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Food-dependent exercise-induced anaphylaxis (FDEIA) – A case study

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Background: Food-dependent exercise-induced anaphylaxis (FDEIA) is a rare. Particularly important clinical problem is wheat-dependent exercise induced anaphylaxis (WDEIA), caused by sensitization to omega-5 gliadin.

Report: Patient, 55, male, was admitted due to recurrent generalized urticaria, which often proceeded loss of consciousness. First episode of urticaria, followed by numbness of the lower limbs and syncope, appeared in 2007, without any apparent reason. Patient was hospitalized due to those symptoms. Next episode occurred in 2012 - patient ate pizza, than performed physical exercise, during which he lost consciousness and due to those symptoms required hospitalization. Most recent episode of anaphylaxis occurred in 2015, also after physical exercise (shoveling coal). In general episodes of urticaria occur every 2-3 months. During diagnosis we performed skin prick tests (SPT) with inhalant and food allergen. We also established the level of total IgE, specific IgE to Dermatophagoides pteronyssinus, Dermatophagoides farinae, bee and wasp venom, gluten, wheat and rye flour and ImmunoCap ISAC. Patient also performed exercise provocation test on an empty stomach and after eating bread. SPT were positive with wheat flour (4 / 25mm) and rye flour (4 / 5mm). The concentration of allergen-specific IgE against wheat flour (before exercise provocation test) was 0.18 IU/ml and rye four 1,06 IU/ml, after provocation test respectively 0.18 IU/ml and 1.21 IU/ml. ImmunoCap ISAC reveled elevated level of IgE specific to wheat allergen component rTri a 19 (omega-5-gliadin) - 2.4 ISU-E and to timothy nPhl p 4 (berberine bridge enzyme) - 2,5 ISU-E. Exercise provocation test on an empty stomach – negative, with no disturbing symptoms. Exercise provocation test after consumption of bread: before the test blood pressure 120/70 mmHg, HR 74/min, immediately after the test (on a treadmill): 128/75 mmHg, HR 120/min. 10 minutes after the test patient experienced generalized urticaria and hypotension 95 / 70 mmHg. Patient was administered intravenous steroids, antihistamines and intravenous fluids with improvement.

Results: Based on the clinical history of the disease, results of provocation test and immunological examination patient was diagnosed with wheat-dependent exercise induced anaphylaxis. The episodes of anaphylaxis could be prevented by avoidance of food (especially wheat and rye flour) ingestion in relation to exercise.

Statement of consent for presentation and publication: Patient consented to the publication.