

## POTENTIAL CROSS-REACTIVITY BETWEEN SHELLFISH AND ANCHOVY: A CASE OF LATE PHASE ANAPHYLAXIS

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**Background:** Prevalence of seafood allergy is rising in the U.S. population, including children. Data on the cross-reactivity among species of shellfish is robust, but data is limited in terms of the potential cross-reactivity between shellfish and fish. Shellfish allergy tends to present with anaphylaxis and episodes can be life-threatening. Data from the National Electronic Injury Surveillance System showed that 24% of ED visits for anaphylaxis were seen in children  $\geq 6$  years, with shellfish being the most common culprit. Tropomyosin and parvalbumin are known proteins that are the main culprits causing allergic reactions and cross-reactivity between different types of shellfish and fish respectively.

**Materials/Methods:** A 16-year-old female with a history of dust mite and cat allergy who developed severe late-phase anaphylactic reactions after consuming shellfish. The episodes required ICU admissions for late-phase anaphylaxis requiring several doses of epinephrine hours to days after consumption of shellfish or fish/shellfish containing products. The 1st episode occurred after consuming rice with shrimp. (hives, lip and eye angioedema). She did not seek medical care, therefore no test results available. The 2nd episode occurred after eating BBQ chicken wings, noted to contain shellfish, fish, artichoke, and anchovies. Symptoms were hives, swelling, shortness of breath and wheezing. The 3rd episode occurred after eating a cheese and sausage kolache at school where fish and shellfish were also cooked. Symptoms were hives, swelling, shortness of breath and wheezing.

**Results:** (sIgE in kU/L and total IgE in IU/L). 2nd episode: IgE: 1060, anchovy: 0.47, crab: 0.56, crayfish: 15.6, lobster: 7.93, shrimp: 13.8, spiny lobster: 1.44, other fish and mollusk: <0.35. 3rd episode: IgE: 647, anchovy: 0.49, artichoke: 0.44. Workup for angioedema was negative.

**Conclusions:** While cross-reactivity is common in shellfish allergic patients (75%), studies are lacking in the clinical and immunologic cross-reactivity among shellfish and fish. This case highlights the importance of creating awareness of potential cross-contamination and how small doses of an aerosolized allergen can be enough to cause symptoms of an allergic reaction and even anaphylaxis. We hypothesize that the positive sIgE level for anchovy might be due in part to cross-reactivity or represent actual fish allergy. More research is needed to improve testing for seafood allergens in order to make evidence-based decisions in treatment, diagnosis and patient education.