

Causal Association between Rheumatoid Arthritis and Inflammatory Bowel Disease: NHANES III Cross-Sectional Study

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Background: Rheumatoid arthritis (RA) and inflammatory bowel disease (IBD) are prevalent autoimmune disorders affecting joints and the digestive tract. Despite distinct manifestations, both share genetic and immune complexities, impacting a significant portion of the U.S. population.

Objectives: We conducted this cross-sectional study using the NHANES data to explore the association between IBD and RA between the years 2009-2010. **Methods:** Our study utilized NHANES data between 2009 and 2010. We analyzed a dataset of 37,857 participants, excluding those under 20 years old and missing data. We conducted various statistical analyses, including descriptive statistics, chi-squared tests, and logistic regression models to predict the likelihood of IBD in individuals with RA.

Results: Our analysis included 5,085 participants, among whom 499 had rheumatoid arthritis and 62 had IBD. Our results showed that various covariates significantly influenced the presence of arthritis, including race, marital status, vigorous work activity, smoking, hypertension, diabetes mellitus, congestive heart failure, coronary heart disease, stroke, emphysema, cancer, and uveitis ($P < 0.05$). Only 26 arthritis patients had IBD, whereas 36 patients without arthritis had IBD ($P < 0.001$). In addition, individuals with rheumatoid arthritis and other types of arthritis exhibited a higher risk of IBD compared to those without arthritis ($p\text{-value} < 0.05$, OR: 1.9-2.9).

Conclusion: Our American dataset analysis confirmed a substantial association between rheumatoid arthritis and inflammatory bowel disease.

Keywords: Rheumatoid arthritis, Inflammatory Bowel Disease, NHANES, U.S.