

## Parasites and Meat Allergy:

### Collusion of Tick Bites and Mysterious Altered Immune Response

By Simon Yu, MD

Allergy to red meat is rare, but the incidence is rising, recognized by astute allergists. If you have an allergy, your immune system overreacts to an allergen by producing antibodies called Immunoglobulin E (IgE). A [recent journal article on meat allergy](#) by Wilson et al. (PubMed 2017) suggests unexpected IgE-mediated delayed-hypersensitivity to ingested animal products is an increasingly important form of unrecognized food allergy. Typically, IgE allergic response is immediate, not a delayed response.

Meat allergy was first recognized in the 1990's and formally described in 2009. Meat allergy was overlooked by primary care physicians because it does not fall under our understanding of typical allergic reactions. Delayed anaphylaxis to red meat occurs in patients with IgE antibodies against the complex sugar called galactose-alpha-1, 3 galactose (alpha-gal) in the meat.

Investigations have revealed an association between IgE to alpha-gal and tick bites. A Swedish study showed the intestinal tract of the tick (*Ixodes ricinus*) was positive for mono- and polyclonal antibody against alpha-gal stains. When an infected tick bites, we get exposed to alpha-gal, and react in an unusual delayed anaphylaxis, after several hours, by IgE mediated allergic reaction.

The missing link that has not been clearly explained is why and how tick bites are associated with red meat allergy, when it used to be such a rare event. Investigative journalist Velasquez-Manoff unraveled why some tick bites are suddenly causing a strange reaction in susceptible people who eat beef, pork and lamb, in [What the Mystery of the Tick-Borne Meat Allergy Could Reveal](#), published in the July 29, 2018 issue of *New York Times Magazine*.

The red meat allergy patients tend to come from the Southeast, and the geographical distribution of cases matched that of a tick-borne disease called Rocky Mountain spotted fever. Patients suffered stomach pain and rashes hours after eating meat, and they had antibodies to alpha-gal. About 80 percent of patients reported a history of strong reaction to tick bites before developing meat allergy.

Australian allergist Sheryl van Nunen described 24 cases of meat allergy associated with tick bites in 2007, and nobody took her report seriously. Tick bites seem to trigger this unusual delayed IgE hypersensitivity, but how? The red meat is rich in alpha-gal and the tick seems to break an already established meat tolerance, causing the immune system to attack what was previously ignored.

One way to hypothesize how the tick (ectoparasite) pulls off this meat allergy is to consider the tick bite as a kind of inadvertent bad vaccine reaction – an unintended consequence of altered immune response. When the tick feeds, alpha-gal leaks from its mouth into the wound, exposing the victim's immune system to the alpha-gal and prompting the immune system to over-react when eating meat. Once sensitized, these patients can no longer tolerate mammal meats such as beef, pork and lamb.

Allergic sensitization to alpha-gal poses a greater risk of arterial plaques, a hallmark of heart disease. The big unanswered question: why is meat allergy on the rise today? Some of the theories include climate changes, northward movement of ticks, changes in ticks' microbiome due to pesticides and herbicides, a decline in natural predators, etc.

Our distant ancestors once made alpha-gal as a part of cell membrane components, but modern humans do not have alpha-gal during their evolution to the New Modern World. Perhaps a genetic selective advantage may backfire on some susceptible people? Malarial plasmodium parasite – protozoal parasite - has been the single greatest force shaping the human genome in our evolutionary history, and it is fully coated in alpha-gal. Parasites coated with alpha-gal, tick bites, and development of meat allergies are not accidents, but accidents waiting to happen with the collusion of environmental changes, changes in microbiome, and the maladaptation of the immune system.

The target of these IgE antibodies may not be the alpha-gal in the meat you may have eaten for dinner, but the alpha-gal complex that leaks into circulation from the parasites dwelling in your gut. **A leading explanation holds that we develop more allergies now because our immune systems have become more sensitive to what they encounter**, not because they are exposed to more pollens or allergenic foods than in the past.

I covered food allergy topics previously in my articles, [Parasites and Allergies: Paradise Lost in a Parallel Universe](#), [Parasites and Allergies-Similarity of Symptoms](#), and [Food Allergies - Often Overlooked Contributors to Chronic Illness](#). The only reliable proof we have for the cause and effect of parasites and allergies relationship is based on clinical observation of the improvement of allergy symptoms with properly prescribed parasite medications.

Beware how a tick bite can alter your immune response and trigger meat allergy. It is still a mystery. The good news is that, provided you are not bitten by another tick again, sometimes the meat allergy fades on its own. When you get rid of intestinal parasites, restore the microbiome and repair the leaky gut, you can handle many mysterious food allergies and the new emerging meat allergy.

Dr. Simon Yu, M.D. is a Board Certified Internist. He practices Internal Medicine with an emphasis on Integrative Medicine to use the best each has to offer. For more articles and information about integrative medicine, patient success stories, and Dr. Yu's health book, [Accidental Cure: Extraordinary Medicine for Extraordinary Patients](#), visit his website at [www.PreventionAndHealing.com](http://www.PreventionAndHealing.com) or call Prevention and Healing, Inc., 314-432-7802. You can also attend a free monthly presentation and discussion by Dr. Yu on Integrative Medicine at his office on the second Tuesday each month at 6:30 pm. Call to verify the date. Seating is limited, arrive early.



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