

# Case of the month

## Celery Sticks Gone Wrong: An Unexpected Reaction

By Peter Vadas, MD, PhD, FRCPC, FACP

A 23-year-old woman presented for investigation of symptoms for an anaphylactic reaction. She had previously been in good general health. In the afternoon, while rushing home from the bus stop, she developed generalized pruritus which evolved into hives, periorbital swelling,



a sensation of tightness in her throat with dysphagia and dysphonia, inspiratory stridor, wheezing, shortness of breath, and lightheadedness. She made her way to a walk-in clinic where she lost consciousness in the waiting room. She was resuscitated and there was a rapid resolution to her symptoms.

The morning of the reaction, she had taken ibuprofen for menstrual cramps and four hours before the reaction, she had eaten a sesame seed bagel with nuts and mustard. About 30 minutes before the onset of the symptoms, she ate several raw carrots and celery sticks. She was not taking other ongoing medications and was not known to have any drug or food allergies. The remainder of her history and her physical examination were unremarkable.

Skin tests for a panel of common food allergens, including sesame seed, mustard seed, carrot, and celery, using commercial diagnostic extracts were entirely non-reactive. A histamine control was positive. She subsequently returned for additional investigations. Skin tests for fresh carrot and celery using the prick-by-prick method caused a large wheal and flare reaction to celery, but not carrot. A carefully supervised graded oral challenge to raw celery was negative. **What's the diagnosis?**

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The patient again returned for further investigations. She was exercised on a machine to approximate the same degree of physical exertion put out when she rushed home from the bus stop. This was well-tolerated with no untoward reaction.

On a subsequent visit, she was instructed to eat two sticks of raw celery 30 minutes before her scheduled visit. She was then exercised again to reproduce a similar degree of physical exertion as the day of her reaction. She developed generalized itching, urticaria, throat discomfort, and expiratory wheezing. She was given epinephrine and diphenhydramine, with rapid resolution to her symptoms.

This woman has food-dependent, exercise-induced anaphylaxis, triggered by celery. This clinical syndrome is a variant of exercise-induced anaphylaxis. Ingestion of a specific food, in this patient's case celery, followed by exercise within six hours will trigger a potentially life-threatening anaphylactic reaction. However, ingestion of celery alone in the absence of exercise, or exercise alone without prior ingestion of celery, will not trigger a reaction.

She was advised to avoid eating celery before engaging in strenuous physical activity. She was provided with an EpiPen<sup>®</sup> autoinjector in the event of an accidental reaction. In some patients, it is safer to simply avoid the food trigger altogether since accidental ingestion of the food followed by physical exertion may trigger a severe reaction. She was advised to always exercise with a companion and carry the EpiPen. Aspirin and non-steroidal anti-inflammatory drugs are known to intensify anaphylactic reactions, and her use of ibuprofen earlier that day was likely a significant contributing factor to her reaction.

Finally, the allergen in celery responsible for anaphylactic sensitization is heat-labile, and commercial extracts do not contain appreciable amounts of heat-labile allergens. Skin testing with fresh celery is the only reliable means of demonstrating sensitization. **Dx**

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