

## **Title**

Characteristics of Rheumatoid Arthritis Patients with and without Cardiovascular Diseases -Data from the Ontario Best Practice Research Initiative (OBRI)

## **Authors**

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## **Key words**

Cardiovascular disease, Rheumatoid arthritis

## **Background/Purpose**

Cardiovascular disease (CVD) is a major comorbidity and the leading cause of death among patients with rheumatoid arthritis (RA). The aim of this study was to compare the characteristics and patterns of medication use in RA patients with and without CVD.

## **Methods**

Descriptive analyses were performed using physician and patient-reported data collected from the Ontario Best Practice Research Initiative (OBRI), a clinical registry of RA patients followed in routine care. CVD was defined as the presence of coronary artery disease (CAD), congestive heart failure (CHF), hypertension (HTN), arrhythmia, stroke, transient ischemic attack (TIA), and/or other heart disorders upon entering the registry (baseline). Patient demographics, clinical characteristics, socioeconomic status and treatment regimens were compared between patients with and without CVD at baseline using Chi-square and t-tests. Generalized linear regression models were used to estimate means for disease activity and functional status scores, adjusting for age, sex, smoking history, and socioeconomic factors.

## Results

Among 2305 RA patients, 725 (31.5%) had CVD at baseline. Of those who had CVD, 562 (77.5%) had HTN, 68 (9.4%) had CAD, 21(2.9%) had arrhythmia, 10 (1.4%) had CHF, 9 (1.2%) had TIA, 5 (0.7%) had stroke, and 108 (14.9%) had other heart disorders. Patients with CVD were older ( $64.5 \pm 10.1$  vs.  $54.2 \pm 12.9$  yrs,  $p < 0.0001$ ), and had longer RA disease duration ( $9.3 \pm 10.7$  vs.  $8.3 \pm 9.1$  yrs,  $p < 0.0001$ ). Male sex, low education and income, lack of private insurance, and smoking were also associated with the presence of CVD.

Positive rheumatoid factor (71.0% vs. 75.1%,  $p < 0.05$ ) was less prevalent in CVD patients. After adjusting for age, sex, income, education, insurance status, and smoking history, there were no significant differences in disease duration but CVD patients maintained higher disease activity (see table) , measured by DAS28, CDAI, RADAI, tender joint count-28 (TJC), and erythrocyte sedimentation rate (ESR). Functional status measured by HAQ was worse in CVD patients. Extra-articular features (24.7% vs. 16.0%,  $p < 0.05$ ) were higher among CVD patients. CVD patients were less frequently treated with biologics (19.5% vs. 24.0%,  $p < 0.05$ ) and NSAIDS (34.9% vs. 48.6%,  $p < 0.05$ ) but did not differ in disease-modifying agents (DMARDs) and steroids usage compared with non-CVD patients.

## Conclusion

RA patients with CVD have worse disease activity, more extra-articular features, and lower utilization of biologics and NSAIDS. The latter may be due to CVD risk with NSAIDs, but the lower utilization of biologics may require further investigation. Clarification on the CVD status of HTN patients is ongoing.

Table. Disease Activity and Functional Status comparing RA patients with and without CVD

Disease Activity and Functional Status Measures	CVD (N=725)		Non-CVD (N=1580)		P-value*
	Adjusted Mean*	SE**	Adjusted Mean*	SE**	
DAS28-ESR	4.6	0.06	4.4	0.04	0.007
CDAI	23.0	0.56	21.3	0.38	0.014
SDAI	24.7	0.64	23.6	0.44	0.178
RDAI	4.3	0.09	3.9	0.06	0.001
SJC	6.2	0.20	5.8	0.13	0.110
TJC	7.0	0.26	6.2	0.17	0.014
ESR	27.1	0.92	24.8	0.61	0.044
CRP	13.8	0.92	13.1	0.63	0.575
HAQ	1.3	0.03	1.2	0.02	<0.001

\*Adjusted for age, gender, income, education, insurance status and smoking history

\*\* Standard errors are reported