Incidence of Oral Candidiasis Among Patients with Asthma Receiving Fluticasone Propionate/Salmeterol Dry Powder Inhaler versus Extra-fine Beclomethasone Dipropionate Hydrofluoroketane: Large-scale Retrospective Claims Analysis

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ABSTRACT

Objective: Oral candidiasis (OC) associated with inhaled corticosteroids (ICS) administration may arise as a result of oropharyngeal deposition of ICS and can be related to ICS dose, delivery system, inhalation technique, and ICS characteristics. This analysis evaluated claims data from MarketScan Commercial and Medicare Supplemental databases (2006-2010) to compare OC rates associated with fluticasone propionate/salmeterol dry powder inhaler (FP/SAL-DPI) versus budesonide/formoterol fumarate diskus (BDP-HFA).

Methods: Commercial and Medicare Supplemental databases were linked to IQVIA's MarketScan Research Databases to identify patients aged ≥1 year of continuous enrollment preceding the first ICS fill who were aged ≥18 years, diagnosed with asthma, newly initiated on ICS therapy with one of eight ICS formulations. Patients were matched 1:1 on age, sex, and asthma inhaler regimen. Only patients with >1 year of follow-up were included. Patients receiving antibiotics or oral corticosteroids during the 1-month preceding an OC diagnosis were excluded. Logistic regression identified the following variables that independently predicted OC diagnosis: age at first asthma diagnosis, sex, ICS dose, allergic rhinitis or allergic conjunctivitis diagnosis, region, region, health care resource use (CPT/HCPCS and NDC), and health care resource use (CPT/HCPCS and NDC).

Results: Compared to patients receiving BDP-HFA, those receiving FP/SAL-DPI had a significantly higher likelihood of subsequent OC (95% CI 1.21 to 1.40; p<0.0001). The risk of developing OC was increased for those on higher versus lower doses of FP-DPI, but not for those on BDP-HFA.

Conclusion: In this study, the risk of developing OC was increased by over 20% in patients who initiated therapy with an extra-fine particle ICS formulation (BDP-HFA) compared with those who started therapy with a large particle ICS formulation (FP/SAL-DPI). This reduction in malignancy risk was observed consistently across subgroups. Additional studies that suggest a higher risk of OC associated with FP versus BDP-HFA are needed.

Sample Identification

Patients who initiated therapy with either FP/SAL-DPI or BDP-HFA were matched 1:1 on age, sex, and asthma inhaler regimen. Only patients with >1 year of continuous enrollment preceding the first ICS fill who were aged ≥18 years, diagnosed with asthma, newly initiated on ICS therapy with one of eight ICS formulations. Patients were matched 1:1 on age, sex, and asthma inhaler regimen. Only patients with >1 year of follow-up were included. Patients receiving antibiotics or oral corticosteroids during the 1-month preceding an OC diagnosis were excluded. Logistic regression identified the following variables that independently predicted OC diagnosis: age at first asthma diagnosis, sex, ICS dose, allergic rhinitis or allergic conjunctivitis diagnosis, region, health care resource use (CPT/HCPCS and NDC), and health care resource use (CPT/HCPCS and NDC).

Table 1. Variables that Independently Contributed to OC Diagnosis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reference</th>
<th>Odds Ratio [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at first asthma diagnosis</td>
<td>0.993</td>
<td>0.990-0.996</td>
</tr>
<tr>
<td>Allergic rhinitis or conjunctivitis</td>
<td>No</td>
<td>Reference</td>
</tr>
<tr>
<td>ICS duration</td>
<td>1.341</td>
<td>1.186-1.518</td>
</tr>
<tr>
<td>ICS dose</td>
<td>1.152</td>
<td>1.321-1.732</td>
</tr>
<tr>
<td>High</td>
<td>1.007</td>
<td>0.886-1.145</td>
</tr>
<tr>
<td>Medium</td>
<td>1.302</td>
<td>1.101-1.541</td>
</tr>
</tbody>
</table>

RESULTS

Table 2. Patient Characteristics After Matching

<table>
<thead>
<tr>
<th>Cohort</th>
<th>n (%)</th>
<th>ICS Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDP-HFA</td>
<td>26,890 (44%)</td>
<td>Low</td>
</tr>
<tr>
<td>FP/SAL-DPI</td>
<td>26,890 (44%)</td>
<td>Medium</td>
</tr>
<tr>
<td>FP/SAL-DPI</td>
<td>26,890 (44%)</td>
<td>High</td>
</tr>
</tbody>
</table>

REFERENCES


CONCLUSION

The risk of developing OC is increased in a large particle ICS formulation compared with an extra-fine particle ICS formulation (BDP-HFA).

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