A Diagnosis Rarer Than My Steak: The Challenges Behind Alpha-Gal Syndrome

Andrew Mertz, MD[1,2], Brianna Bahe, MD[1], Patrick Young, MD[1,2]
Department of Internal Medicine[1], Gastroenterology Service[2], Walter Reed National Military Medical Center, Bethesda, MD

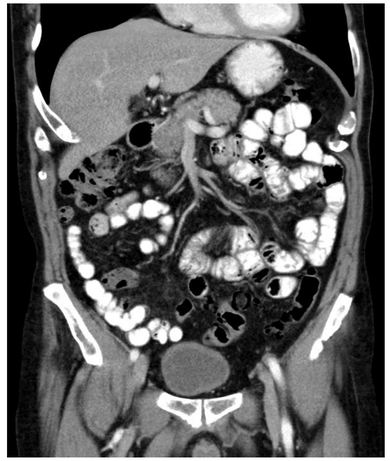
INTRODUCTION

- Alpha-gal syndrome (AGS) is a rare, acquired allergic reaction to mammalian meat
- Most commonly occurs in the United States following a tick bite exposure
- Alpha-gal epitopes in the tick saliva drive formation of specific IgE antibody to oligosaccharide galactose-α-1,3-galactose (alpha-gal)
- AGS can present along a spectrum from localized pruritis to anaphylaxis
- Some AGS patients may only present with gastrointestinal manifestations such as profuse watery diarrhea, which is non-specific and typically presents a unique diagnostic challenge
- Given the rare nature of this disease entity, patients with AGS are often misdiagnosed and empirically treated for alternative etiologies of chronic upper and lower GI symptoms
- We describe a classic case of AGS that was exquisitely responsive to strict dietary modification, demonstrating the effectiveness of a simple intervention for AGS

CASE

- A 78-year-old man initially presented to the GI clinic for evaluation of 6-month history of episodic vomiting and diarrhea occurring exclusively late in the evening.
- Profuse watery diarrhea, vomiting, and overwhelming malaise onset prior to sleep
- Prior to the start of the episodes and between episodes, the patient denied any GI complaints or symptoms
- No classic trigger foods could be identified
- Biochemical and infectious evaluations were unrevealing
- Cross-sectional imaging to look for inflammatory or structural etiologies of symptoms was unremarkable
- A concomitant urticarial eruption was noted during an episode and further historical data regarding a tick-bite exposure was obtained
- Serologic assessment revealed a significantly elevated alpha-gal IgE level
- Following strict avoidance of beef, dairy, and gelatin-containing products the patient's clinical manifestations and serum alpha-gal IgE level normalized over the course of 1-month

FIGURES



1A – Coronal computed tomography (CT) of the abdomen with intravenous contrast demonstrating no luminal pathology.

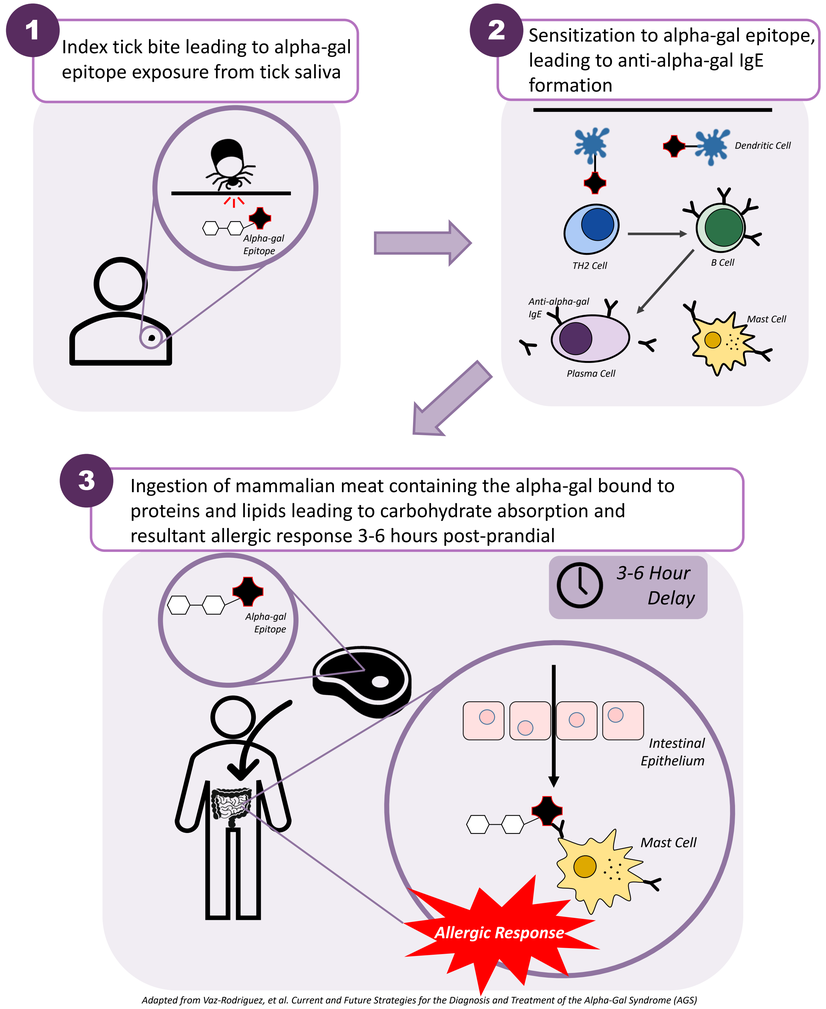
Laboratory	Value
TSH	2.36 µIU/mL
ESR	6 mm/hr
C-reactive Protein	<0.30 mg/dL
Stool *C.diff* PCR	Negative
Stool culture	Negative
Tryptase	10.2 µg/L
Total IgE	361.9 IU/mL
Alpha-gal IgE (at time of diagnosis)	29.10 kU/L
Alpha-gal IgE (after treatment)	<0.10 kU/L

1B – Table of clinically relevant lab values demonstrating significant decrease in alpha-gal IgE after dietary modification

DISCUSSION

- The mechanism behind the pathogenesis remains poorly understood but it has become a more widely recognized clinical syndrome despite its rarity
- The classic triad of gastrointestinal, dermatologic, and cardiovascular symptoms are demonstrated in this case presentation of AGS
- AGS is clinically distinct from other food allergy syndromes since the driving allergen is a carbohydrate rather than a protein
- Delayed absorption of the alpha-gal carbohydrate creates the classic latency period of 3-6 hours from time of food exposure to symptom onset
- Recognizing this latency period between time of ingestion and symptom onset is critical for diagnosis of AGS, but is typically what makes the diagnosis so elusive

PROPOSED MECHANISM



Adapted from Vaz-Rodriguez, et al. Current and Future Strategies for the Diagnosis and Treatment of the Alpha-Gal Syndrome (AGS)