

LETTER TO THE EDITOR

Case with acute urticaria by red meat after *Haemaphysalis longicornis* bite

Dear Editor,

A 77-year-old woman was transferred and admitted to a hospital because of stroke due to cerebellar infarction. Two ticks attached to her right arm were identified by a physician in the emergency department. The ticks were removed with tweezers. Then, she was treated with edaravone and ozagrel sodium for cerebellar infarction. Because she was living in an endemic area for Japanese spotted fever (JSF), she had been carefully observed for rash and fever due to *Rickettsia* diseases. Five days after admission, she started to take slurry food including red meat. She developed generalized eruption on her body 3 h after ingestion and the eruption changed to a wheal within 30 min (Fig. 1a). The meal was miso soup containing red meat, vegetables and milk. Because of her history of repeated tick bites, she was diagnosed with urticarial allergic reaction to red meat. Therefore, red meat was eliminated from her hospital feeding program. Interestingly, the eruption disappeared within 3 days without antihistamine or systemic corticosteroid therapy.

The removed ticks were confirmed as *Haemaphysalis longicornis* by a specific polymerase chain reaction and product sequence analysis (Data S1). The skin biopsy from the wheal revealed superficial perivascular lymphocyte and eosinophil infiltration with dermal edema, which was non-specific and

similar to urticarial response (Fig. 1b). We performed skin prick testing with beef, pork, chicken, cow milk and isotonic sodium chloride solution. The wheal reaction was observed at the beef-tested skin after 30 min (Fig. 1c).

The patient is currently avoiding red meat and her rash did not recur during 4 months of hospitalization. She had a history of more than 10 tick bites without urticarial reactions.

A previous report indicated high prevalence of red meat allergy in the endemic area of JSF, which closely relates to the tick bite episodes in residents.¹ The reported clinical manifestation of the red meat allergy was urticarial type.¹ The tick salivary gland protein contains galactose- α -1,3-galactose (α -Gal), which is a shared epitope in red meat. *H. longicornis* bite has been suspected as the major cause for red meat allergy in Japan.¹ In the USA, *Amblyomma americanum* bite induces an immunoglobulin (Ig)E response to α -Gal.²

This is a detailed report of a patient with an obvious history of *H. longicornis* bite who developed urticarial rash after taking red meat meal with a serial record of allergen-specific IgE. The red meat-specific IgE was 11.30 Ua/mL at admission. Two days after the allergic episode, it increased to 15.5 Ua/mL. Interestingly, 4 days after elimination of the red meat, it decreased to 9.23 Ua/mL. The α -Gal-specific IgE was higher than the highest detection limit through the clinical course

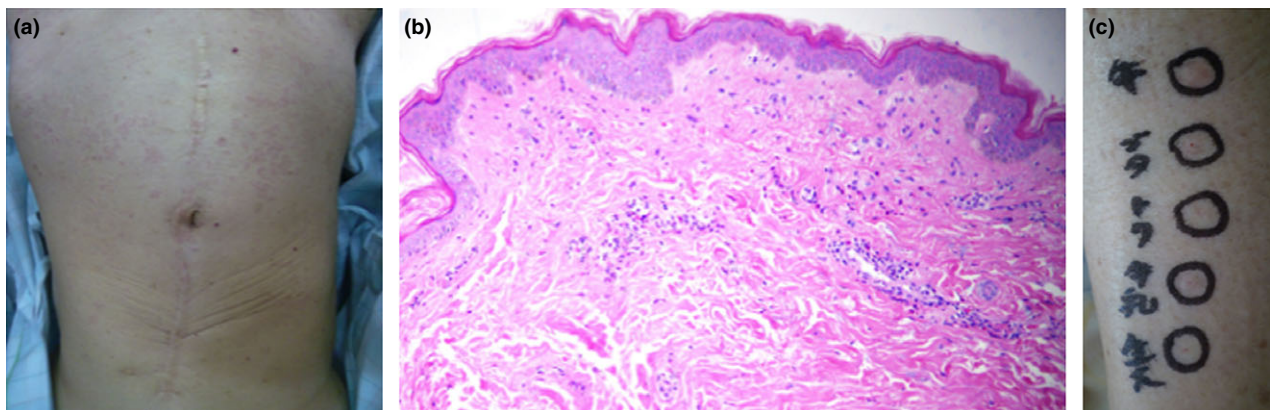


Figure 1. (a) Diffusely distributed urticarial rash on the patient's abdomen. (b) Superficial perivascular lymphocyte and eosinophil infiltration with dermal edema, which was non-specific and similar to urticarial response in a biopsy specimen from an abdominal lesion (hematoxylin–eosin, original magnification $\times 4$). (c) Results of the prick test with suspicious allergens: 1, beef; 2, pork; 3, chicken; 4, cow milk; and 5, isotonic saline. Wheal reaction developed at the beef-tested skin.

(Data S2), which indicates sensitization to red meat allergy before her hospitalization. This is because it takes more than several days to develop the adaptive immune system to produce antigen-specific IgE at detectable levels in the plasma.

Red meat allergy should be kept in mind for diagnosis of generalized urticarial rash in the residents of the endemic area of JSF.

CONFLICT OF INTEREST: None declared.

Makoto KONDO,¹ Tomu NAKAGAWA,²
Keiichi YAMANAKA,¹  Hitoshi MIZUTANI¹

¹Department of Dermatology, Mie University Graduate School of Medicine,
Tsu, and ²Division of Internal Medicine, Minamiise Municipal Hospital,
Minamiise, Japan

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- 1 Chinuki Y, Ishiwata K, Yamaji K, Takahashi H, Morita E. Haemaphysalis longicornis tick bites are a possible cause of red meat allergy in Japan. *Allergy* 2016; **71**: 421–425.
- 2 Commins SP, Jerath MR, Cox K, Erickson LD, Platts-Mills T. Delayed anaphylaxis to alpha-gal, an oligosaccharide in mammalian meat. *Allergol Int* 2016; **65**: 16–20.

SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Data S1. Polymerase chain reaction with the tick species-specific primer sets.

Data S2. Sequential data of non-specific and specific immunoglobulin E.