

# A Case of Shrimp-Dependent Exercise Induced Anaphylaxis

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## Objective:

To understand that food allergy anaphylaxis may occur only following physical exertion in food-dependent exercise-induced anaphylaxis (FDEIA).

## Introduction:

Food-dependent exercise-induced anaphylaxis (FDEIA) is a disorder in which patients experience symptoms within a few hours of exercise. Patients tolerate these foods under routine circumstances. They experience anaphylaxis only after they have exercised within a few hours of eating the culprit food.

Early symptoms include diffuse flushing, generalized pruritus, and wheezing. As exercise progresses, the patient experiences more severe signs such as angioedema of the face, hypotension and laryngeal edema. Strenuous forms of exercise such as aerobics, running, and dancing are most often implicated.

Wheat, nuts and shellfish are the most commonly implicated foods, but any food may be associated with this condition. The precise pathophysiological mechanism is unknown. One proposed theory suggests increased gastric permeability of allergens secondary to exercise.



## Case Presentation

A 21-year-old Hispanic female presented to our service after experiencing facial swelling and diffuse urticaria after exercising. She consumed cooked shrimp, and then ran for two miles 90 minutes later. After her run, she experienced cutaneous swelling of her face and diffuse hives. The patient runs daily and denies ever experiencing hives after her runs. Furthermore, she denied any history of shrimp and shellfish allergy or adverse reactions to it. She consumed shrimp days later and denied any adverse reactions. One week later, the patient ate shrimp and exercised 60 minutes after dinner. She experienced symptoms that were similar to her first episode in which she had diffuse urticaria but no angioedema. Diphenhydramine resolved each episode within 3 hours

## Results

A serum specific IgE to food (Immucap) demonstrated a grade 0 (<0.35) to shrimp and all seafood. Percutaneous skin prick testing with shrimp extract and fresh shrimp were also non-reactive. The patient was diagnosed with shrimp dependent exercise-induced anaphylaxis, and instructed to wait at least 4 hours before exercising after eating shrimp. Our preferred recommendation was to avoid shrimp ingestion prior to exercise. In addition, she was prescribed an epinephrine auto-injector 0.3 mg dual pack (Epipen) as a precaution. She was given training in the use and safe handling of the Epipen.



Percutaneous Skin Prick Results. Shrimp was completely negative. Positive and Negative controls are confirmed as well.

## Discussion

Patients are not required to abstain from culprit foods, but must avoid exercising for 4-6 hours following consumption of these foods. An additional recommendation would be to use a second generation antihistamine 2 hours before the ingestion of culprit foods. The second generation antihistamines (e.g., Cetirizine) are effective for longer duration than first generation antihistamines (e.g., Diphenhydramine) Prophylactic use of cromolyn sodium is a treatment option for patients, such as children, in which modifying behaviors may be challenging. For children 2-12 years of age, 100 mg by mouth 20 minutes before meals is the recommended dose. And for children over 12 years of age, 200 mg by mouth 20 minutes prior to meals is recommended.

## Conclusion

In cases of unexplained anaphylaxis, FDEIA should be included in the differential diagnosis. Recognition of this condition is important, because its management differs from that of classic food allergy anaphylaxis.

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