



Alpha-gal Syndrome (AGS)

2022 Case Definition

NOTE: A surveillance case definition is a set of uniform criteria used to define a disease for public health surveillance. Surveillance case definitions enable public health officials to classify and count cases consistently across reporting jurisdictions. Surveillance case definitions are not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient's health needs.

CSTE Position Statement(s)

21-ID-07

Background

Alpha-gal Syndrome (AGS) is a hypersensitivity reaction to galactose- α -1,3-galactose (alpha-gal), found in non-primate mammalian meat and certain derivative products.¹⁻⁵ Unlike typical food allergies, symptoms are often delayed by two hours or more after exposure and can arise suddenly following years of safe meat consumption.⁶⁻⁸ Evidence suggests that the bite of some tick species induces immunoglobulin E (IgE) antibodies to alpha-gal, sensitizing patients to subsequent alpha-gal exposures.^{1,9-12} Symptoms typically include abdominal cramping, urticaria, and anaphylaxis.⁸ Diagnosis relies on a history of symptoms following exposure to mammalian products, and an elevated serum IgE specific to alpha-gal.⁶ AGS has been reported worldwide¹³; in the United States, it is most closely associated with lone star tick (*Amblyomma americanum*) bites.¹⁰ Research has suggested that other tick species, including *Ixodes* spp., may also be associated with AGS development.^{14,15} Reports of AGS in the scientific literature have been increasing over the last decade, but the true burden of cases is unknown. Additionally, much of the country may be at risk given the expanding geographic range of lone star and other ticks.¹⁶ Responding to the increased diagnosis of cases and public interest, multiple states have expressed a desire to quantify the burden of AGS. The standardization of case definition and reporting criteria is necessary in order to characterize disease burden, compare interstate disease incidence, and monitor trends in patient demographics, morbidity, mortality, and geographic distribution of risk. This will inform public health recommendations and guidance. Preventing tick bites is the main strategy for AGS intervention¹⁻³; disease surveillance could, therefore, inform activities to strengthen occupational health protocols of suspected risk groups and public health messaging regarding tick bite prevention behaviors, with the goal of reducing tick borne disease risk.^{11,17}

Clinical Criteria

- Acute onset of any one or more of the following allergic and/or gastrointestinal symptoms that occur 2–10 hours after ingestion of pork, beef, lamb, any other mammalian meat, or any mammalian-derived product (e.g. gelatin), **OR** within two hours after intramuscular, intravenous, or subcutaneous administration of alpha-gal-containing vaccination or medication:
 - Abdominal pain
 - Nausea
 - Diarrhea
 - Vomiting
 - Heartburn/indigestion
 - Hives
 - Itching
 - Anaphylaxis as diagnosed by a provider
 - Swelling of one or more of the following: lips, tongue, throat, face, eyelids, or other associated structures

- Shortness of breath
- Cough
- Wheezing
- Acute episode of hypotension*

AND

- the absence of a clear alternative diagnosis.

* Normal values for systolic blood pressure vary by age. Hypotension is classified by systolic blood pressure <90 mmHg for ages 11+ years; < [70 mmHg + 2 x age] for ages 1 -10 years; <70 mmHg for ages less than 1 year.

Laboratory Criteria

Confirmatory laboratory evidence:

- Serum or plasma immunoglobulin E specific to alpha-gal (sIgE) ≥ 0.1 IU/mL or ≥ 0.1 kU/L.

Presumptive laboratory evidence:

- An allergy skin test result that is interpreted by the ordering provider as consistent with alpha-gal allergy based on sensitivity to one or more mammalian meats (e.g., pork, beef, lamb) or other mammalian-derived products.

Note: The categorical labels used here to stratify laboratory evidence are intended to support the standardization of case classifications for public health surveillance. The categorical labels should not be used to interpret the utility or validity of any laboratory test methodology.

Criteria to Distinguish a New Case from an Existing Case

A case should only be counted if not previously reported to public health authorities.

Case Classification

Suspect

Meets confirmatory laboratory evidence with no clinical information available.

Probable

Meets clinical criteria **AND** presumptive laboratory evidence.

Confirmed

Meets clinical criteria **AND** confirmatory laboratory evidence.

References

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Last Reviewed: September 19, 2022