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Wheat-dependent exercise-induced anaphylaxis especially positive to omega-5 gliadin specific IgE test: two case reports
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Background: Food-dependent exercise-induced anaphylaxis (FDEIA) is a peculiar form of food allergy where a food-intake alone does not induce any symptoms. However, allergic symptoms are elicited when triggering factors such as exercise are added after ingestion of the causative food. Wheat is one of the most common frequent causative food among Asian countries and is called wheat-dependent exercise-induced anaphylaxis (WDEIA). Here we present 2 cases of WDEIA especially positive to omega-5 gliadin specific IgE in a 50-year male and a 25-year female respectively.

Report:
Case 1: A 50-year-old man came to the emergency department for generalized urticaria and angioedema. He was eating wheat based bread with alcohol then about 20 minutes later the symptom developed. He usually enjoyed eating wheat flour based food, and sometimes not all the times, urticaria appears on his whole body surface. It started about 4 years ago, but he did not know the exact triggering factor. We suspected simple food allergy and Food-dependent exercise induced anaphylaxis because he had suspected causative food with alcohol and aspirin that are common co-trigger of FDEIA. The serum specific IgE to wheat, gluten, omega-5 gliadin were 2.54 kUA/L, 8.72 kUA/L, and 29.5 kUA/L respectively. He started exercise 30 minutes later eating of wheat based bread on challenge test, then 15 minutes later, hives appeared on the stomach and trunk area of his body with itching sense. With the test results, we diagnosed as WDEIA. Then explained and educated the patient to avoid exercise, alcohol, NSAIDs after wheat based food ingestion.

Case 2: A 25-year-old woman ate black-bean-sauce noodles then 10 minutes later generalized urticaria, dyspnea, dizziness and nausea developed. She experienced similar symptoms almost 1-2 times in a month, and they started about 5 years ago. With precise history taking, we found out this symptom usually come along with exercise event but not all the time. A skin prick test showed positive results to wheat flour (2+ compared with control). The serum specific IgE to wheat, gluten, omega-5 gliadin were 0.67 kUA/L, 1.06 kUA/L, and 6.91 kUA/L respectively. However, exercise challenge test showed negative results. Even challenge test was negative, her history and specific IgE test showed coincidence results with WDEIA, we diagnosed as WDEIA.

Clinical Relevance of Report: Food-dependent exercise-induced anaphylaxis (FDEIA) is a rare and potentially fatal food allergy. Here we reported two cases of WDEIA, which is one of the most common FDEIA among Asian countries. One patient (50-year old man) was positive on oral-food exercise challenge, and the other patient (25-year old woman) was negative. The first step to diagnosing FDEIA is to take a precise history especially the correlation between exercise or other co-factors and food ingestion. In our case, both of them had the vague co-factors at first. However, with the precise history we suspected about the WDEIA. Then allergy tests with skin prick test or in vitro serum food-specific IgE assays were done. Only one was positive to food-exercise challenge test, and both of them were positive to specific IgE to omega-5 gliadin that can be a good diagnostic marker for WDEIA. After diagnosed as WDEIA, two patients in our case still never had experienced anaphylaxis again after that with education. Anaphylaxis is preventable with accurate diagnosis and education, but the lack of awareness will potentially lead to wrong diagnosis and even lead to severe anaphylaxis. Public awareness about the importance of accurate diagnosis and strategies for education, emergency coping maneuver are necessary.
**Statement of Consent for Presentation and Publication:** In relation to this presentation, I declare that there are no conflicts of interest and these cases are not published or submitted for presentation elsewhere.