

Successfull oral tolerance induction to apple in 45 patients with birch-apple oral allergy syndrome.

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Background

Birch pollen allergy is associated with a food allergy in 40-70% of cases. In Northern Europe, this food allergy is most often in the form of an oral allergy syndrome (OAS): oro-pharyngeal symptoms, without signs of anaphylaxis, but with an important impact on quality of life, because of the variety of fruits and vegetables involved (apple, peach, cherry, hazelnut, carrot,...). Birch pollen immunotherapy is not sufficiently effective, with no or only transient improvement of OAS ¹. Few studies are available about oral tolerance induction (OTI) in birch-apple OAS ².

Results

N.	Age (y)	Sex	slgE: Birch (kU/l)	rBet v1 kU/l	rBet v2 kU/l	Bromelin kU/l	Apple kU/l	rPru p3 kU/l
1	46	M	16,80	17,40	0,00	0,00	0,80	0,00
2	32	F	17,20	17,70	0,97	0,13	1,89	0,00
3	25	F	62,70	66,30	0,00	0,00	3,61	0,00
4	36	F	5,12	3,82	0,78	0,00	0,20	0,00
5	22	F	ND	ND	ND	ND	ND	ND
6	26	M	ND	28,00	2,28	0,23	4,13	0,00
7	11	M	48,60	36,90	0,00	0,00	0,43	0,00
8	39	F	6,07	6,70	0,00	0,00	0,32	0,00
9	32	M	0,78	1,16	0,00	0,00	1,06	1,93
10	22	F	20,90	9,25	19,60	0,85	1,84	0,00
11	13	F	ND	9,60	1,84	ND	0,61	0,00
12	46	F	31,80	32,80	0,00	ND	ND	0,00
13	20	M	43,90	43,60	0,17	0,00	2,18	0,00
14	31	M	9,34	9,75	0,00	0,00	1,91	0,00
15	31	M	17,70	18,40	0,00	0,00	2,02	0,00
16	40	F	9,84	11,50	0,00	ND	0,38	0,00
17	10	F	ND	8,49	ND	ND	1,82	ND
18	31	F	ND	18,30	0,00	0,00	2,49	0,00
19	35	M	1,05	0,67	0,00	0,00	0,19	0,00
20	15	F	16,20	ND	ND	ND	ND	ND
21	9	F	ND	ND	ND	ND	ND	ND
22	61	F	ND	17,40	0,00	ND	ND	0,00
23	32	F	29,50	28,50	0,00	0,00	0,41	0,00
24	41	M	19,80	20,80	0,00	0,00	2,11	0,00
25	37	M	10,10	9,15	0,00	0,00	0,87	0,00
26	35	M	27,10	23,30	0,00	0,00	1,17	0,91
27	51	F	29,80	33,30	0,00	0,00	2,37	0,00
28	20	F	>100	>100	0,00	3,93	19,90	0,00
29	43	F	33,10	40,60	0,00	0,00	3,67	0,00
30	38	F	41,70	36,80	0,00	0,00	0,76	0,00
31	37	F	39,60	31,50	3,28	0,00	1,25	0,00
32	56	M	51,00	41,30	0,00	0,00	2,40	0,00
33	44	F	18,20	20,10	0,00	0,00	1,40	0,00
34	34	F	ND	8,73	0,00	0,00	1,01	0,00
35	32	F	14,60	11,60	0,00	0,00	2,11	0,00
36	26	F	6,06	5,40	0,13	0,00	0,22	0,00
37	37	F	42,10	41,50	0,00	0,62	2,40	0,00
38	20	M	ND	12,90	0,00	0,12	2,73	0,00
39	27	F	54,20	43,20	0,00	0,00	2,53	0,00
40	43	M	26,80	27,30	0,00	0,00	1,29	0,00
41	11	F	67,40	55,50	0,00	0,00	5,04	0,00
42	35	F	23,90	22,00	0,00	0,00	0,60	0,00
43	32	F	>100	>100	0,00	0,00	15,20	0,00
44	36	F	39,60	29,90	0,00	0,00	8,12	0,00
45	49	M	>100	>100	0,00	0,44	12,50	0,27

ND: not done

Objectives

To study the efficacy and tolerance of a rush protocol of OTI to apple, on the symptoms of OAS.

Methods

From June 2013 to March 2015, 45 patients were recruited (9-61 years old; 15 males, 30 females), with birch pollen allergy and OAS to apple and other related foods, without history of anaphylaxis. All diagnosis were confirmed by positive skin prick tests (SPT) to birch and fresh apple (Golden Delicious), and presence of specific IgE to birch, Bet v 1 and apple. The rush protocol consisted in 8 increasing doses of fresh Golden apple at 30 min intervals (total: 3h30): 0,1 – 1g (mixed in water) – 1 – 2 – 4 – 8 – 16 – 32g (total cumulative dose: 64.1 g). Patients were then advised to continue at home with a Golden apple consumption of 32 g/day during a month, then 64 g/day during a month; then they were seen by the allergist to eat a whole apple. Finally, they were asked to continue eating at least one apple three times a week.



All but one patient tolerated rush protocol; one 11-y-old child stopped at 16 g because of abdominal pain, but he completed the protocol at home in 3 months (N. 7). One patient had to go back to 8 g two days after the rush because of severe OAS with 32 g (N. 33).

All patients have completed the 2 months protocol (follow-up: 2-24 months), and 44/45 have no more symptoms with apple; most of them can also eat cherry, pear, peach, carrot or kiwi, without symptoms; one patient stopped the protocol after 2 months because of persistent abdominal pain due to apple consumption (N. 31); one patient had a recurrence of OAS after stopping eating apple during one month.

As in the study of Bergmann ³, some patients reported a beneficial effect of apple OTI on birch pollinosis symptoms.

Conclusions

OTI to apple seems safe and promising to improve OAS due to birch-related foods, but apple consumption has to be continued to maintain tolerance. Long term follow up is lacking, and other studies are mandatory to confirm these data.

References

1. Mauro M. Int Arch Allergy Immunol 2011;156:416–422
2. Kopac P. Allergy 2012; 67: 280-285
3. Bergmann KC. WAO Journal 2008;79-84.

The authors declare that there are no conflicts of interest in relation to this presentation