

**DIFFERENCES IN CARDIOVASCULAR COMPLICATIONS BETWEEN CROHN'S DISEASE AND ULCERATIVE COLITIS****Dayna Panchal, DO; Catherine Choi, DO; Umair Nasir, DO; Sushil Ahlawat, MD****Introduction:**

Inflammatory bowel disease (IBD) is marked by chronic inflammation which is known to promote damage to the endothelium of blood vessels, leading to venous thrombus formation. There is now growing evidence that IBD can increase the events of arterial stiffening, atherosclerosis, ischemic heart disease as well as other cardiovascular complications, such as stroke, myocardial infarction, aortic aneurysm or peripheral arterial disease. Though IBD patients have an increased risk of these events compared to the general population, it has not been established if they occur at differing rates within the IBD population. The objective of this study is to assess and compare the cardiovascular complications between Crohn's disease and ulcerative colitis (UC)

**Methods:**

The National Inpatient Sample Database from 2012-2014 was used to identify hospitalized patients with Crohn's Disease and ulcerative Colitis, by using ICD-9 codes. Primary outcomes were measured including hospital length of stay (LOS), inpatient mortality, coronary artery disease (CAD), myocardial infarction (MI), cerebrovascular accident (CVA), aortic aneurysm (AA) and peripheral arterial disease (PAD). Multivariate analysis was done to evaluate odds ratios after adjusting for age, sex and Elixhauser Comorbidity Index score.

**Results:**

A total of 431,057 patients with IBD were identified, of which 274,321 patients had Crohn's disease and 156,736 had ulcerative colitis. Chi-Square analysis compared categorical values while independent T-test compared nominal variables, and showed increased rates of CAD, MI, CVA, AA, PAD, LOS and inpatient mortality for patients with ulcerative Colitis. On average, patients with ulcerative colitis were older (mean age = 54.0 vs 49.2) and had a higher Elixhauser Comorbidity Index (mean ECI 5.3 vs 4.1). Male population in ulcerative colitis was also higher (46.1% vs. 41.2%). After adjusting for age, sex, and comorbidity, rates of AA between the two groups was not significantly different, however, rates of MI were higher in ulcerative colitis, while rates of CAD, CVA and PAD were higher in Crohn's disease.

**Discussion:**

Our study found that the ulcerative colitis population tends to be older, male, have more comorbidity and have higher incidence of cardiovascular disease overall. However, after adjusting for age, sex and comorbidity, rates of CAD, CVA and PAD were actually higher in Crohn's disease, while rates of MI were higher in the ulcerative colitis population. The difference may be attributable to an earlier average age of onset of Crohn's disease compared to ulcerative colitis, therefore causing a longer period of a pro-inflammatory state. These findings suggest that earlier screening for cardiovascular complications may be warranted for patients with IBD, especially Crohn's disease.

Table 1: Characteristics of patient population: Crohn's vs. UC

	Crohn's	UC	p-value	95% CI
N= 431,057	N=274,321	N=156,736		
Age, years (SD)	49.2 (19.4)	54.0 (21.1)	<0.05	-4.8 (-4.9 -4.7)
Sex				
Female	161,328 (58.8%)	84,455 (53.9%)	<0.05	
Male	112,993 (41.2%)	72,281 (46.1%)	<0.05	
LOS, days (SD)	5.2 (39.3)	6.0 (7.4)	<0.05	-0.90 (-1.1~ -0.7)
Elixhauser comorbidity index	4.1 (8.3)	5.3 (8.8)	<0.05	-1.2 (-1.3~ -1.2)
In-patient mortality	3,037 (1.1%)	3,946 (2.5%)	<0.05	

Table 2: Clinical outcomes in hospitalized IBD patients: Crohn's vs UC

	Crohn's	UC	P-value	
N= 431,057	N=274,321	N=156,736		
CAD	20,940 (7.6%)	15,372 (9.8%)	<0.05	
MI	4,723 (1.7%)	4,053 (2.6%)	<0.05	
CVA	9,933 (3.6%)	6,792 (4.3%)	<0.05	
Aortic aneurysm	1,525 (0.6%)	1,350 (0.9%)	<0.05	
PAD	5,661 (2.1%)	4,070 (2.6%)	<0.05	
LOS	5.2 (39.3)	6.0 (7.4)	<0.05	-0.90 (-1.1~ -0.7)
In-patient mortality	3,037 (1.1%)	3,946 (2.5%)	<0.05	

Table 3: Multivariate analysis, adjusted odds ratio: Comparing risk of developing complication in UC compared to Crohn's

	aOR (95% CI)
CAD	0.94 (0.92-0.96)
MI	1.14 (1.1-1.2)
CVA	0.92 (0.89-0.95)
Aortic aneurysm	1.04 (-.96-1.12)
PAD	0.90 (0.86-0.94)

aOR: adjusted odd ratios, adjusted for age, sex, comorbidity