

# Celiac Disease is Associated with Idiopathic Inflammatory Myopathies: Results from a National Database

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## Background

- Celiac disease (CD) is a chronic, systemic immune-mediated disorder that occurs in genetically predisposed people upon ingestion of gluten.
- Small studies have noted a possible association between CD and inflammatory myopathies, such as polymyositis (PM), dermatomyositis (DM), and inclusion body myositis (IBM), with no large cohort studies.

## Objective

- We aimed to study the association between CD and inflammatory myopathies using a large, nation-wide healthcare database.

## Methods

- We queried IBM Exploryst<sup>®</sup> (Cleveland, OH), a database aggregating approximately 81 million patients drawn since 1999 from across the United States.
- Employing SNOMED Clinical Terms<sup>®</sup> definitions, we identified groups of patients with each of the three idiopathic inflammatory myopathies
- Multivariate regression analysis was performed, accounting for demographic variables and potential confounders, including age, sex, race, hypothyroidism, alcohol abuse, and tobacco use.

**Celiac disease is associated with inclusion body myositis (OR 11.6), dermatomyositis (OR 3.6), & polymyositis (OR 3.2)**

## Results

- In the database of 80,920,060 patients at the time of querying, there were 143,330 CD patients (0.18%).
- 18,270 (0.02%) of the total patients had dermatomyositis, with 160 (0.88%) of these carrying the diagnosis of CD. There were 8,970 (0.01%) polymyositis patients, with 70 (0.78%) also having CD. There were 1,520 (0.002%) IBM patients, with 30 (2%) having CD.
- Following multivariable logistic regression, CD was significantly associated with all inflammatory myopathies.

**Table – Multivariable logistic regression analyses**

Risk factor	IBM	DM	PM
Celiac disease	11.60 [9.02-14.92]	3.55 [3.11-4.04]	3.23 [2.89-3.60]
Age ≥ 65	9.16 [8.20-10.25]	2.26 [2.20-2.33]	2.51 [2.45-2.57]
Female	0.47 [0.43-0.52]	1.36 [1.32-1.40]	1.34 [1.31-1.38]
Caucasian	1.88 [1.69-2.09]	1.71 [1.65-1.76]	1.49 [1.45-1.53]
Alcohol use	3.01 [2.47-3.67]	1.76 [1.61-1.93]	1.64 [1.53-1.76]
Tobacco use	1.45 [1.25-1.68]	1.93 [1.84-2.02]	1.93 [1.86-2.00]
Hypothyroidism	3.08 [2.76-3.43]	3.33 [3.21-3.45]	3.59 [3.49-3.69]

Results written as odds ratio [confidence interval]  
 p value for all <0.001  
 IBM = inclusion body myositis, DM = dermatomyositis, PM = polymyositis

## Discussion

- Clinicians should be aware of this significantly elevated risk of inflammatory myopathies when assessing myalgia in celiac disease patients.
- Further studies are needed to determine if following a gluten-free diet for such patients can change the natural course of their inflammatory myopathies.