Background

Herpes zoster (HZ) is a disease characterized by a painful dermatomal rash, caused by reactivation of the varicella-zoster virus. The incidence of HZ is higher in ulcerative colitis (UC) and Crohn’s disease (CD) populations than the general adult population.

With higher incidence of HZ in these populations, this study examined the burden associated with HZ in patients with UC and CD in the United States.

Methods

**Study Design and Population**

Retrospective cohort study

Identification of patients based on diagnosis codes or on prescription claims for IBD-related medications*

*Details can be found in the supplemental data.

**Outcomes**

- Healthcare resource use and costs after 1 month
- More than half of patients used IBD medications at index though there were differences between HZ and non-HZ cohorts in the medications used

**Conclusions**

HZ poses a significant burden in UC and CD populations

These findings highlight the need to prevent HZ in patients with UC or CD
Algorithm for Identifying patients with UC and CD: Patients with UC and CD were identified using International Statistical Classification of Diseases and Related Health Problems – revision 10 (ICD-10) codes (ICD-10: K50 for CD, ICD-10: K51 for UC) based on previously validated claims algorithms, and grouped into two mutually exclusive patient cohorts:

- At least two claims associated with a diagnosis of UC or CD on separate days within a 30-day period OR
- At least one claim associated with a diagnosis of UC or CD and at least one pharmacy claim for an IBD-related medication (i.e., aminosalicylates, azathioprine, sulfasalazine, infliximab, ustekinumab, vedolizumab, anti-TNF biologics, and tofacitinib) within 30 days of the UC/CD diagnosis.

Individuals with claims for both UC and CD were assigned to one of the two mutually exclusive cohorts using a majority-based algorithm of the claims in the claims dataset. To illustrate, patients were classified into the CD cohort if (a) there was a greater number of CD-related inpatient (IP) stays than UC-related IP stays; (b) there was an equal number of CD- and UC-related IP stays, but more CD-related outpatient (OP) visits than UC-related OP visits; or (c) there was an equal number of CD- and UC-related IP stays and OP visits but the most recent claim prior to 62 index days for either.

IBD-related medications at baseline

Measured using different observation windows prior to index for various medications. Ustekinumab, Vedolizumab, Anti-TNF biologics, and IBD-related medications claim algorithms were identified based on a prescription or refill within 6 months prior to index allowing for an additional 30 days at discontinuation.

Calculation of standardized differences

Continuous variables: the standardized difference was calculated by dividing the absolute difference in means of each cohort comparison by the pooled standard deviation of both groups. The pooled standard deviation was the square root of the average of the squared standard deviations. For categorical variables, the standardized difference was calculated using the following equation where P1 was the respective proportion of participants in the first cohort, and P2 was the respective proportion of participants in the second/comparison cohorts: \[ \text{standardized difference} = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\left(\frac{P_1(1-P_1)}{n_1} + \frac{P_2(1-P_2)}{n_2}\right)}} \]

Methods

Results

<table>
<thead>
<tr>
<th>Test Procedure</th>
<th>UC+HZ</th>
<th>UC</th>
<th>CD+HZ</th>
<th>CD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-month post-Index costs in patients with UC and HZ vs patients with UC and no history of HZ</td>
<td>$2,205 (919;3,949)</td>
<td>$3,763 (2,025;7,173)</td>
<td>$3,679 (2,890;4,480)</td>
<td>$3,457 (2,667;4,247)</td>
<td>$9,164 (5,586;12,742)</td>
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<tr>
<td>1-month post-Index costs in patients with CD and HZ vs patients with CD and no history of HZ</td>
<td>$2,205 (919;3,949)</td>
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</tbody>
</table>

Healthcare resource use

<table>
<thead>
<tr>
<th>Healthcare resource use</th>
<th>UC+HZ</th>
<th>UC</th>
<th>CD+HZ</th>
<th>CD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs Medical Pharmacy</td>
<td>$2,205 (919;3,949)</td>
<td>$3,763 (2,025;7,173)</td>
<td>$3,679 (2,890;4,480)</td>
<td>$3,457 (2,667;4,247)</td>
<td>$9,164 (5,586;12,742)</td>
</tr>
<tr>
<td>Outpatient visits</td>
<td>0.17</td>
<td>0.08</td>
<td>0.19</td>
<td>0.13</td>
<td>0.56</td>
</tr>
<tr>
<td>Inpatient admissions</td>
<td>0.09</td>
<td>0.02</td>
<td>0.30</td>
<td>0.20</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Abbreviations: CD: Crohn's disease; CI: confidence interval; HZ: Herpes zoster; IBD: inflammatory bowel disease; IRR: incidence rate ratio; JNK: Junn kinase; n: number of patients; PPPY: per patient per year; TNF: tumor necrosis factor; UC: ulcerative colitis.

References


Authors information (ORCID #) and disclosures

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