

Challenge tests with food additives and aspirin in the diagnostics of chronic urticaria

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INTRODUCTION

Hypersensitivity symptoms due to individual intolerances of some frequently used food additives are mostly pseudoallergic reactions - PAR [1]. These are triggered by a variety of pathomechanisms such as: interactions with the central or peripheral nervous system, non-specific release of mediators, hereditary or pharmacologically induced enzyme deficiencies, or others which remain unclear [2]. The study of Young et al. in a survey population with double blind, placebo-controlled oral challenges (DBPCFC), suggests an overall 0.026% prevalence of reaction to food additives [3].

The problem of food additives occurs more frequently in patients suffering from chronic urticaria, and may be accompanied by a history of aspirin pseudoallergic reactions. Following the DBPCFC principle and depending on the group selected, different percentages of positive reactions will be found. The criterion of selection may include: all available urticaria cases, or only those with chronic idiopathic urticaria, patients with suspected food additive-dependent urticaria only, or those who have responded to an additive free-diet [4].

MATERIAL AND METHODS

Thirty seven adult patients with active chronic urticaria and histories suggestive of food or / and aspirin exacerbations volunteered to take part in

this study. Medications were discontinued 3 days before beginning and during the hospitalisation. All patients received a diet free of additives and common allergens for 7 days [5]. DBPCFC with food additives and aspirin were performed in patients who became symptom-free during the elimination diet (n = 18). Common food additives and aspirin in nontransparent gelatine capsules were used for the challenge tests (table I). Potato starch was chosen as the placebo. All objective and subjective symptoms were recorded for 24 hours after the beginning of the challenges. The reaction was considered positive only when the original burst of urticaria / angioedema appeared. Questionable reactors (flare, itching, subjective symptoms) were retested, and if the repeat test was positive, it was assumed that the first test was positive.

RESULTS

Positive reactions were seen in eight patients. There were no positive reactions to the challenge with placebo (table II). Most reactions occurred between 5 and 120 min. One patient reacted to the sodium benzoate after 4 hours. All reactions resolved within 24 hours and in most cases these were localised or generalised urticaria bursts with flare and itching. One patient developed severe angioedema with stridor. In this case, emergency treatment with adrenaline and steroids was performed and symptoms disappeared within

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Table I. – Challenge schedule. Tested agents and sequential doses.

Day	Tested agents [mg]	8:00 h	10:00 h	12:00 h
1	Tartrazine*	10	placebo	50
2	Methyl paraben p-hydroxybenzoate	200	placebo	400
3	Sodium benzoate	50	200	500
4	Non-azo dyes "mix" Indigotine 10 mg Quinoline yellow 10 mg	5 + 5	placebo	10 + 10
5	Sodium glutamate	placebo	100	500
6	Sodium bisulphite	10	50	100
7	Acetyl salicylic acid	50	250	500

* Followed by Azo dyes "mix" when positive: (E 110 & E 151 à 10 mg).

40 min. In one case, positive aspirin reaction was associated with a history of egg allergy, confirmed by the prick test and specific serum IgE-evaluation.

CONCLUSION

Chronic urticaria and angioedema may be due to intolerance of multiple food additives or associated with aspirin intolerance. Considering that the proposed mechanisms for reactions to tartrazine, sodium benzoate, sulphites, sodium glutamate and aspirin are so different, the meaning of those associations remain unclear [6].

In each individual patient without allergy and with history suggesting food dependent urticaria, a diagnostic elimination diet combined with additives and aspirin challenge is desirable.

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Table II. – Anamnestic data in patients with positive results (n = 8) of oral challenges with food additives and aspirin. Challenges were performed in patients who became symptom-free during the elimination diet (n = 18).

Patient No.	Duration of chronic urticaria	Histories of food/ aspirin dependent urticaria	Agents eliciting positive reactions by DBPCFC
1	12 months	tinned foods	Sodium benzoate
2	6 years	unspecified foods	Methyl paraben Sodium benzoate Sodium glutamate Sodium bisulphite
3	3 years	aspirin unspecified fruits	Sodium glutamate Acetylosalicylic acid
4	8 years	wine, soft drinks tinned foods	Sodium glutamate Acetylosalicylic acid
5	3 months	soft drinks aspirin	Sodium glutamate Acetylosalicylic acid
6	8 years	unspecified foods eggs	Acetylosalicylic acid
7	6 months	smoked meat and sausage	Acetylsalicylic acid
8	2 years	concentrates of soft drinks smoked fish grapes	Tartrazine Methyl paraben Sodium benzoate Sodium bisulphite