducted by Galarraga et al., systemic inflammation was found to be responsible for microvascular endothelial dysfunction in patients with RA (Galarraga et al., 2008). Therefore patients with romatoid arthritis are candidates for coronary artery disease and sttrict follow up is important in those patients. Beside, RA is associated not only with coronary artery disease but also different various types of ishemic and non-ischemic cardiac disorders (Table 1) (Rezus et al, 2021).



**Fig 1.** Cardiac involvement in Rheumatoid Arthritis

CABG operations via sternotomy is a big challenge in patients with RA due to various extra postoperative manifestations such as delayed wound healing, necessity of postoperative supine position for a long term while lying and graft restenosis.

Delayed wound healing related to sternum and lower extremity in patients with RA after CABG is one of the main concerns. Undesirable effects on wound healing of NSAIDs were well documented in the literature (Fowler, 2018). Additionally, prolonged inflammation has adverse effects on wound healing (Geissler et al., 2022). Therefore, discontinuation of NSAIDs preoperative and postoperative period except low dose acetylsalicylic, continuation of synthetic DMARDs for their anti-inflammatory effects and well wound care is important factors for satisfactoried wound improving.

Requirement of postoperative supine position beside morning stiffness is one of the another subjects to deal with in patients with RA after CABG. Thi can be achieved by cardiac rehabilitation programme which includes life style modification, education, psychosocial support and exercises (Tasbulak et al., 2021).

Patients with RA have higher risks related to graft stenosis and MI risks after CABG due to chronic inflammtion. Thus, special attention is important for prevention of cardiovascular events including acetylsalicylic acid admission after CABG (Malmberg et al.,2021).

NSAIDs, corticosteroids and conventional synthetic DMARDs are accepted as the first line drugs for RA (Rezus et al., 2021). Increased cardiovascular risk was emphasized with long term use of NSAIDs. Platelet mobilization, vasoconstriction, increased risk of elevated blood pressure and atherogenesis are the probable mechanisms of this process (McGettigan and Henry, 2006). Although acetylsalicylic acid is a kind of NSAID, a dose of 100 mg/day is recommended in patients with RA for its cardioprotective effect (Bolten, 2006).

Corticosteroid can be used as a first line treatment in RA however it may link to CVD by worsening blood pressure, influencing insulin resistance and blood lipid levels and increasing abdominal obesity. Therefore they should be used in a short time period to control disease activity. For instance, 75 mg/day or higher doses are related to death from CVD (Zhang et al., 2021).

Synthetic DMARDs consist of methotrexate (MTX), sulphasalazine, gold salts, hydroxychloroquine and leflunomide. Although MTX is the gold standard therapy for RA, 30% of the patients stop taking MTX because of unresponsiveness and/or adverse effects. Smoking and female gender are related to MTX non-reponse (Sergeant et al., 2018). Initially MTX was started to our patient but continued with sulphasalazine because of not revealing the symptoms.

Sulphasalazine is an anti-inflammatory drug and has a positive impact on diminishing cardiovascular risk in patients with RA. Halm et al., showed the efficacy of sulphasalazine on lowering cardiovascular events in their study (Halm et al., 2006).

In conclusion sulfasalazine treatment used in RA must be given preoperatively and continued in postoperative period because of its positive effects on cardiovascular system. In addition although acetylsalicylic acid is one of the members of NSAIDs it must be given in low doses to prevent undesired cardiovascular events and after CABG in patient with RA and CVD.

Conflict of interest: The authors declare no conflict of interest.

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