• Alpha-gal syndrome (AGS) is a vector-borne condition characterized by an IgE-mediated hypersensitivity reaction in individuals exposed to galactose-1-α, 3-galactose (α-Gal), a carbohydrate found in most mammals.

• A person bitten by the Lone Star tick (Amblyomma americanum) may develop AGS, also known as mammalian meat allergy, with up to 60% of those afflicted experiencing life-threatening anaphylaxis following the ingestion of red meat, certain medications, and animal-derived inactive ingredients containing α-Gal. (Figure 1)

• The AGS Awareness Campaign recommends that hospitalized patients with AGS have a red meat restricted dietary order and avoid medications containing α-Gal. It is imperative for clinicians to consider this food interaction to avoid potentially lethal consequences.

• The objective of this study is to assess the need for creating a dietary consult and drug-food-allergy alert system in hospitalized patients with an α-Gal allergy, and to implement this patient safety initiative at AtlantiCare Regional Medical Center.

Methods

• Data was collected at AtlantiCare Regional Medical Center (ARMC) between August 2018 and October 2020 using a report from Cerner Dermat Analytics. Those included had a documented allergy to α-Gal, red meat, pork, and/or beef. Of the 275 patients that were identified, 268 had a meat allergy and 7 had a documented allergy to α-Gal.

• A new “α-Gal allergy” order will be triggered. An automated nutritional education consult process will appear on the diet task list. The dietitian will see the patient, discuss the food allergies, and alter the patient’s diet as necessary.

Figure 1: Alpha-Gal Containing Medications and Food

Medication

Cetuximab

Food

Mammalian red meat & organs, Beef, Pork, Lamb

Inactive Ingredients

Gelatin, Magnesium stearate, Stearic acid, Glycerin

Figure 3: Analysis of IgE-Mediated Hypersensitivity Reactions

<table>
<thead>
<tr>
<th>Allergy Type</th>
<th>Sampled Subgroup (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammalian Meat Allergy*</td>
<td>72% (n=18)</td>
</tr>
<tr>
<td>Anaphylaxis**</td>
<td>42% (n=3)</td>
</tr>
<tr>
<td>Urticaria</td>
<td>58% (n=4)</td>
</tr>
</tbody>
</table>

*100% of patients reported a history of tick bite in the α-Gal allergy patient subset (n=7/7)
**22% of patients reported a history of tick bite in the mammalian meat allergy patient subset (n=4/18)

Results

• There have been 34,000 reported cases of AGS in the United States since 2009. Rising global temperatures and ecologic changes have led to geographic range expansions of the Lone Star tick to the Northeastern United States, likely correlating to the recent increases in AGS diagnosis.

• The ingestion of α-Gal is known to elicit a delayed onset hypersensitivity reaction 3 to 6 hours after red meat consumption in AGS patients. Reported symptoms range from itching, gastrointestinal upset, urticaria, angioedema, and anaphylaxis. In addition, drug-induced anaphylaxis resulting in preventable deaths has been reported in AGS patients who were administered intravenous cetuximab.

• The data collected in our sampled subgroup (Figure 3) revealed that all patients with a documented α-Gal allergy had a documented history of tick bite and documentation of allergic reaction to red meat. In patients with a reported meat allergy, only 22% had a documented reaction to meat ingestion or a history of tick bite.

• A dietitian will receive an automated nutritional education consult on the multi-patient task list. Upon admission of a patient with AGS, the dietitian will visit the patient to discuss food allergies focusing on meats associated with alpha-gal syndrome and add food allergies to the allergy section of PowerChart. Food allergies in PowerChart will sync with the food service menu and restrict any items that may potentially cause an allergic reaction.

• This risk reduction patient safety initiative may help avoid unnecessary hospital days for the management of hypersensitivity reactions and prevent the occurrence of sentinel events. Further evaluation of α-Gal containing medications and the nature of reported meat allergy in patients who may or may not have AGS should be explored.

Discussion

The nutritional education consult and drug monitoring software for AGS patients will create a higher quality of care by improving patient safety and decreasing the risk of developing preventable adverse reactions.

Conclusions

References


The authors have no disclosure concerning financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.