

Celiac Disease is Associated with Cardiac Pathology: Results from a National Database

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Background

- Celiac disease (CD) is a common and underdiagnosed immune-mediated systemic disorder triggered by dietary gluten with a strong genetic component and various manifestations.
- Few studies examined the relationship of CD to cardiac pathology such as dilated cardiomyopathy (DCM), myocarditis (MC), and pericarditis.
- The potential links between CD and these cardiac pathologies include systemic inflammation, imbalanced nutrition, auto-immunity, and shared genetic predisposition.

Objective

- We aimed to study the association between CD and cardiac pathology using a large healthcare database.

Methods

- We queried IBM Explorys® (Cleveland, OH), a database aggregating approximately 81 million patients drawn since 1999 from across the United States.
- Employing SNOMED Clinical Terms® definitions, we described patients with DCM, idiopathic myocarditis, and pericarditis, excluding those with clear secondary diagnoses such as infection and lupus.
- Multivariate regression analysis was performed, accounting for demographic variables and potential confounders, including age, gender, hypertension, obesity, diabetes, alcohol abuse and tobacco use.

Celiac disease is associated with myocarditis (OR 3.5), pericarditis (OR 3.7), & dilated cardiomyopathy (OR 1.6)

Results

- Of 80,920,060 patients included in the database (including 143,330 CD patients / 0.18%), 848,960 were diagnosed with DCM (3,940 / 0.46% CD), 27,390 with idiopathic myocarditis (180 / 0.65% CD) and 63,990 with idiopathic pericarditis (460 / 0.71% CD).
- After running the multivariable regression analysis, CD was significantly associated with DCM (OR 1.56, 95%CI 1.50-1.60, p< 0.001), idiopathic myocarditis (OR 3.49, 95%CI 3.02-4.04, p< 0.001), and idiopathic pericarditis (OR 3.65, 95%CI 3.32-3.40, p< 0.001).

Table – Multivariable logistic regression analyses

Risk factor	Myocarditis	Pericarditis	DCM
Celiac disease	3.49 [3.02-4.04]	3.65 [3.32-4.00]	1.55 [1.50-1.60]
Age ≥ 65	2.05 [2.00-2.10]	2.45 [2.41-2.49]	2.28 [2.27-2.29]
Female	0.63 [0.62-0.65]	0.65 [0.64-0.66]	0.64 [0.64-0.65]
Caucasian	1.96 [1.91-2.01]	2.16 [2.12-2.20]	1.15 [1.14-1.15]
Tobacco use			1.63 [1.62-1.65]
Alcohol use			2.31 [2.29-2.33]
Diabetes			1.92 [1.92-1.93]
Obesity			1.86 [1.85-1.87]
Hypertension			7.82 [7.77-7.87]

Results written as odds ratio [confidence interval]
 p value for all <0.001
 DCM = dilated cardiomyopathy

Discussion

- An increased risk of cardiac pathologies may have clinical implications for CD patients who present with chest discomfort or those controlled on a gluten-free diet with new concerns of upper abdominal or lower chest discomfort.
- Further studies are needed to determine if following a gluten-free diet for such patients can change the natural course of their cardiac disease.