

Follow-up of patients with wheat-dependent exercise induced-anaphylaxis

Morten J. Christensen¹, Esben Eller¹, Charlotte G. Mortz¹, Knut Brockow², Carsten Bindslev-Jensen¹

From ¹ Odense Research Center for Anaphylaxis (ORCA), Department of Dermatology and Allergy Centre, Odense University Hospital, 5000 Odense C, Denmark and ² Department of Dermatology and Allergy Biederstein, Klinikum rechts der Isar, Technische Universität München, Munich.

Aim

Wheat-dependent, exercise-induced anaphylaxis (WDEIA) is considered a severe form of food allergy caused by physical exercise (or other co-factors) in combination with ingestion of a wheat food containing food wheat. Based on case-history and challenge results patients are either recommended to either total wheat avoidance or to avoid exercise 4 hours before and after wheat ingestion.

The aims of this study were to evaluate threshold and immunoglobulin levels in two groups of patients with challenge confirmed WDEIA, prescribed either total wheat avoidance or wheat consumption only avoided short time in connection to physical exercise.

Method

We investigated 12 patients with WDEIA divided in two groups of wheat avoidance (n=5) and wheat consumption (n=7) and conducted 2 titrated gluten challenges in combination with treadmill exercise 4 weeks apart. Skin prick test (SPT) with wheat and gluten together with measurement of specific IgE (slgE), slgG and slgG₄ in serum to wheat and omega-5 gliadin using ImmunoCap (Thermo Fisher Scientific, Uppsala, Sweden) were performed.

Results

In the avoidance group (n=5) time between the 1. and 2. challenge was 34±11 days and in 60%(3/5) a decrease in threshold was observed, median decrease 3.2 g[0-12g](p=0.09). In the consumption group (n=7) time between the 1. and 2. challenge was 27 days ±3 and in 71%(5/7) an increase in threshold was observed, mean increase 9.6 g [0-32g](p=0.05). No increase in threshold in the avoidance group or decrease in threshold in the consumption group was observed, respectively. A significant difference (p=0.018) was observed in the absolute change in threshold between the avoidance group and consumption group from the 1. to the 2. challenge (see figure 1).

There was no significant between-group difference or in the respective groups at the different times of measurements of slgE, IgG and IgG₄. Wheal size to wheat was unchanged over the period of challenge.

Conclusion

The clinical threshold in WDEIA seems to be lowered in patients on wheat free diet, whereas the opposite is seen in patients on regular wheat intake. A recommendation of wheat consumption, if considered safe to the patient based on case-history and challenge results, should be preferred.