

ALEX® Case Report No. 3

Nestor, 22y, from Valencia

Clinical History

Perennial rhino-conjunctivitis with accentuated severity from end of April to beginning of June was observed since late childhood. In-vitro tests, as well as skin prick tests were positive for mites, olive and mugwort. An allergen-specific immunotherapy (AIT) for olive and mites was initiated and significantly relieved the respiratory symptoms.



Family History

Both parents do not have any allergic disease.

Present situation (2019)

After a recent intake of grilled fish, angioedema of lips and eyelids, as well as abdominal pain was observed. Oral allergy syndrome and nausea/vomiting was reported after the ingestion of peach and other stone fruits.

ALEX Results*

Allergen Source	Allergen	Biochemical Designation	IgE Level [kU _A /L]
European Ash	Fra e 1	Ole e 1 family	19.07
Olive	Ole e 1	Ole e 1 family	22.14
Mugwort	Art v 3	nsLTP type 1	10.65
D. farinae	Der f 1	Cysteine protease	23.05
	Der f 2	NPC2	7.08
D. pteronyssinus	Der p 1	Cysteine protease	36.32
	Der p 2	NPC2	28.92
Apple	Mal d 3	nsLTP	19.8
Plum	Pru d	Extract	17.48
Peach	Pru p 3	nsLTP	24.36
Carp	Cyp c 1	Parvalbumin	28.9
Cod	Gad m 1	Parvalbumin	32.08
Salmon	Sal s	Extract	15.58
Hazelnut	Cor a 8	nsLTP	0.46
Peanut	Ara h 9	nsLTP	3.87

* For convenience extract results are not shown, if a corresponding component was positive.

Interpretation

- A mite sensitization was confirmed in the ALEX allergy test, the major allergens Der f 2 and Der p 2 showed positive results. As AIT was successful, further therapeutic interventions are not necessary at the moment.
- A genuine sensitization to olive pollen was confirmed with the positive result against the major allergen component in olive pollen, Ole e 1. Closely related to Ole e 1 is the major ash pollen allergen Fra e 1, which also showed a clearly positive result. As AIT was successful, further therapeutic interventions are not necessary at the moment.
- The positive SPT result against mugwort pollen was also confirmed by ALEX, however the observed IgE reaction was only against the minor allergen Art v 3 (nsLTP, cross-reactive) and not to the major allergen Art v 1. Art v 3, the nsLTP from mugwort pollen demonstrates frequent cross-reactivity to homologous molecules in plant food, i. e. Pru p 3 (peach).
- A Sensitization to several stone fruits was detected (apple, peach, plum). The responsible allergens belong to the nsLTP family. Non-specific Lipid Transfer allergens are present in various cereals, fruits, legumes, tree-nuts and some pollen.
- nsLTPs are heat-stable and can cause mild as well as severe allergic symptoms.
- The clinical reaction to grilled fish was confirmed by the presence of IgE to Parvalbumin from carp and cod (+positive result for salmon extract). Parvalbumins are heat stable and are present in fish and amphibians, they can cause severe clinical reactions.
- Ara h 9 and Cor a 8 are both nsLTPs. These sensitizations can be clinically silent, but often they cause mild and/or severe symptoms after food intake. As the anamnesis was negative for both pea- and hazelnut, the results are most likely caused by cross-reaction to Pru p 3 (nsLTP from peach).

Summary

- The patient showed extensive sensitizations to potentially high-risk allergens like the nsLTPs (Ara h 9, Cor a 8, Mal d 3, Pru p 3)- and Parvalbumins (Cyp c 1 & Gad m 1). Only the nsLTPs from stone fruit and the parvalbumins were of clinical importance. Avoidance and the prescription of an emergency kit is advised.
- The past respiratory symptoms can be explained by the sensitizations against allergens from the Ole e 1 family (Fra e 1, Ole e 1). A new allergen specific immunotherapy (AIT) treatment could be beneficial, if symptoms reoccur. A similar situation was observed for the mite sensitizations – in addition to AIT, encasings can be a possible intervention to lower the allergen load.