

Histamine-free diet: treatment of choice for histamine-induced food intolerance and supporting treatment for chronic headaches

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Summary

Histamine-induced food intolerance is not IgE-mediated. Skin-prick testing and specific IgE to food allergens are typically negative. Food rich in histamine or red wine may cause allergy-like symptoms such as sneezing, flush, skin itching, diarrhoea and even shortness of breath. The suspected reason is a diminished histamine degradation based on a deficiency of diamine oxidase. As diamine oxidase cannot be supplemented, a histamine-free diet was implemented to reduce histamine intake. Forty-five patients with a history of suffering from intolerance to food or wine ($n=17$) and chronic headache ($n=28$) were put on the diet over months to years. Fish, cheese, hard cured sausages, pickled cabbage and alcoholic beverages had to be avoided. Complaint intensity and drug-use per week prior to and 4 weeks after a histamine-free diet were compared. After 4 weeks on the diet 33/45 patients improved considerably ($P<0.01$), eight of them had total remission. In 12/45 patients, however, no changes in symptoms were observed. Symptoms of food or wine intolerance significantly decreased ($P<0.02$; treatment of choice), headaches decreased in frequency ($P<0.001$), duration and intensity. After eating histamine-rich food symptoms were reproducible and could be eliminated by anti-histamines in most patients. These data indicate the role of histamine in food and wine intolerance and that histamine-rich food causes a worsening of symptoms in patients suffering from chronic headaches. Results obtained support the hypothesis of a deficiency of diamine oxidase in patients with intolerance to food or wine.

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Introduction

So called 'food allergy' despite negative allergy tests is common. As several foods may contain high amounts of histamine [1–5], their ingestion sometimes causes allergy-like symptoms such as sneezing, flush, headache, diarrhoea and even shortness of breath. In these patients an increase in plasma histamine after drinking red wine was observed compared with asymptomatic controls [6–8]. In the same patients red wine intolerance could be eliminated by H1-blocker premedication [7,8], indicating the histamine genesis. In patients with intolerance to food and/or wine we consider a diminished histamine degrada-

tion based on a deficiency of diamine oxidase, the main enzyme catabolizing histamine in the gut [9].

As diamine oxidase cannot be substituted, a diet with clearly reduced histamine may pose fewer demands on diamine oxidase. Thus, diamine oxidase's capacity may be indirectly enhanced and histamine could be eliminated more easily.

The aim of the present study was to evaluate the therapeutic efficacy of a histamine-free diet in patients intolerant to food and/or wine as well as in patients suffering from chronic headaches.

Patients and methods

Forty-five patients, 30 women and 15 men, mean age 37.7 years (range 10–60 yr) with suspected histamine-induced

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Table 1. Food listed below must be avoided strictly

Histamine-free diet
Fish
Tunny
Sardine
Anchovy
Mackerel
Cheese
Emmenthal
Harzer cheese
Gouda
Roquefort
Tilsiter
Camembert
Cheddar
Hard cured sausages
Salami
Dried ham
Vegetables
Pickled cabbage
Spinach
Tomatoes (ketchup)
Alcoholic beverages
Red wine
White wine
Sparkling wine
Beer

intolerance to food ($n=17$) and chronic headaches ($n=28$) were given the histamine-free diet for 4 weeks (Table 1). Foods listed in Table 1 had to be strictly avoided. All patients had a history of food intolerance over at least 6 months to several years and served as their own controls. After skin-prick testing with standard and food series (Epipharm, Linz, Austria) they were classified according to their diagnoses.

Patients

Group 1 Seventeen patients with intolerance to food or wine showing symptoms such as flush ($n=10$), itching of the skin ($n=8$), itching as well as mucosal swelling in the mouth ($n=5$) congestion of the nose with sneezing ($n=3$), diarrhoea ($n=4$), or shortness of breath ($n=3$) after ingestion of histamine-rich food. Symptoms occurred at least two times per week between 10 to 30 min and 3 hr after ingestion of food as listed in Table 1. Patients were non-atopics with negative allergy tests to food allergens except two patients allergic to animal dander and two

patients allergic to birch pollen (17 patients, 11 women, six men; 40.6 yr mean; total IgE: mean 94 kU/l, range 4–310 kU/l).

Group 2 Twenty-eight patients suffering from chronic headaches with at least one weekly attack (mean 3.1 ± 2.0 attacks per week). Patients were non-atopics except three patients allergic to birch pollens (28 patients, 19 women, nine men; 36.0 yr mean; total IgE: mean 71 kU/l, range 2–598 kU/l).

Assessment of success of treatment

Frequency of symptoms per week and drug use per week (non-steroidal-analgesics on demand in the headache group) the month prior to and 4 weeks after histamine-free diet were compared. Success of treatment was assumed when reduction of symptoms and/or reduction of drug use was evident by more than 50% compared with the months before diet, a total remission was classified as cessation of symptoms.

Dietary errors

A dietary error is defined by symptoms after eating any food listed in Table 1.

Statistical analysis

Statistical analysis was carried out using the sign test.

Results

After 4 weeks of diet a reduction of symptoms and/or drug use was evident in 33/45 patients by more than 50% ($P < 0.01$), eight of them had total remission. However, no changes in symptoms could be observed in 12/45 patients (Table 2).

In 14/17 patients with intolerance to food and/or wine the incidence of symptoms decreased significantly

Table 2. Results in 45 patients after 4 weeks of diet

	Total remission (n)	Improvement > 50% (n)	No change of symptoms (n)
Patients with food and wine intolerance ($n=17$)			
$P < 0.02$	4	10	3
Patients with chronic headaches ($n=28$)			
$P < 0.001$	4	15	9